



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

Friday, May 13, 2022
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 BARDSTOWN N-9HU
47-051-02445-00-00

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: BARDSTOWN N-9HU
Farm Name: RUSSELL & MARY BLAKE
U.S. WELL NUMBER: 47-051-02445-00-00
Horizontal 6A New Drill
Date Issued: 5/13/2022

Promoting a healthy environment.

05/13/2022



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

April 28, 2022

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

RE: Application for Deep Well Permit – API #47-051-02445

COMPANY: Tug Hill Operating, LLC

FARM: Russell & Mary Blake Bardstown N-9HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

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,

A handwritten signature in blue ink that reads 'Susan Rose'.
Susan Rose
Administrator

**Burch Ridge S-7HU 47-051-02194; Burch Ridge S-6HU 47-051-02193; Blake U-7H 47-051-D1766; McMasters N-11HU 47-051-02317; McMasters N-12HU 47-051-02316; McMasters N-13HU 47-051-02332; McMasters N-14HU 47-051-02333; McMasters N-15HU 47-051-02334; McMasters S-16HU 47-051-02337; McMasters S-17HU 47-051-02338; McMasters S-18HU 47-051-02339; McMasters S-19HU 47-051-02340; McMasters S-20HU 47-051-02341; Bardstown N-11HU 47-051-02447

05/13/2022

PERMIT CONDITIONS

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

CONDITIONS

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

API Number: _____

PERMIT CONDITIONS

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

05/13/2022

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 Powhatan Point 7
Operator ID County District Quadrangle

2) Operator's Well Number: Bardstown N-9HU Well Pad Name: Blake

3) Farm Name/Surface Owner: Russell Blake, et ux; William Bungard, et ux Public Road Access: Burch Ridge Road - CR 29

4) Elevation, current ground: 1,326.20' Elevation, proposed post-construction: 1,326.20'

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

(b) If Gas Shallow Deep X
Horizontal X

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 11,104' - 11,223', thickness of 119' and anticipated pressure of approx. 7,500 psi.

8) Proposed Total Vertical Depth: 11,373'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 22,911'

11) Proposed Horizontal Leg Length: 11,273.57'

12) Approximate Fresh Water Strata Depths: 70; 922'

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

14) Approximate Saltwater Depths: 1,370', 1595' (47-051-02048) - (47-051-02054)

15) Approximate Coal Seam Depths: Sewickley Coal - 816' and Pittsburgh Coal - 916', 969-975, 1054-1059'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated (47-051-02048) WR-35

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

(a) If Yes, provide Mine Info: Name: Depth: Seam: Owner:

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WW-6B
(04/15)

API NO. 47- 051 -
OPERATOR WELL NO. Bardstown N-9HU
Well Pad Name: Blake

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#	1,050'	1,050'	1,689FT^3(CTS)
Intermediate 1	13 3/8"	NEW	J55	54.5#	2,802'	2,802'	1,976FT^3(CTS)
Intermediate 2	9 5/8"	NEW	HPP110	47#	10,079'	10,079'	3,295FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	22,911'	22,911'	5,420FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		10,895'	
Liners							

MJK 1/19/2022

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.33
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			
Sizes:	N/A			
Depths Set:	N/A			

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WW-6B
(10/14)

4705102445
API NO. 47-051 -
OPERATOR WELL NO. Bardstown N-9HU
Well Pad Name: Blake

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(10,395'). 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 28,200,000 lb. proppant and 510,000 bbl of water. Max rate = 80bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.72 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.94 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.

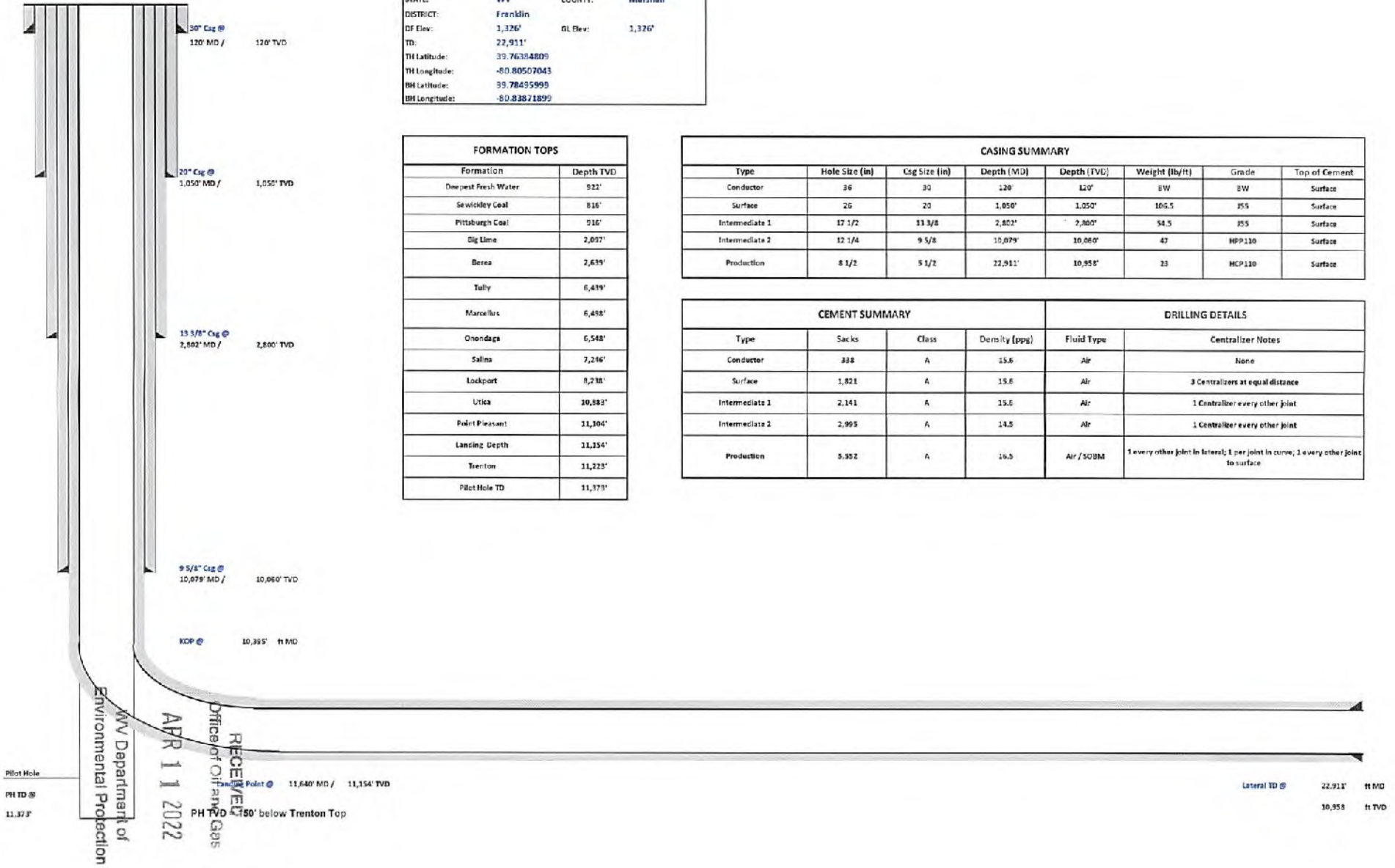


WELL NAME: Bardstown N-9HU
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,326' **DL Elev:** 1,326'
TD: 22,911'
TH Latitude: 39.76354809
TH Longitude: -80.80507043
BH Latitude: 39.78435999
BH Longitude: -80.83871899

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	922'
Sewickley Coal	816'
Pittsburgh Coal	916'
Big Lime	2,097'
Berea	2,619'
Tully	6,419'
Marcellus	6,498'
Onondaga	6,548'
Salina	7,246'
Lockport	8,238'
Utica	10,883'
Point Pleasant	11,104'
Landing Depth	11,354'
Trenton	11,323'
Pilot Hole TD	11,373'

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'	8W	8W	Surface
Surface	26	20	1,050'	1,050'	105.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,802'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,079'	10,080'	47	HPP110	Surface
Production	8 1/2	5 1/2	22,911'	10,958'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Type	Sacks	Class	Density (ppg)	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,821	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,141	A	15.6	Air	1 Centralizer every other joint
Intermediate 2	2,999	A	14.5	Air	1 Centralizer every other joint
Production	5,352	A	16.5	Air/SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other joint to surface



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 PH TD @ 11,373' below Trenton Top

Lateral TD @ 22,911' ft MD
 10,958' ft TVD



Tug Hill Operating, LLC Casing and Cement Program

Bardstown N-9HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,050'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,802'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,079'	CTS
Production	5 1/2"	HCP110	8 1/2"	22,911'	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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April 7, 2022

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

RE: Bardstown N-9HU

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-hilop.com.

Sincerely,

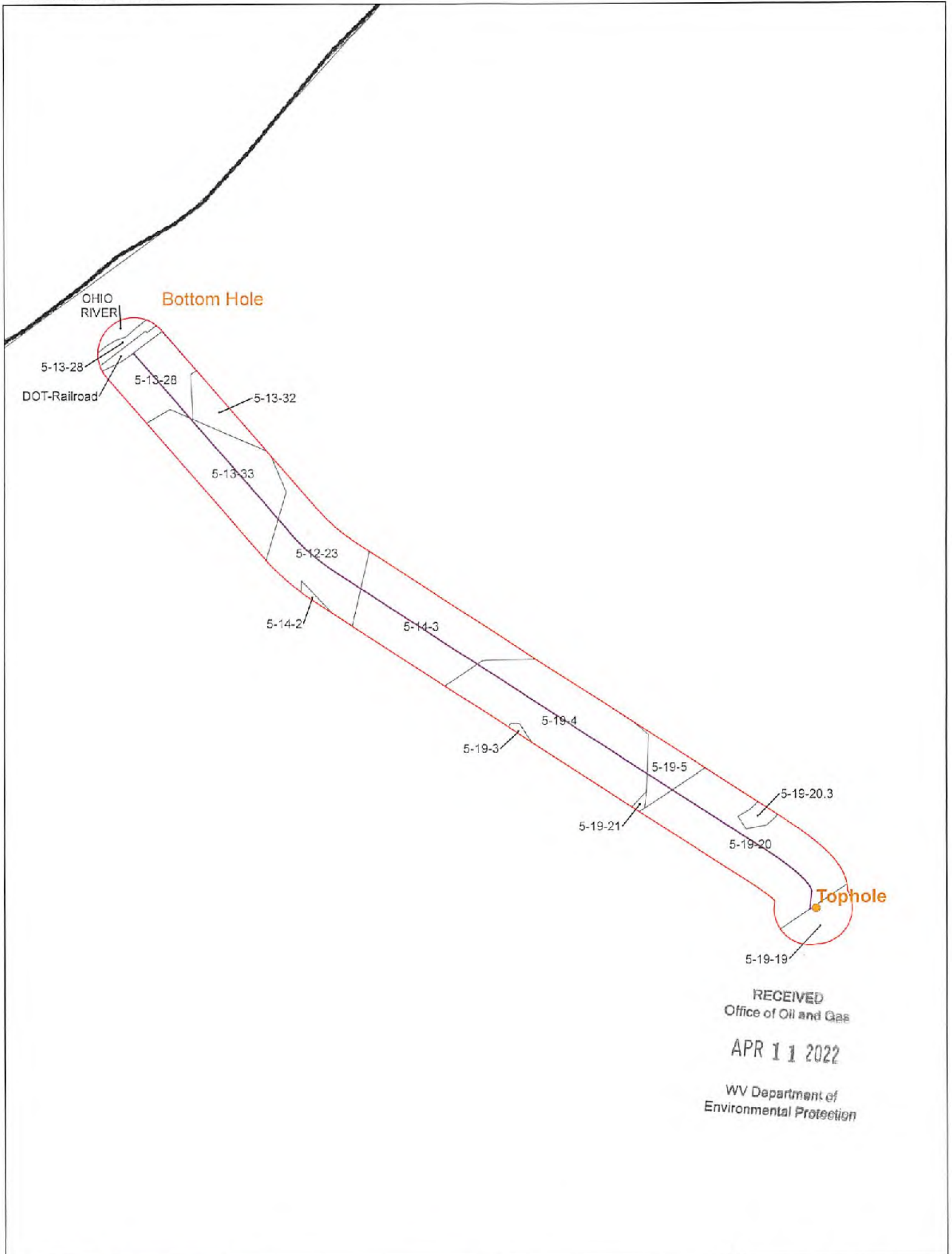
Amy L. Morris
Permitting Specialist
Tug Hill Operating

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Bardstown N-9HU



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Coordinate System: NAD 83
 Datum: North American 1983
 Units: Feet
 Scale Factor: 0.9999999999999999

CONFIDENTIAL

- Utica Well
- Force Pool
- 500' Buffer



Bardstown N-9HU
 Operators within 500 Feet of Well Borehole



**Operators within 500' of Well Bore
Bardstown N - 9HU**

COUNTY	DISTRICT	TMP	MINERAL OWNER OR LESSEE	ADDRESS
Marshall	Franklin	5-12-23	HG ENERGY II APPALACHIA, LLC	5260 Dupont Road Parkersburg, WV 26101
Marshall	Franklin	5-13-28	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-13-28	TH EXPLORATION, LLC	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-13-32	TH EXPLORATION, LLC	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-13-33	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-13-33	TH EXPLORATION, LLC	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-14-2	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-14-3	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-19	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-20	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-20.3	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-21	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-3	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-4	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	5-19-5	TH EXPLORATION II, LLC*	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	Ohio River	TH EXPLORATION, LLC	1320 S University Drive Suite 500 Fort Worth, TX 76107
Marshall	Franklin	DOT-RAILROAD	CSX TRANSPORTATION INC	500 Water Street J-180 Jacksonville, FL 32202

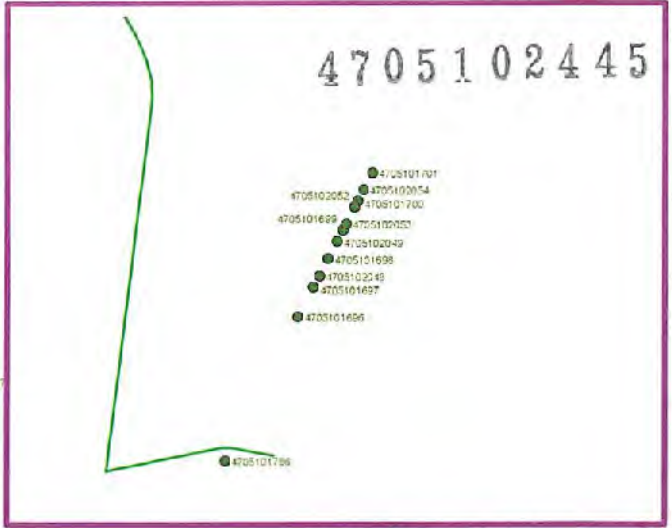
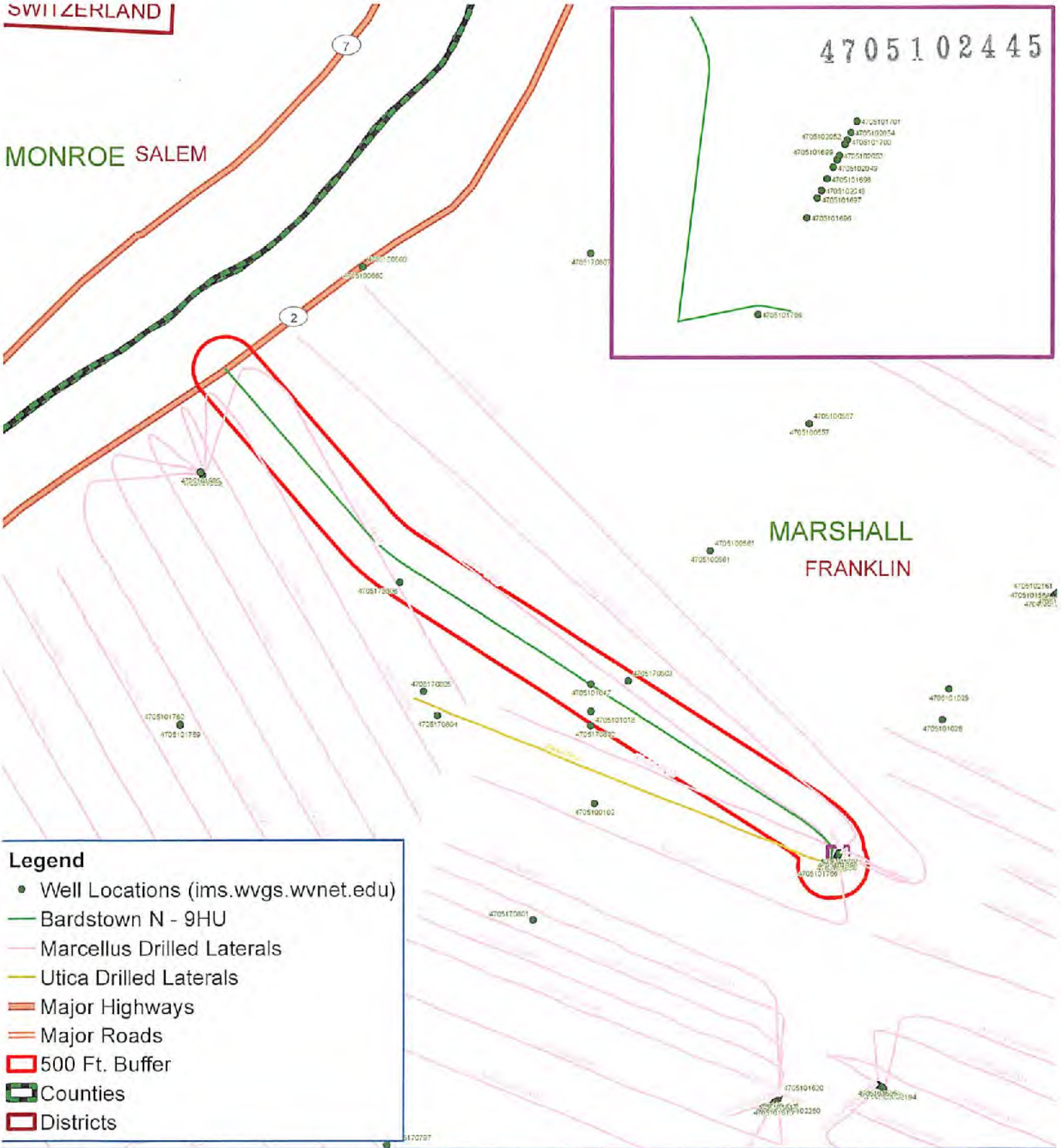
* TH Exploration II, LLC is a wholly owned subsidiary of THQ Appalachia I, LLC. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under that certain Operating Services Agreement dated July 23, 2014. For further information please see the recorded affidavit submitted as part of the permit pack.

05/13/2022

SWITZERLAND

MONROE SALEM

4705102445



MARSHALL
FRANKLIN

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Bardstown N - 9HU
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- Major Highways
- Major Roads
- ▭ 500 Ft. Buffer
- ▭ Counties
- ▭ Districts



Bardstown N - 9HU
Franklin District
Marshall County, WV

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Map Prepared by:

05/13/2022
DPS
LAND SERVICES



Notes:

All locations are approximate and are for visualization purposes only.

Map Created: January 4, 2022

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

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

Data Sources Reviewed:

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

Contacted Adam Picard 724-485-9331, apicard@dpslandservices.com, DPS GIS (1/04/2022) 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

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

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

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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
✓ 4705101698	Tug Hill Operating, LLC.	12673' MD / 6503' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705101701	Tug Hill Operating, LLC.	13354' MD / 6514' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705101766	Tug Hill Operating, LLC.	18102' MD / 11066' TVD	Point Pleasant	none	Yes, this is a producing well in the Point Pleasant. This well is within the expected fracture propagation from the proposed Point Pleasant stimulation. Proper casing and cement should prevent migration of fluids between wellbores.	Producing Point Pleasant well, operated by Tug Hill Operating, LLC., located on same well pad as proposed Bardstown N-9HU.
✓ 4705101696	Gastar Exploration USA, Inc.	6505' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.

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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
✓ 4705101697	Gastar Exploration USA, Inc.	6511' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.
✓ 4705101699	Gastar Exploration USA, Inc.	6518' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.
✓ 4705101700	Gastar Exploration USA, Inc.	6521' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.
✓ 4705102048	Tug Hill Operating, LLC.	14112' MD / 6465' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705102049	Tug Hill Operating, LLC.	17942' MD / 6462' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.

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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
✓ 4705102052	Tug Hill Operating, LLC.	16978' MD / 6417' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705102053	Tug Hill Operating, LLC.	19291' MD / 6437' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705102054	Tug Hill Operating, LLC.	17512' MD / 6416' TVD	Marcellus	none	No, this producing Marcellus 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 Bardstown N-9HU.
✓ 4705101017	CNX Gas Co. LLC (North)	1192' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.
4705101018	CNX Gas Co. LLC (North)	1192' TVD (proposed)	none	none	No, this well will not be drilled to the proposed depth or perforated. This is a canceled permit.	Permit canceled.

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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
✓ 4705170803	Manufacturers Light & Heat Co.	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing of the proposed Point Pleasant well.	State records are incomplete.
✓ 4705170806	unknown	unknown	unknown	unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing of the proposed Point Pleasant well.	State records are incomplete.

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WV Geological & Economic Survey.

Well: County = 51 Permit = 01698

Report Time: Monday, January 10, 2022 11:37:26 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101698	Marshall	1698	Franklin	Powhatan Point	Clarrington	39.764195	-80.804973	516704.6	4401603.9

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101698	1 As Drilled	514982.7	4401990.6	-80.825067	39.767711
4705101698	1 As Proposed	514985.1	4401995.9	-80.825039	39.767759

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101698	6/6/2015	Dvtd Orgnl Loc	Completed	Wilbert H Bungard et ux	3H		Blake	WV16-0022-001/WV16-0135-000/WV16-0092-001	Russell Blake et al	Gaslar Exploration USA, Inc	6511	Marcellus Fm	3000

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF
4705101698	6/6/2015	7/23/2014	1326	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6562	12673	12673	6184	1261			155		

Comment: 6/6/2015 KOP 6184'. Additional Mineral Owners:WV16-0068-000/WV16-0011-001/WV16-0006-000

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
4705101698	6/6/2015	Water	Fresh Water	Vertical			60	Pennsylvanian System					
4705101698	6/6/2015	Water	Salt Water	Vertical			1418	3rd Salt Sand					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	6990	Marcellus Fm	7142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	7190	Marcellus Fm	7342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	7390	Marcellus Fm	7542	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	7590	Marcellus Fm	7742	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	7790	Marcellus Fm	7942	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	7990	Marcellus Fm	8142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	8190	Marcellus Fm	8342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	8390	Marcellus Fm	8542	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	8590	Marcellus Fm	8742	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	8790	Marcellus Fm	8942	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	8990	Marcellus Fm	9142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	9190	Marcellus Fm	9342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	9390	Marcellus Fm	9542	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	9590	Marcellus Fm	9742	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	9790	Marcellus Fm	9942	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	9990	Marcellus Fm	10142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	10190	Marcellus Fm	10342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	10390	Marcellus Fm	10542	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	10590	Marcellus Fm	10742	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	10790	Marcellus Fm	10942	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	10990	Marcellus Fm	11142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	11190	Marcellus Fm	11342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	11390	Marcellus Fm	11542	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	11590	Marcellus Fm	11742	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	11790	Marcellus Fm	11942	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	11990	Marcellus Fm	12142	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	12190	Marcellus Fm	12342	Marcellus Fm					
4705101698	6/6/2015	Pay	Oil & Gas	Deviated	12392	Marcellus Fm	12594	Marcellus Fm					

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
4705101698	Gaslar Exploration Inc	2015	298,054	0	0	0	0	10,747	37,692	45,542	38,547	42,846	45,302	39,243	38,133
4705101698	Tug Hill Operating, LLC	2016	460,714	46,503	41,512	42,171	37,298	40,563	38,637	38,967	37,930	35,208	35,119	33,223	33,582
4705101698	Tug Hill Operating, LLC	2017	352,489	31,998	28,846	30,852	29,373	30,788	28,968	30,028	29,751	28,428	28,941	27,297	27,423
4705101698	Tug Hill Operating, LLC	2018	202,565	27,486	25,500	8,181	31,316	27,680	27,194	27,124	23,359	4,725	0	0	0
4705101698	Tug Hill Operating, LLC	2019	202,672	0	0	0	0	0	31,935	34,973	45,006	26,359	23,220	27,933	13,446
4705101698	Tug Hill Operating, LLC	2020	298,290	31,419	26,732	29,259	24,387	13,615	24,042	22,118	20,298	24,203	23,631	24,772	33,614

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Well: County = 51 Permit = 01701

Report Time: Monday, January 10, 2022 11:38:15 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101701	Marshall	1701	Franklin	Powhatan Point	Clarington	39.764348	-80.894894	516711.3	4401629.9

Bottom Hole Location Information:

API	EP FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101701	1 As Drilled	515111.9	4402311.1	-80.823551	39.770597
4705101701	1 As Proposed	515113.1	4402313.9	-80.823537	39.770622

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101701	10/23/2014	Divd Wlkd Ovr	Completed	W H Bungard et ux	6H		Blake	WV16-0022-001/WV16-0128-000/WV-0135-000	R Blake et al	Gastar Exploration USA, Inc.	6521	Marcellus Fm	
4705101701	6/6/2015	Divd Dtd Dpr	Completed	Wilbert H Bungard, et al	6H	6H	Blake	16-0135-000, 16-0022-001, 16-0128-000, 16-0068-000	Russell Blake, et al	Gastar Exploration USA, Inc.		Marcellus Fm	
4705101701	-/-	Divd Ogrnl Loc	Completed	Wilbert H Bungard et ux	6H		Blake	WV16-0022-001/WV16-0135-000/WV16-0128-000	Russell Blake et al	Gastar Exploration USA, Inc.	6521	Marcellus Fm	3000

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_FTC	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_E
4705101701	10/23/2014	10/23/2014	1326	Ground Level	Unnamed			Development Well	Unsuccessful		Rotary		5700										
4705101701	6/6/2015	8/3/2014	1326	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6572	13355	12785	5805		2161			185		
4705101701	-/-	-/-	1326	Ground Level				Development Well	Unsuccessful			NotCmplt	6754		6754								

Comment: -/- Additional Mineral Owners:WV16-0068-000/WV16-0006-000

Comment: 10/23/2014 Additional Lease Numbers:WV16-0068-000/WV16-0006-000. Received affidavit for partial plug without other completion information and before original completion.

Comment: 6/6/2015 KOP 5805', addl. lease #: 16-0006-000

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
4705101701	6/6/2015	Water	Fresh Water	Vertical			60	Pennsylvanian System					
4705101701	6/6/2015	Water	Salt Water	Vertical			1418	3rd Salt Sand					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	7231	Marcellus Fm	7384	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	7445	Marcellus Fm	7590	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	7606	Marcellus Fm	7769	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	7831	Marcellus Fm	7992	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	8010	Marcellus Fm	8272	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	8315	Marcellus Fm	8488	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	8466	Marcellus Fm	8655	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	8717	Marcellus Fm	8852	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	8905	Marcellus Fm	9059	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	9111	Marcellus Fm	9308	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	9340	Marcellus Fm	9481	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	9516	Marcellus Fm	9670	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	9725	Marcellus Fm	9972	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	9896	Marcellus Fm	10027	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	10095	Marcellus Fm	10296	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	10340	Marcellus Fm	10479	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	10527	Marcellus Fm	10687	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	10734	Marcellus Fm	10897	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	10859	Marcellus Fm	11092	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	11140	Marcellus Fm	11392	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	11422	Marcellus Fm	11614	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	11645	Marcellus Fm	11879	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	11912	Marcellus Fm	12084	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	12146	Marcellus Fm	12356	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	12409	Marcellus Fm	12586	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	12629	Marcellus Fm	12828	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	12878	Marcellus Fm	13030	Marcellus Fm					
4705101701	6/6/2015	Pay	Oil & Gas	Deviated	13080	Marcellus Fm	13282	Marcellus Fm					

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
4705101701	Gastar Exploration Inc	2015	279,549	0	0	0	0	8,503	33,893	37,132	29,474	47,803	48,312	39,995	34,447
4705101701	Tug Hill Operating, LLC	2016	501,239	43,322	50,023	47,827	45,429	45,995	42,225	42,149	40,456	37,511	37,817	33,913	34,565
4705101701	Tug Hill Operating, LLC	2017	503,022	36,492	31,613	34,203	32,833	31,157	29,067	29,949	29,561	28,216	26,636	26,292	25,797
4705101701	Tug Hill Operating, LLC	2018	503,414	26,834	24,970	26,996	25,901	26,969	28,712	26,031	23,995	3,006	0	0	0
4705101701	Tug Hill Operating, LLC	2019	500,116	0	0	0	0	0	15,182	4,958	0	0	0	0	0
4705101701	Tug Hill Operating, LLC	2020	506,859	18,515	0	2,815	19,953	11,139	19,671	0	0	0	0	0	26,566

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Well: County = 51 Permit = 01766

Report Time: Monday, January 10, 2022 11:38:46 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101766	Marshall	1766	Franklin	Powhatan Point	Clarrington	39.763938	-80.005156	516689	4401564.2

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101766	1	As Drilled	514707.7	4402354.1	-80.02027
4705101766	1	As Proposed	514707.6	4402353.7	-80.02027

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101766	6/6/2015	Dvtd Orqnl Loc	Completed	Russell Blake et al	U-7H		Blake	WV16-0011-001/WV16-0090-000/WV16-0171-000	Russell Blake et al	Gastar Exploration USA, Inc.	11131	Pt Pleasant Fm	7000

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	T_L	
4705101766	6/6/2015	6/14/2014	1326	Ground Level	Unnamed	Pt Pleasant Fm	Pt Pleasant Fm	Development Well	Development Well	Gas	Rotary	Fractured	18102	18102	9400									37957

Comment: 6/6/2015 Additional Lease Numbers:WV16-0022-001/WV16-0092-001/WV16-0006-000/WV16-0135-000/WV16-0068-000/WV16-0128-000. KOP 9400'

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
4705101766	6/6/2015	Water	Fresh Water	Vertical			60	Pennsylvanian System					
4705101766	6/6/2015	Water	Salt Water	Vertical			1418	3rd Salt Sand					
4705101766	6/6/2015	Pay	Gas	Deviated	11235	Ulica Sh	11387	Ulica Sh					
4705101766	6/6/2015	Pay	Gas	Deviated	11435	Ulica Sh	11587	Ulica Sh					
4705101766	6/6/2015	Pay	Gas	Deviated	11635	Pt Pleasant Fm	11797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	11835	Pt Pleasant Fm	11997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	12035	Pt Pleasant Fm	12197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	12235	Pt Pleasant Fm	12397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	12435	Pt Pleasant Fm	12597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	12640	Pt Pleasant Fm	12797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	12835	Pt Pleasant Fm	12997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	13035	Pt Pleasant Fm	13197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	13235	Pt Pleasant Fm	13397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	13435	Pt Pleasant Fm	13597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	13635	Pt Pleasant Fm	13797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	13835	Pt Pleasant Fm	13997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	14035	Pt Pleasant Fm	14197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	14235	Pt Pleasant Fm	14397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	14435	Pt Pleasant Fm	14597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	14635	Pt Pleasant Fm	14797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	14835	Pt Pleasant Fm	14997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	15040	Pt Pleasant Fm	15197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	15235	Pt Pleasant Fm	15397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	15435	Pt Pleasant Fm	15597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	15635	Pt Pleasant Fm	15797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	15835	Pt Pleasant Fm	15997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	16035	Pt Pleasant Fm	16197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	16235	Pt Pleasant Fm	16399	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	16435	Pt Pleasant Fm	16597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	16635	Pt Pleasant Fm	16797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	16835	Pt Pleasant Fm	16997	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17035	Pt Pleasant Fm	17197	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17235	Pt Pleasant Fm	17397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17335	Pt Pleasant Fm	17397	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17435	Pt Pleasant Fm	17597	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17635	Pt Pleasant Fm	17797	Pt Pleasant Fm					
4705101766	6/6/2015	Pay	Gas	Deviated	17837	Pt Pleasant Fm	18039	Pt Pleasant Fm					

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
4705101766	Gastar Exploration Inc.	2015	2,909,149	0	0	0	366,421	546,795	526,534	358,122	297,655	294,458	253,415	273,699	
4705101766	Tug Hill Operating LLC	2016	2,003,118	232,976	205,317	208,652	189,265	181,481	166,605	149,558	148,430	136,880	134,893	124,926	
4705101766	Tug Hill Operating LLC	2017	1,124,740	119,502	103,011	109,106	100,804	99,800	82,719	92,456	89,951	84,447	84,457	79,271	
4705101766	Tug Hill Operating LLC	2018	612,130	90,787	75,792	79,801	74,711	77,675	72,383	66,927	63,957	8,117	0	0	
4705101766	Tug Hill Operating LLC	2019	420,185	0	0	0	0	37,446	59,870	90,230	73,197	68,799	64,067	26,576	
4705101766	Tug Hill Operating LLC	2020	894,495	67,292	51,326	55,171	48,070	42,353	57,543	47,069	47,133	45,443	47,951	43,500	

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Well: County = 51 Permit = 01696

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101696	Marshall	1696	Franklin	Powhatan Point	Clarington	39.764093	-80.805026	516700.1	4401592.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101696	1 As Proposed	514899.8	4401783.9	-80.82604	39.76585

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101696	1	As Proposed	Cancelled	Wilbert H Bungard et ux	1H		Blake	WV16-0022-001/WV16-0092-001/WV16-0103-001	Russell Blake et al	Gastar Exploration USA, Inc.	6506	Marcellus Fm	3000

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4705101696	1		1326	Ground Level																					

Comment: -/- Additional Lease Owners:WV16-0135-000/WV16-0068-000/WV16-0010-001

WV Geological & Economic Survey

Well: County = 51 Permit = 01697

Report Time: Monday, January 10, 2022 11:39:30 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101697	Marshall	1697	Franklin	Powhatan Point	Clarington	39.764145	-80.804999	516702.4	4401593.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101697	1 As Proposed	514942.5	4401889.9	-80.825539	39.766805

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101697	1	As Proposed	Cancelled	Wilbert H Bungard et ux	2H		Blake	WV16-0005-000/WV16-0072-000/WV16-0022-001	Russell Blake et al	Gastar Exploration USA, Inc.	6511	Marcellus Fm	3000

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4705101697	1		1326	Ground Level																					

Comment: -/- WV16-0092-001/WV16-0011-001/WV16-0135-000/WV16-0068-000/WV16-0010-001

WV Geological & Economic Survey

Well: County = 51 Permit = 01699

Report Time: Monday, January 10, 2022 11:39:46 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101699	Marshall	1699	Franklin	Powhatan Point	Clarington	39.764246	-80.804947	516706.8	4401609.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101699	1 As Proposed	515027.8	4402101.9	-80.824538	39.768713

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101699	1	As Proposed	Cancelled	Wilbert H Bungard et ux	4H		Blake	WV16-0022-001/WV16-0135-000/WV16-0092-001	Russell Blake et al	Gastar Exploration USA, Inc.	6518	Marcellus Fm	3000

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4705101699	1		1326	Ground Level																					

Comment: -/- Additional Lease Numbers:WV16-0068-000/WV16-0011-001/WV16-0006-000

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101700	Marshall	1700	Franklin	Powhatan Point	Clarington	39.754298	-80.80492	516709.1	4401615.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101700	1	As Proposed	515070.4	4402207.9	-80.824038 39.759668

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101700	-/-	Dvtd Orgrnl Loc	Cancelled	Wibert H Bungard	5H	Blake	WV16-0072-000/WV16-0022-001/WV16-0135-000	Russell Blake et al	Gastar Exploration USA, Inc	6521	Marcellus Frm	3000	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_A
4705101700	-/-	-/-	1326	Ground Level																					

Comment: -/- Additional Lease Numbers:WV16-0128-000/WV16-0068-000/WV16-0011-001/WV16-0006-000

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Well: County = 51 Permit = 02048

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102048	Marshall	2048	Franklin	Pawhatan Point	Clarington	39 754167	-80 80499	516703.1	4401600.8

Bottom Hole Location Information:

API	EP	FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102048	1	As Proposed	514744.8	4403137.7	-80.827819	39.778051
4705102048	1	As Drilled	514744.7	4403138.1	-80.82782	39.778055

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102048	6/9/2019	Dvtd Orgh Loc	Completed	Wilbert H Bungard et ux		N-1HM	Blake		Russell Blake et al	Tug Hill Operating, LLC	6643	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	1VD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_B
4705102048	6/9/2019	10/28/2018	1316	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Acid-Frac	6541	14112	14112	5933		0			0		0

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
4705102048	6/9/2019	Water	Fresh Water	Vertical			70						
4705102048	6/9/2019	Water	Salt Water	Vertical			1595						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7044	Marcellus Fm	1595						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7220	Marcellus Fm	7198						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7395	Marcellus Fm	7373						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7571	Marcellus Fm	7548						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7746	Marcellus Fm	7724						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	7921	Marcellus Fm	7899						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8097	Marcellus Fm	8075						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8272	Marcellus Fm	8250						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8448	Marcellus Fm	8426						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8623	Marcellus Fm	8601						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8798	Marcellus Fm	8776						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	8974	Marcellus Fm	8952						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	9149	Marcellus Fm	9127						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	9325	Marcellus Fm	9303						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	9500	Marcellus Fm	9478						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	9675	Marcellus Fm	9653						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	9851	Marcellus Fm	9829						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10026	Marcellus Fm	10004						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10202	Marcellus Fm	10180						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10377	Marcellus Fm	10355						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10552	Marcellus Fm	10530						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10728	Marcellus Fm	10706						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	10903	Marcellus Fm	10881						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11079	Marcellus Fm	11057						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11254	Marcellus Fm	11232						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11429	Marcellus Fm	11407						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11605	Marcellus Fm	11583						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11780	Marcellus Fm	11758						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	11956	Marcellus Fm	11934						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	12131	Marcellus Fm	12109						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	12306	Marcellus Fm	12284						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	12482	Marcellus Fm	12460						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	12657	Marcellus Fm	12635						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	12833	Marcellus Fm	12811						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13008	Marcellus Fm	12986						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13183	Marcellus Fm	13161						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13359	Marcellus Fm	13337						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13534	Marcellus Fm	13512						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13710	Marcellus Fm	13688						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13885	Marcellus Fm	13863						
4705102048	6/9/2019	Pay	Oil & Gas	Deviated	13960	Marcellus Fm	13938						

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	RRD	YEAR	ANN GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705102048	Tug Hill Operating, LLC	APR 1 1 2022	2020	581,701	0	0	0	0	3,035	18,101	44,525	104,728	127,505	54,759	113,308	115,740
4705102048	Tug Hill Operating, LLC	APR 1 1 2022	2021	1,236,783	144,022	125,512	137,936	83,079	0	138,955	105,650	102,165	140,159	93,197	83,627	84,491

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API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705102049	Marshall	2049	Franklin	Powhatan Point	Clarrington	39.764226	-80.804957	516705.9	4401607.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4705102049	1 As Proposed	514154.4	4404059.2	-80.834693	39.786364
4705102049	1 As Drilled	514152.7	4404050.3	-80.834713	39.786268

Owner Information

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102049	6/9/2019	Dvtd Orgnl Loc	Completed	Wilbert H Bungard et ux		N-2HM	Blake		Russell Blake et al	Tug Hill Operating, LLC		6645	Marcellus Fm

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BI	
4705102049	6/9/2019	11/22/2019	1316	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Acid-Frac	6462	17942		17942	6151						

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_REF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705102049	6/9/2019	Water	Fresh Water	Vertical					70				
4705102049	6/9/2019	Water	Salt Water	Vertical					1595				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	6851	Marcellus Fm			7005				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7027	Marcellus Fm			7180				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7202	Marcellus Fm			7355				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7377	Marcellus Fm			7531				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7553	Marcellus Fm			7708				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7728	Marcellus Fm			7882				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	7904	Marcellus Fm			8057				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8079	Marcellus Fm			8232				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8254	Marcellus Fm			8400				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8430	Marcellus Fm			8503				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8605	Marcellus Fm			8759				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8781	Marcellus Fm			8934				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	8956	Marcellus Fm			9109				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	9131	Marcellus Fm			9285				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	9307	Marcellus Fm			9460				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	9462	Marcellus Fm			9636				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	9658	Marcellus Fm			9811				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	9833	Marcellus Fm			9986				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10006	Marcellus Fm			10182				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10184	Marcellus Fm			10337				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10359	Marcellus Fm			10513				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10535	Marcellus Fm			10688				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10710	Marcellus Fm			10863				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	10885	Marcellus Fm			11039				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11061	Marcellus Fm			11214				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11236	Marcellus Fm			11390				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11412	Marcellus Fm			11565				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11587	Marcellus Fm			11740				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11762	Marcellus Fm			11916				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	11938	Marcellus Fm			12091				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	12113	Marcellus Fm			12267				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	15270	Marcellus Fm			15424				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	15446	Marcellus Fm			15599				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	15621	Marcellus Fm			15775				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	15797	Marcellus Fm			15950				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	15972	Marcellus Fm			16125				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	16147	Marcellus Fm			16301				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	16323	Marcellus Fm			16476				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	16498	Marcellus Fm			16652				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	16674	Marcellus Fm			16827				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	16849	Marcellus Fm			17002				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	17024	Marcellus Fm			17178				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	17200	Marcellus Fm			17353				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	17375	Marcellus Fm			17529				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	17551	Marcellus Fm			17704				
4705102049	6/9/2019	Pay	Oil & Gas	Deviated	17784	Marcellus Fm			17831				

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
4705102049	Tug Hill Operating, LLC	2019	257,842	0	0	0	0	2,708	12,317	50,300	142,698	163,184	136,950	137,946	111,739
4705102049	Tug Hill Operating, LLC	2020	20,268	153,288	137,282	158,098	48,266	0	28	148,198	140,682	165,860	124,675	114,172	109,719

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Well: County = 51 Permit = 02052

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102052	Marshall	2052	Franklin	Powhatan Point	Claxington	39.754267	-80.634925	516709.6	4401614.1

Bottom Hole Location Information:

API	EP	FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102052	1	As Drilled	514851.2	4404375.6	-80.626199	39.739211
4705102052	1	As Proposed	514851.4	4404375.8	-80.626196	39.739213

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102052	09/2019		Completed	Wilbert H Bungard et ux	N-9HU		Blake		Russell Blake et al	Tug Hill Operating, LLC	6647	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMO	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_B
4705102052	09/2019	1/12/2019	1315	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Acid-Frac	6235	16970	16970	6163							

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_ONLY
4705102052	09/2019	Water	Fresh Water	Vertical					70				Pennsylvania System
4705102052	09/2019	Water	Salt Water	Vertical					1595				Salt Sands (undiff)
4705102052	09/2019	Pay	Oil & Gas	Deviated	7126	Marcellus Fm			7271				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	7301	Marcellus Fm			7447				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	7476	Marcellus Fm			7622				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	7651	Marcellus Fm			7797				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	7826	Marcellus Fm			7992				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8001	Marcellus Fm			8147				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8176	Marcellus Fm			8322				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8351	Marcellus Fm			8497				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8526	Marcellus Fm			8672				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8701	Marcellus Fm			8847				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	8877	Marcellus Fm			9022				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9052	Marcellus Fm			9199				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9227	Marcellus Fm			9373				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9402	Marcellus Fm			9548				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9577	Marcellus Fm			9723				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9752	Marcellus Fm			9898				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	9927	Marcellus Fm			10073				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10102	Marcellus Fm			10248				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10277	Marcellus Fm			10423				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10452	Marcellus Fm			10598				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10628	Marcellus Fm			10773				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10803	Marcellus Fm			10948				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	10978	Marcellus Fm			11124				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	11153	Marcellus Fm			11299				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	11328	Marcellus Fm			11474				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	11503	Marcellus Fm			11649				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	11678	Marcellus Fm			11824				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	11853	Marcellus Fm			11999				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12028	Marcellus Fm			12174				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12203	Marcellus Fm			12349				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12379	Marcellus Fm			12524				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12554	Marcellus Fm			12700				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12729	Marcellus Fm			12875				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	12904	Marcellus Fm			13050				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13079	Marcellus Fm			13225				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13254	Marcellus Fm			13400				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13429	Marcellus Fm			13575				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13604	Marcellus Fm			13750				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13779	Marcellus Fm			13925				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	13954	Marcellus Fm			14100				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	14130	Marcellus Fm			14275				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	14305	Marcellus Fm			14451				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	14480	Marcellus Fm			14626				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	14655	Marcellus Fm			14801				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	14830	Marcellus Fm			14976				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15005	Marcellus Fm			15151				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15180	Marcellus Fm			15326				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15355	Marcellus Fm			15501				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15530	Marcellus Fm			15676				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15705	Marcellus Fm			15851				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	15881	Marcellus Fm			16026				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	16056	Marcellus Fm			16202				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	16231	Marcellus Fm			16377				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	16406	Marcellus Fm			16552				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	16581	Marcellus Fm			16727				Marcellus Fm
4705102052	09/2019	Pay	Oil & Gas	Deviated	16756	Marcellus Fm			16902				Marcellus Fm

API	PRODUCING_OPERATOR	PRD_YEAR	ANNUAL_GAS	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705102052	Tug Hill Operating, LLC	2019	1,094,204	0	0	0	4,467	14,566	35,685	131,510	115,539	96,054	88,523	97,835
4705102052	Tug Hill Operating, LLC	2020	1,026,768	123,000	101,824	105,898	67,916	0	107,554	89,100	91,027	110,647	79,018	69,534

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Well: County = 51 Permit = 02053

Report Time: Monday, January 10, 2022 11:41:51 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102053	Marshall	2053	Franklin	Powhatan Point	Clarington	39.764257	-80.804941	516707.3	4401610.7

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102053	1 As Proposed	514470.2	4404290	-80.831	39.768438
4705102053	1 As Drilled	514469.3	4404289.1	-80.83101	39.76843

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102053	6/9/2019	Divd Orign Loc	Completed	Wilbert H Bungard et ux		N-4HM	Blake		Russell Blake et al	Tug Hill Operating, LLC	6550	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_I	
4705102053	6/9/2019	12/18/2018	1316	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Oil and Gas	Rotary	Acid-Frac	6559	19335	19338	5870								

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
4705102053	6/9/2019	Water	Fresh Water	Vertical			70	Pennsylvanian System					
4705102053	6/9/2019	Water	Salt Water	Vertical			1595	Salt Sands (undiff)					
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	7285	Marcellus Fm		7432	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	7461	Marcellus Fm		7608	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	7637	Marcellus Fm		7794	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	7813	Marcellus Fm		7960	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	7989	Marcellus Fm		8136	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	8165	Marcellus Fm		8312	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	8341	Marcellus Fm		8488	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	8517	Marcellus Fm		8654	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	8693	Marcellus Fm		8840	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	8869	Marcellus Fm		9016	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9045	Marcellus Fm		9192	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9221	Marcellus Fm		9368	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9397	Marcellus Fm		9544	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9573	Marcellus Fm		9720	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9749	Marcellus Fm		9896	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	9925	Marcellus Fm		10072	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10101	Marcellus Fm		10248	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10277	Marcellus Fm		10424	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10453	Marcellus Fm		10600	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10629	Marcellus Fm		10776	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10805	Marcellus Fm		10952	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	10981	Marcellus Fm		11128	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	11157	Marcellus Fm		11304	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	11333	Marcellus Fm		11480	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	11509	Marcellus Fm		11656	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	11685	Marcellus Fm		11832	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	11861	Marcellus Fm		12008	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12037	Marcellus Fm		12184	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12213	Marcellus Fm		12360	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12389	Marcellus Fm		12536	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12565	Marcellus Fm		12712	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12741	Marcellus Fm		12888	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	12917	Marcellus Fm		13064	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13093	Marcellus Fm		13240	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13269	Marcellus Fm		13416	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13445	Marcellus Fm		13592	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13621	Marcellus Fm		13768	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13797	Marcellus Fm		13944	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	13973	Marcellus Fm		14120	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	14149	Marcellus Fm		14296	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	14325	Marcellus Fm		14472	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	14501	Marcellus Fm		14648	Marcellus Fm				
4705102053	6/9/2019	Pay	Oil & Gas	Deviated	14677	Marcellus Fm		14824	Marcellus Fm				

Production Gas Information: (Vol in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705102053	Tug Hill Operating, LLC	2019	764,720	0	0	0	0	1,651	14,981	46,363	142,766	150,915	158,193	110,748	131,155
4705102053	Tug Hill Operating, LLC	2020	441,580	170,920	153,101	165,198	46,696	0	106	137,767	158,809	206,079	141,589	133,140	126,574

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Well: County = 51 Permit = 02054

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102054	Marshall	2054	Franklin	Powhatan Point	Clarington	39.764318	-80.80491	516710	4401617.5

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102054	1 As Proposed	515003.8	4404779.1	-80.824757	39.792836
4705102054	1 As Drilled	514999	4404780.9	-80.824813	39.792852

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705102054	6/9/2019	Divd Orqnl Loc	Completed	Wilbert H Bunceard et ux			N-9HM	Blake	Russell Blake et al	Tug Hill Operating, LLC	6647	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEI	
4705102054	6/9/2019	2/1/2019	1316	Ground Level	Unnamed	Marcellus Fm	Marcellus Fm	Development Well	Development Well	Oil and Gas	Rotary	Acid-Frac	6539	17512		17512	5876							

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
4705102054	6/9/2019	Water	Fresh Water	Vertical			70	Pennsylvanian System					
4705102054	6/9/2019	Water	Salt Water	Vertical			1595	Salt Sands (undiff)					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	7463	Marcellus Fm	7616	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	7638	Marcellus Fm	7791	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	7813	Marcellus Fm	7967	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	7989	Marcellus Fm	8142	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	8164	Marcellus Fm	8318	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	8340	Marcellus Fm	8493	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	8515	Marcellus Fm	8688	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	8690	Marcellus Fm	8844	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	8866	Marcellus Fm	9019	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9041	Marcellus Fm	9195	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9217	Marcellus Fm	9370	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9392	Marcellus Fm	9545	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9567	Marcellus Fm	9721	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9743	Marcellus Fm	9896	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	9918	Marcellus Fm	10072	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10094	Marcellus Fm	10247	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10269	Marcellus Fm	10422	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10444	Marcellus Fm	10598	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10620	Marcellus Fm	10773	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10795	Marcellus Fm	10949	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	10971	Marcellus Fm	11124	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	11146	Marcellus Fm	11299	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	11321	Marcellus Fm	11475	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	11497	Marcellus Fm	11650	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	11672	Marcellus Fm	11826	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	11848	Marcellus Fm	12001	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	12023	Marcellus Fm	12176	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	12190	Marcellus Fm	12352	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	12374	Marcellus Fm	12527	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	15882	Marcellus Fm	16035	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16057	Marcellus Fm	16211	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16233	Marcellus Fm	16386	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16408	Marcellus Fm	16561	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16583	Marcellus Fm	16737	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16759	Marcellus Fm	16912	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	16934	Marcellus Fm	17088	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	17110	Marcellus Fm	17263	Marcellus Fm					
4705102054	6/9/2019	Pay	Oil & Gas	Deviated	17338	Marcellus Fm	17388	Marcellus Fm					

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
4705102054	Tug Hill Operating, LLC	2019	50,710	0	0	0	0	1,730	15,575	44,859	140,213	140,314	125,517	119,912	62,590
4705102054	Tug Hill Operating, LLC	2020	81,947	7,148	138,546	150,273	91,121	0	102,072	133,563	143,489	184,877	116,923	106,026	109,911

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WV Geological & Economic Survey:

Well: County = 51 Permit = 01017

Report Time: Monday, January 10, 2022 11:43:56 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101017	Marshall	1017	Franklin	Powhatan Point	Clarington	39.771537	-80.81854	515540.9	4402421.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101017	-/-	Original Loc	Cancelled	Jeffrey S.Cunningham			OE-1			CNX Gas Co. LLC (North)		1192	Pittsburgh coal

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	P_AFT
4705101017	-/-	-/-	1283	Ground Level				unclassified	unclassified	not available	unknown	unknown												

WV Geological & Economic Survey:

Well: County = 51 Permit = 01018

Report Time: Monday, January 10, 2022 11:44:18 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101018	Marshall	1018	Franklin	Powhatan Point	Clarington	39.770427	-80.818539	515541.2	4402293.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101018	-/-	Original Loc	Cancelled	Jeffrey & Shirley Cunningham			OE-1A			CNX Gas Co. LLC (North)		1192	Pittsburgh Ss

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	P_AFT
4705101018	-/-	-/-	1292	Ground Level				unclassified	unclassified	not available	unknown	unknown												

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WV Geological & Economic Survey

Well: County = 51 Permit = 70803

Report Time: Monday, January 10, 2022 11:44:31 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705170803	Marshall	70803	Franklin	Powhatan Point	Clarington	39.771714	-80.816487	515716.7	4402436.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170803	-/-		unknown	Prpty Map B & F Darrah				1298		Manufacturers Light & Heat Co.			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF
4705170803	-/-	-/-						unclassified	unclassified	not available	unknown	unknown												

WV Geological & Economic Survey

Well: County = 51 Permit = 70806

Report Time: Monday, January 10, 2022 11:44:49 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705170806	Marshall	70806	Franklin	Powhatan Point	Clarington	39.775923	-80.829085	514636.9	4402901.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170806	-/-		unknown	Prpty Map McIntire & Fountain						unknown			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF
4705170806	-/-	-/-						unclassified	unclassified	not available	unknown	unknown												

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Well: Bardstown N-09 HU (slot O)
 Site: Blake / Bardstown Pad
 Project: Marshall County, West Virginia NAD83 UTM 17N
 Design: rev3



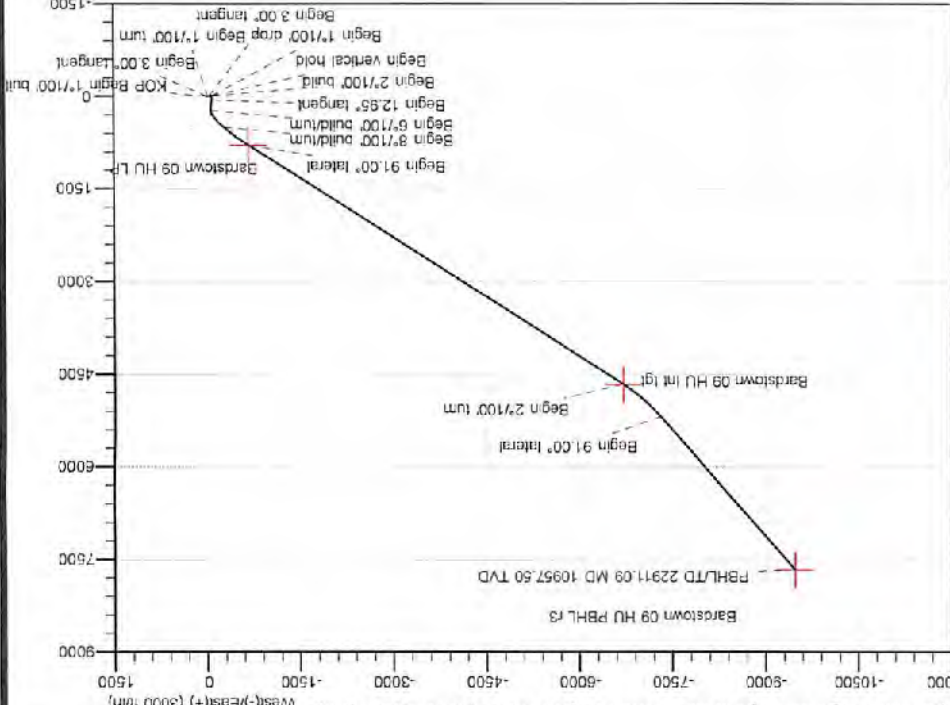
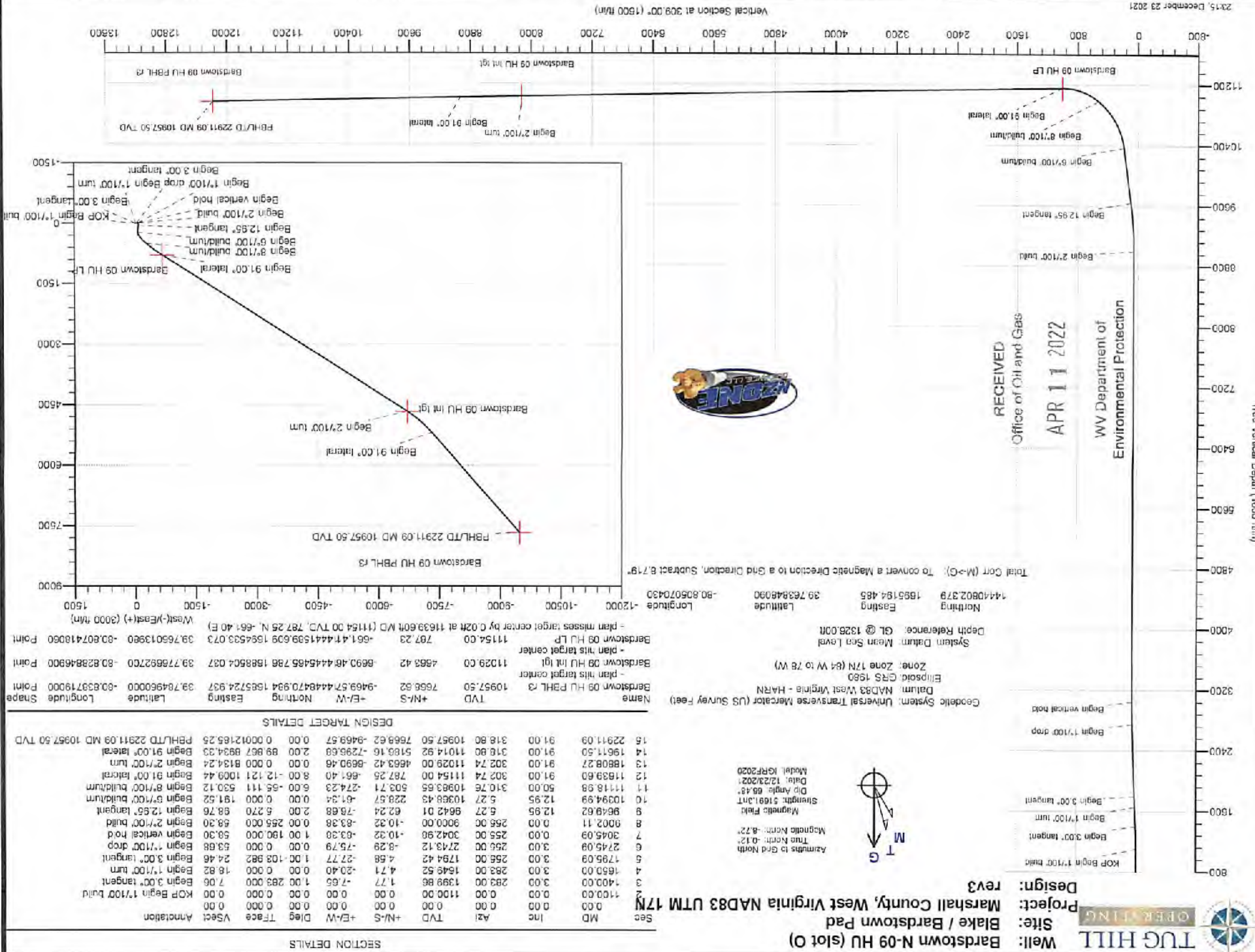
Azimuths to Grid North
 True North: -0.12°
 Magnetic North: -8.22°
 Magnetic Field
 Strength: 51691.91T
 Dip Angle: 66.45°
 Date: 12/23/2021
 Model: IGRF2020



Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (64 W to 78 W)
 System Datum: Mean Sea Level
 Depth Reference: GL @ 1326.00ft
 Nothing
 Easting 1655194.485
 Latitude 39.76384890
 Longitude -80.805070430
 Total Corr (M-G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.719'



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SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Nothing	Eastings	Latitudes	Longitude	Snake
2	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	1400.00	3.00	293.00	1399.86	1.77	-7.65	1.00	283.000	7.06	16.82	KOP Begin 17100' build
4	1650.00	3.00	283.00	1649.52	4.71	-20.40	0.00	0.00	16.82	16.82	Begin 3.00° tangent
5	1795.09	3.00	256.00	1794.42	4.68	-27.77	1.00	103.982	24.46	16.82	Begin 17100' build
6	2745.09	3.00	256.00	2743.12	-8.29	-75.79	0.00	0.00	53.68	53.68	Begin 3.00° tangent
7	3045.09	0.00	255.00	3042.98	-10.32	-63.38	1.00	190.000	58.30	58.30	Begin vertical hold
8	9002.11	0.00	256.00	9000.00	-10.32	-83.38	0.00	255.000	58.30	58.30	Begin 27100' build
9	9649.62	12.95	6.27	9642.01	62.24	-78.68	2.00	6.270	68.76	68.76	Begin 12.65° tangent
10	10394.99	12.95	5.27	10388.43	228.57	-61.34	0.00	0.000	191.52	191.52	Begin 87100' build/tum
11	11118.98	50.00	310.76	10983.65	503.71	-274.23	6.00	-55.111	530.12	530.12	Begin 87100' build/tum
12	11839.60	91.00	302.74	11154.00	787.25	-661.40	8.00	-12.121	1009.44	1009.44	Begin 91.00° lateral
13	18608.27	91.00	302.74	11029.00	4663.42	-6690.46	0.00	0.000	8134.24	8134.24	Begin 27100' tum
14	19611.50	91.00	318.80	11014.92	5169.16	-7299.68	2.00	89.867	8934.33	8934.33	Begin 91.00° lateral
15	22911.09	91.00	318.80	10957.50	7669.62	-9469.57	0.00	0.000	12165.25	12165.25	PBH/LTD 22911.09 MD 10957.50 TVD

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Nothing	Eastings	Latitudes	Longitude	Snake
Bardstown 09 HU PBHL R3	10957.50	7666.82	-9469.57	4444870.994	1685724.937	-80.8339719000	Point	
Bardstown 09 HU Int lgt	11029.00	4663.42	-6690.46	44445465.798	1888504.037	-80.8288469000	Point	
Bardstown 09 HU LP	11154.00	787.23	-661.41	44441599.699	1954533.073	-80.8074180600	Point	
Bardstown 09 HU Int lgt	11524.00	4663.42	-661.41	44441599.699	1954533.073	-80.8074180600	Point	

plan misses target center by 0.02ft at 11639.60ft MD (11154.00 TVD, 787.25 N, -661.40 E)
 - plan n/its target center
 - plan n/its target center



Planning Report - Geographic

Database:	DB_Dec2220_v18	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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	Blake / Bardstown Pad				
Site Position:		Northing:	14,440,917.719 usft	Latitude:	39.764164710
From:	Lat/Long	Easting:	1,695,217.289 usft	Longitude:	-80.804988390
Position Uncertainty:	0.00 ft	Slot Radius:	13-5/16 "		

Well	Bardstown N-09 HU (slot O)					
Well Position	+N/-S	0.00 ft	Northing:	14,440,802.379 usft	Latitude:	39.763048090
	+E/-W	0.00 ft	Easting:	1,695,194.485 usft	Longitude:	-80.805070430
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,326.00 ft
Grid Convergence:						

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	12/23/2021	-8.594	66.482	51,691.32708440

Design	rev3				
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	309.00	

Plan Survey Tool Program	Date				
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	22,911.09 rev3 (Original Hole)			

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	3.00	283.00	1,399.86	1.77	-7.85	1.00	1.00	0.00	283.000	
1,650.00	3.00	283.00	1,649.52	4.71	-20.40	0.00	0.00	0.00	0.000	
1,795.09	3.00	255.00	1,794.42	4.58	-27.77	1.00	0.00	-19.30	-103.982	
2,745.09	3.00	255.00	2,743.12	-8.29	-75.79	0.00	0.00	0.00	0.000	
3,045.09	0.00	255.00	3,042.98	-10.32	-83.38	1.00	-1.00	0.00	180.000	
9,002.11	0.00	255.00	9,000.00	-10.32	-83.38	0.00	0.00	0.00	255.000	
9,649.62	12.95	5.27	9,642.01	62.24	-76.68	2.00	2.00	17.03	5.270	
10,394.99	12.95	5.27	10,368.43	228.57	-61.34	0.00	0.00	0.00	0.000	
11,118.98	50.00	310.76	10,983.65	503.71	-274.23	6.00	5.12	-7.53	-85.111	
11,639.60	91.00	302.74	11,154.00	787.25	-661.40	8.00	7.88	-1.54	-12.121	
18,808.27	91.00	302.74	11,029.00	4,663.42	-6,690.46	0.00	0.00	0.00	0.000	Bardstown 09 HU Int 1
19,611.50	91.00	318.80	11,014.92	5,186.16	-7,296.68	2.00	0.00	2.00	89.867	
22,911.09	91.00	318.80	10,957.50	7,668.62	-9,469.57	0.00	0.00	0.00	0.000	Bardstown 09 HU PBI

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Wall Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
100.00	0.00	0.00	100.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
200.00	0.00	0.00	200.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
300.00	0.00	0.00	300.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
400.00	0.00	0.00	400.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
500.00	0.00	0.00	500.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
600.00	0.00	0.00	600.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
700.00	0.00	0.00	700.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
800.00	0.00	0.00	800.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
900.00	0.00	0.00	900.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,440,802.379	1,695,194.485	39.763848090	-80.805070430	
KOP Begin 1°/100' build										
1,200.00	1.00	283.00	1,199.99	0.20	-0.65	14,440,802.576	1,695,193.635	39.763848634	-80.805073455	
1,300.00	2.00	283.00	1,299.96	0.79	-3.40	14,440,803.165	1,695,191.084	39.763850266	-80.805082526	
1,400.00	3.00	283.00	1,399.86	1.77	-7.65	14,440,804.146	1,695,186.834	39.763852986	-80.805097543	
Begin 3.00° tangent										
1,500.00	3.00	283.00	1,499.73	2.94	-12.75	14,440,805.323	1,695,181.735	39.763855250	-80.805115780	
1,600.00	3.00	283.00	1,599.59	4.12	-17.85	14,440,806.500	1,695,176.635	39.763859514	-80.805133918	
1,650.00	3.00	283.00	1,649.52	4.71	-20.40	14,440,807.088	1,695,174.086	39.763861145	-80.805142986	
Begin 1°/100' turn										
1,700.00	2.92	273.43	1,699.45	5.08	-22.95	14,440,807.460	1,695,171.540	39.763862178	-80.805152043	
1,795.09	3.00	255.00	1,794.42	4.58	-27.77	14,440,806.961	1,695,166.718	39.763860836	-80.805169204	
Begin 3.00° tangent										
1,800.00	3.00	255.00	1,799.32	4.51	-28.01	14,440,806.894	1,695,166.470	39.763860655	-80.805170087	
1,900.00	3.00	255.00	1,899.19	3.16	-33.07	14,440,805.539	1,695,161.415	39.763859965	-80.805188087	
2,000.00	3.00	255.00	1,999.05	1.81	-38.13	14,440,804.185	1,695,156.360	39.763853276	-80.805206387	
2,100.00	3.00	255.00	2,098.91	0.45	-43.18	14,440,802.830	1,695,151.305	39.763849586	-80.805224086	
2,200.00	3.00	255.00	2,198.77	-0.90	-48.24	14,440,801.476	1,695,146.249	39.763845896	-80.805242086	
2,300.00	3.00	255.00	2,298.64	-2.26	-53.29	14,440,800.121	1,695,141.194	39.763842206	-80.805260086	
2,400.00	3.00	255.00	2,398.50	-3.61	-58.35	14,440,798.767	1,695,136.139	39.763838516	-80.805278086	
2,500.00	3.00	255.00	2,498.36	-4.97	-63.40	14,440,797.412	1,695,131.084	39.763834827	-80.805296085	
2,600.00	3.00	255.00	2,598.23	-6.32	-68.46	14,440,796.058	1,695,126.028	39.763831137	-80.805314085	
2,700.00	3.00	255.00	2,698.09	-7.68	-73.51	14,440,794.703	1,695,120.973	39.763827447	-80.805332085	
2,745.09	3.00	255.00	2,743.12	-8.29	-75.79	14,440,794.092	1,695,118.694	39.763825783	-80.805340201	
Begin 1°/100' drop										
2,800.00	2.45	255.00	2,797.97	-8.96	-78.31	14,440,793.417	1,695,116.172	39.763823942	-80.805349181	
2,900.00	1.45	255.00	2,897.91	-9.84	-81.60	14,440,792.535	1,695,112.883	39.763821542	-80.805360889	
3,000.00	0.45	255.00	2,997.89	-10.27	-83.21	14,440,792.105	1,695,111.280	39.763820372	-80.805366597	
3,045.09	0.00	0.00	3,042.98	-10.32	-83.38	14,440,792.080	1,695,111.109	39.763820247	-80.805367207	
Begin vertical hold										
3,100.00	0.00	255.00	3,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,200.00	0.00	255.00	3,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,300.00	0.00	255.00	3,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,400.00	0.00	255.00	3,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,500.00	0.00	255.00	3,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,600.00	0.00	255.00	3,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,700.00	0.00	255.00	3,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,800.00	0.00	255.00	3,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
3,900.00	0.00	255.00	3,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
4,000.00	0.00	255.00	3,997.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
4,100.00	0.00	255.00	4,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	
4,200.00	0.00	255.00	4,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.763820247	-80.805367207	

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WV Dept
Environmental Protection



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NADB3 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rav3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,300.00	0.00	255.00	4,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,400.00	0.00	255.00	4,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,500.00	0.00	255.00	4,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,600.00	0.00	255.00	4,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,700.00	0.00	255.00	4,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,800.00	0.00	255.00	4,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
4,900.00	0.00	255.00	4,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,000.00	0.00	255.00	4,997.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,100.00	0.00	255.00	5,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,200.00	0.00	255.00	5,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,300.00	0.00	255.00	5,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,400.00	0.00	255.00	5,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,500.00	0.00	255.00	5,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,600.00	0.00	255.00	5,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,700.00	0.00	255.00	5,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,800.00	0.00	255.00	5,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
5,900.00	0.00	255.00	5,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,000.00	0.00	255.00	5,997.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,100.00	0.00	255.00	6,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,200.00	0.00	255.00	6,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,300.00	0.00	255.00	6,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,400.00	0.00	255.00	6,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,500.00	0.00	255.00	6,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,600.00	0.00	255.00	6,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,700.00	0.00	255.00	6,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,800.00	0.00	255.00	6,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
6,900.00	0.00	255.00	6,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,000.00	0.00	255.00	6,997.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,100.00	0.00	255.00	7,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,200.00	0.00	255.00	7,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,300.00	0.00	255.00	7,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,400.00	0.00	255.00	7,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,500.00	0.00	255.00	7,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,600.00	0.00	255.00	7,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,700.00	0.00	255.00	7,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,800.00	0.00	255.00	7,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
7,900.00	0.00	255.00	7,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,000.00	0.00	255.00	7,997.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,100.00	0.00	255.00	8,097.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,200.00	0.00	255.00	8,197.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,300.00	0.00	255.00	8,297.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,400.00	0.00	255.00	8,397.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,500.00	0.00	255.00	8,497.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,600.00	0.00	255.00	8,597.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,700.00	0.00	255.00	8,697.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,800.00	0.00	255.00	8,797.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
8,900.00	0.00	255.00	8,897.89	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
9,002.11	0.00	0.00	9,000.00	-10.32	-83.38	14,440,792.060	1,695,111.109	39.783820247	-80.805367207
Begin 2"/100' build									
9,100.00	1.85	5.27	9,097.87	-8.65	-83.22	14,440,793.725	1,695,111.263	39.783824819	-80.805366648
9,200.00	3.96	5.27	9,197.73	-3.52	-82.75	14,440,798.883	1,695,111.736	39.783838927	-80.805364921
9,300.00	5.86	5.27	9,297.35	5.09	-81.96	14,440,807.468	1,695,112.530	39.783862556	-80.805362030
9,400.00	7.95	5.27	9,396.61	17.15	-80.84	14,440,819.530	1,695,113.643	39.783895674	-80.805357979
9,500.00	9.95	5.27	9,495.39	32.66	-79.41	14,440,835.034	1,695,115.073	39.783938244	-80.805352789

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,600.00	11.96	5.27	9,593.56	51.58	-77.67	14,440,853.962	1,695,116.819	39.763990213	-80.805346411
9,649.62	12.95	5.27	9,642.01	82.24	-76.68	14,440,864.618	1,695,117.801	39.764019471	-80.805342831
Begin 12.95° tangent									
9,700.00	12.95	5.27	9,691.11	73.48	-75.65	14,440,875.860	1,695,118.838	39.764050340	-80.805339054
9,800.00	12.95	5.27	9,788.57	95.80	-73.59	14,440,898.176	1,695,120.897	39.764111613	-80.805331557
9,900.00	12.95	5.27	9,886.02	118.11	-71.53	14,440,920.491	1,695,122.955	39.764172886	-80.805324059
10,000.00	12.95	5.27	9,983.48	140.43	-69.47	14,440,942.807	1,695,125.013	39.764234159	-80.805316582
10,100.00	12.95	5.27	10,080.94	162.74	-67.41	14,440,965.123	1,695,127.072	39.764295432	-80.805309055
10,200.00	12.95	5.27	10,178.39	185.06	-65.36	14,440,987.438	1,695,129.130	39.764356705	-80.805301588
10,300.00	12.95	5.27	10,275.85	207.37	-63.30	14,441,009.754	1,695,131.188	39.764417978	-80.805294070
10,394.99	12.95	5.27	10,368.43	228.57	-61.34	14,441,030.952	1,695,133.143	39.764476183	-80.805286949
Begin 6°/100' build/turn									
10,400.00	13.08	4.07	10,373.30	229.70	-61.25	14,441,032.076	1,695,133.235	39.764479269	-80.805286614
10,450.00	14.84	353.35	10,421.85	241.82	-61.58	14,441,044.000	1,695,132.904	39.764512018	-80.805287700
10,500.00	16.60	344.88	10,470.01	254.80	-64.16	14,441,057.174	1,695,130.308	39.764548214	-80.805296836
10,550.00	18.82	338.25	10,517.64	269.19	-69.03	14,441,071.564	1,695,125.454	39.764587782	-80.805313988
10,600.00	21.24	333.02	10,564.82	284.75	-76.13	14,441,087.130	1,695,118.355	39.764630552	-80.805339139
10,650.00	23.78	328.85	10,610.81	301.45	-85.45	14,441,103.829	1,695,109.031	39.764676467	-80.805372189
10,700.00	26.41	325.44	10,656.09	319.24	-96.98	14,441,121.615	1,695,097.508	39.764725382	-80.805413058
10,750.00	29.10	322.62	10,700.34	338.06	-110.67	14,441,140.440	1,695,083.817	39.764777161	-80.805481635
10,800.00	31.85	320.25	10,743.42	357.87	-126.49	14,441,160.251	1,695,067.995	39.764831864	-80.805517785
10,850.00	34.64	318.22	10,785.24	378.62	-144.40	14,441,180.995	1,695,050.066	39.764888740	-80.805581355
10,900.00	37.45	316.45	10,825.86	400.24	-164.35	14,441,202.816	1,695,030.139	39.764948234	-80.805652171
10,950.00	40.29	314.90	10,864.59	422.67	-186.26	14,441,225.052	1,695,008.209	39.765009982	-80.805730038
11,000.00	43.15	313.52	10,901.90	445.87	-210.13	14,441,248.244	1,694,984.355	39.765073816	-80.805814744
11,050.00	46.02	312.29	10,937.51	469.75	-235.84	14,441,272.127	1,694,958.644	39.765139559	-80.805908056
11,100.00	48.90	311.16	10,971.31	494.26	-263.34	14,441,296.636	1,694,931.145	39.765207031	-80.806003724
11,118.98	50.00	310.76	10,983.65	503.71	-274.23	14,441,308.088	1,694,920.258	39.765233055	-80.806042403
Begin 8°/100' build/turn									
11,150.00	52.43	310.10	11,003.08	519.39	-292.64	14,441,321.788	1,694,901.849	39.765276226	-80.806107785
11,200.00	55.35	309.13	11,032.19	545.30	-323.95	14,441,347.675	1,694,870.536	39.765347560	-80.806219014
11,250.00	60.28	308.24	11,058.45	571.88	-357.16	14,441,374.257	1,694,837.327	39.765420758	-80.806336989
11,300.00	64.21	307.42	11,081.73	599.00	-392.10	14,441,401.383	1,694,802.381	39.765495461	-80.806461135
11,350.00	68.15	306.65	11,101.92	628.54	-428.61	14,441,428.921	1,694,755.871	39.765571308	-80.806590848
11,400.00	72.09	305.92	11,118.92	654.36	-466.51	14,441,456.738	1,694,727.974	39.765647924	-80.806725496
11,450.00	76.03	305.22	11,132.65	682.32	-505.61	14,441,484.898	1,694,688.875	39.765724940	-80.806854421
11,500.00	79.98	304.55	11,143.04	710.29	-545.72	14,441,512.864	1,694,648.783	39.765801981	-80.807006949
11,550.00	83.93	303.89	11,150.04	738.12	-586.65	14,441,540.500	1,694,607.835	39.765878670	-80.807152384
11,600.00	87.87	303.25	11,153.61	765.69	-628.20	14,441,568.071	1,694,566.290	39.765954634	-80.807300018
11,639.60	91.00	302.74	11,154.00	787.25	-681.40	14,441,589.629	1,694,533.084	39.766014034	-80.807418020
Begin 91.00° lateral									
11,700.00	91.00	302.74	11,152.95	819.91	-712.20	14,441,622.290	1,694,482.283	39.766104999	-80.807598552
11,800.00	91.00	302.74	11,151.21	873.98	-796.31	14,441,676.360	1,694,398.181	39.766253019	-80.807897431
11,900.00	91.00	302.74	11,149.46	928.05	-880.41	14,441,730.431	1,694,314.078	39.766402008	-80.808196312
12,000.00	91.00	302.74	11,147.72	982.12	-964.51	14,441,784.502	1,694,229.975	39.766550995	-80.808495193
12,100.00	91.00	302.74	11,145.96	1,036.20	-1,048.61	14,441,838.573	1,694,145.872	39.766699983	-80.808794077
12,200.00	91.00	302.74	11,144.23	1,090.27	-1,132.72	14,441,892.644	1,694,061.770	39.766848970	-80.809092961
12,300.00	91.00	302.74	11,142.49	1,144.34	-1,216.82	14,441,946.714	1,693,977.667	39.766997956	-80.809391847
12,400.00	91.00	302.74	11,140.74	1,198.41	-1,300.92	14,442,000.785	1,693,893.564	39.767146941	-80.809690734
12,500.00	91.00	302.74	11,139.00	1,252.48	-1,385.03	14,442,054.856	1,693,809.462	39.767295925	-80.809989622
12,600.00	91.00	302.74	11,137.26	1,306.55	-1,469.13	14,442,108.927	1,693,725.359	39.767444909	-80.810288511
12,700.00	91.00	302.74	11,135.51	1,360.62	-1,553.23	14,442,162.997	1,693,641.256	39.767593892	-80.810587402
12,800.00	91.00	302.74	11,133.77	1,414.69	-1,637.33	14,442,217.068	1,693,557.153	39.767742874	-80.810886294

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West Virginia Department of Environmental Protection



Planning Report - Geographic

Database: DB_Dec2220_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia NAD83 UTM
 17N
 Site: Blake / Bardstown Pad
 Well: Bardstown N-09 HU (slot O)
 Wellbore: Original Hole
 Design: rev3

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

Well Bardstown N-09 HU (slot O)
 GL @ 1328.00ft
 GL @ 1328.00ft
 Grid
 Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,900.00	91.00	302.74	11,132.03	1,468.76	-1,721.44	14,442,271.139	1,693,473.051	39.767891355	-80.811195188
13,000.00	91.00	302.74	11,130.28	1,522.83	-1,805.54	14,442,325.210	1,593,398.948	39.768040838	-80.811484082
13,100.00	91.00	302.74	11,128.54	1,576.90	-1,889.64	14,442,379.281	1,593,304.845	39.768189315	-80.811792878
13,200.00	91.00	302.74	11,126.79	1,630.90	-1,973.75	14,442,433.351	1,593,220.742	39.768338794	-80.812031875
13,300.00	91.00	302.74	11,125.05	1,685.05	-2,057.85	14,442,487.422	1,593,136.640	39.768487773	-80.812380773
13,400.00	91.00	302.74	11,123.31	1,739.12	-2,141.95	14,442,541.493	1,593,052.537	39.768636750	-80.812679673
13,500.00	91.00	302.74	11,121.56	1,793.19	-2,226.05	14,442,595.564	1,592,968.434	39.768785727	-80.812978575
13,600.00	91.00	302.74	11,119.82	1,847.26	-2,310.16	14,442,649.635	1,592,884.332	39.768934703	-80.813277477
13,700.00	91.00	302.74	11,118.08	1,901.33	-2,394.26	14,442,703.705	1,592,800.229	39.769083678	-80.813576381
13,800.00	91.00	302.74	11,116.33	1,955.40	-2,478.36	14,442,757.776	1,592,716.128	39.769232652	-80.813875286
13,900.00	91.00	302.74	11,114.59	2,009.47	-2,562.47	14,442,811.847	1,592,632.023	39.769381626	-80.814174192
14,000.00	91.00	302.74	11,112.84	2,063.54	-2,646.57	14,442,865.918	1,592,547.921	39.769530598	-80.814473100
14,100.00	91.00	302.74	11,111.10	2,117.61	-2,730.67	14,442,919.989	1,592,463.818	39.769679571	-80.814772009
14,200.00	91.00	302.74	11,109.36	2,171.68	-2,814.77	14,442,974.059	1,592,379.715	39.769828542	-80.815070919
14,300.00	91.00	302.74	11,107.61	2,225.76	-2,898.86	14,443,028.130	1,592,295.612	39.769977512	-80.815369830
14,400.00	91.00	302.74	11,105.87	2,279.83	-2,982.96	14,443,082.201	1,592,211.510	39.770126482	-80.815668743
14,500.00	91.00	302.74	11,104.13	2,333.90	-3,067.06	14,443,136.272	1,592,127.407	39.770275451	-80.815967657
14,600.00	91.00	302.74	11,102.38	2,387.97	-3,151.19	14,443,190.342	1,592,043.304	39.770424419	-80.816266573
14,700.00	91.00	302.74	11,100.64	2,442.04	-3,235.29	14,443,244.413	1,591,959.202	39.770573387	-80.816565489
14,800.00	91.00	302.74	11,098.89	2,496.11	-3,319.39	14,443,298.484	1,591,875.099	39.770722353	-80.816864407
14,900.00	91.00	302.74	11,097.15	2,550.18	-3,403.50	14,443,352.555	1,591,790.996	39.770871316	-80.817163326
15,000.00	91.00	302.74	11,095.41	2,604.25	-3,487.60	14,443,406.626	1,591,706.893	39.771020284	-80.817462247
15,100.00	91.00	302.74	11,093.66	2,658.32	-3,571.70	14,443,460.696	1,591,622.791	39.771169249	-80.817761169
15,200.00	91.00	302.74	11,091.92	2,712.39	-3,655.80	14,443,514.767	1,591,538.688	39.771318212	-80.818060092
15,300.00	91.00	302.74	11,090.18	2,766.46	-3,739.91	14,443,568.838	1,591,454.585	39.771467175	-80.818359016
15,400.00	91.00	302.74	11,088.43	2,820.54	-3,824.01	14,443,622.909	1,591,370.482	39.771616137	-80.818657942
15,500.00	91.00	302.74	11,086.69	2,874.61	-3,908.11	14,443,676.980	1,591,286.380	39.771765098	-80.818956868
15,600.00	91.00	302.74	11,084.94	2,928.68	-3,992.22	14,443,731.050	1,591,202.277	39.771914059	-80.819255797
15,700.00	91.00	302.74	11,083.20	2,982.75	-4,076.32	14,443,785.121	1,591,118.174	39.772063018	-80.819554727
15,800.00	91.00	302.74	11,081.46	3,036.82	-4,160.42	14,443,839.192	1,591,034.072	39.772211977	-80.819853657
15,900.00	91.00	302.74	11,079.71	3,090.89	-4,244.52	14,443,893.263	1,590,949.969	39.772360935	-80.820152590
16,000.00	91.00	302.74	11,077.97	3,144.96	-4,328.63	14,443,947.333	1,590,865.866	39.772509893	-80.820451523
16,100.00	91.00	302.74	11,076.23	3,199.03	-4,412.73	14,444,001.404	1,590,781.763	39.772658849	-80.820750458
16,200.00	91.00	302.74	11,074.48	3,253.10	-4,496.83	14,444,055.475	1,590,697.661	39.772807805	-80.821049394
16,300.00	91.00	302.74	11,072.74	3,307.17	-4,580.94	14,444,109.546	1,590,613.558	39.772956760	-80.821348331
16,400.00	91.00	302.74	11,070.99	3,361.24	-4,665.04	14,444,163.617	1,590,529.455	39.773105715	-80.821647270
16,500.00	91.00	302.74	11,069.25	3,415.32	-4,749.14	14,444,217.687	1,590,445.353	39.773254668	-80.821946210
16,600.00	91.00	302.74	11,067.51	3,469.39	-4,833.24	14,444,271.758	1,590,361.250	39.773403621	-80.822245151
16,700.00	91.00	302.74	11,065.76	3,523.46	-4,917.35	14,444,325.829	1,590,277.147	39.773552573	-80.822544093
16,800.00	91.00	302.74	11,064.02	3,577.53	-5,001.45	14,444,379.900	1,590,193.044	39.773701524	-80.822843037
16,900.00	91.00	302.74	11,062.28	3,631.60	-5,085.55	14,444,433.971	1,590,108.942	39.773850475	-80.823141982
17,000.00	91.00	302.74	11,060.53	3,685.67	-5,169.66	14,444,488.041	1,590,024.839	39.773999424	-80.823440928
17,100.00	91.00	302.74	11,058.79	3,739.74	-5,253.76	14,444,542.112	1,589,940.736	39.774148373	-80.823739876
17,200.00	91.00	302.74	11,057.04	3,793.81	-5,337.86	14,444,596.183	1,589,856.633	39.774297321	-80.824038825
17,300.00	91.00	302.74	11,055.30	3,847.88	-5,421.96	14,444,650.254	1,589,772.531	39.774446269	-80.824337775
17,400.00	91.00	302.74	11,053.56	3,901.95	-5,506.07	14,444,704.325	1,589,688.428	39.774595215	-80.824636726
17,500.00	91.00	302.74	11,051.81	3,956.02	-5,590.17	14,444,758.395	1,589,604.325	39.774744151	-80.824935679
17,600.00	91.00	302.74	11,050.07	4,010.09	-5,674.27	14,444,812.466	1,589,520.223	39.774893096	-80.825234633
17,700.00	91.00	302.74	11,048.33	4,064.17	-5,758.38	14,444,866.537	1,589,436.120	39.775042042	-80.825533589
17,800.00	91.00	302.74	11,046.58	4,118.24	-5,842.48	14,444,920.608	1,589,352.017	39.775190989	-80.825832545
17,900.00	91.00	302.74	11,044.84	4,172.31	-5,926.59	14,444,974.678	1,589,267.914	39.775339937	-80.826131503
18,000.00	91.00	302.74	11,043.09	4,226.38	-6,010.68	14,445,028.749	1,589,183.812	39.775488879	-80.826430462
18,100.00	91.00	302.74	11,041.35	4,280.45	-6,094.79	14,445,082.820	1,589,099.709	39.775637820	-80.826729423
18,200.00	91.00	302.74	11,039.61	4,334.52	-6,178.89	14,445,136.891	1,589,015.606	39.775786760	-80.827028385



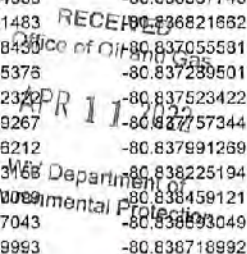
Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
18,300.00	91.00	302.74	11,037.86	4,388.59	-8,262.99	14,445,190.962	1,688,931.503	39.775935700	-80.827327348
18,400.00	91.00	302.74	11,036.12	4,442.66	-8,347.10	14,445,245.032	1,688,847.401	39.776084639	-80.827826312
18,500.00	91.00	302.74	11,034.38	4,496.73	-8,431.20	14,445,299.103	1,688,763.298	39.776233577	-80.827925278
18,600.00	91.00	302.74	11,032.63	4,550.80	-8,515.30	14,445,353.174	1,688,679.195	39.776382514	-80.828224245
18,700.00	91.00	302.74	11,030.89	4,604.87	-8,599.41	14,445,407.245	1,688,595.093	39.776531451	-80.828523213
18,803.27	91.00	302.74	11,029.00	4,663.42	-8,690.46	14,445,465.786	1,688,504.037	39.776692700	-80.828846900
Begin 2°/100' turn									
18,900.00	91.00	304.57	11,027.40	4,714.24	-8,766.80	14,445,516.613	1,688,427.695	39.776832687	-80.829118272
19,000.00	91.01	306.57	11,025.64	4,772.40	-8,848.12	14,445,574.774	1,688,348.373	39.776992840	-80.829407316
19,100.00	91.01	308.57	11,023.89	4,833.37	-8,927.37	14,445,635.739	1,688,267.132	39.777160680	-80.829686940
19,200.00	91.01	310.57	11,022.13	4,897.06	-9,004.43	14,445,699.432	1,688,190.057	39.777330000	-80.829962801
19,300.00	91.01	312.57	11,020.37	4,963.41	-9,079.23	14,445,765.776	1,688,115.272	39.777518592	-80.830226566
19,400.00	91.01	314.57	11,018.61	5,032.32	-9,151.66	14,445,834.691	1,688,042.638	39.777708228	-80.830485910
19,500.00	91.00	316.57	11,016.86	5,103.72	-9,221.64	14,445,908.092	1,687,972.854	39.777904680	-80.830734521
19,600.00	91.00	318.57	11,015.12	5,177.52	-9,289.09	14,445,979.392	1,687,905.405	39.778107705	-80.830974095
19,811.50	91.00	318.80	11,014.92	5,186.16	-9,296.68	14,445,988.529	1,687,897.814	39.778131465	-80.831001053
Begin 91.00° lateral									
19,700.00	91.00	318.80	11,013.38	5,252.74	-9,354.96	14,446,055.112	1,687,839.535	39.778314623	-80.831208040
19,800.00	91.00	318.80	11,011.64	5,327.98	-9,420.82	14,446,130.347	1,687,773.682	39.778521581	-80.831441925
19,900.00	91.00	318.80	11,009.90	5,403.21	-9,486.67	14,446,205.582	1,687,707.829	39.778728538	-80.831675811
20,000.00	91.00	318.80	11,008.16	5,478.45	-9,552.52	14,446,280.818	1,687,641.976	39.778935496	-80.831909699
20,100.00	91.00	318.80	11,006.42	5,553.68	-9,618.38	14,446,356.053	1,687,576.123	39.779142452	-80.832143588
20,200.00	91.00	318.80	11,004.68	5,628.92	-9,684.23	14,446,431.288	1,687,510.270	39.779349408	-80.832377478
20,300.00	91.00	318.80	11,002.94	5,704.16	-9,750.08	14,446,506.523	1,687,444.417	39.779556364	-80.832611370
20,400.00	91.00	318.80	11,001.20	5,779.39	-9,815.94	14,446,581.758	1,687,378.564	39.779763319	-80.832845263
20,500.00	91.00	318.80	10,999.46	5,854.63	-9,881.79	14,446,656.993	1,687,312.712	39.779970274	-80.833079158
20,600.00	91.00	318.80	10,997.72	5,929.86	-9,947.64	14,446,732.229	1,687,246.859	39.780177228	-80.833313054
20,700.00	91.00	318.80	10,995.98	6,005.10	-10,013.49	14,446,807.464	1,687,181.006	39.780384182	-80.833546951
20,800.00	91.00	318.80	10,994.24	6,080.33	-10,079.35	14,446,882.699	1,687,115.153	39.780591135	-80.833780850
20,900.00	91.00	318.80	10,992.50	6,155.57	-10,145.20	14,446,957.934	1,687,049.300	39.780798087	-80.834014750
21,000.00	91.00	318.80	10,990.76	6,230.80	-10,211.05	14,447,033.169	1,686,983.447	39.781005040	-80.834248652
21,100.00	91.00	318.80	10,989.01	6,306.04	-10,276.91	14,447,108.404	1,686,917.594	39.781211992	-80.834482555
21,200.00	91.00	318.80	10,987.27	6,381.27	-10,342.76	14,447,183.640	1,686,851.741	39.781418943	-80.834716450
21,300.00	91.00	318.80	10,985.53	6,456.51	-10,408.61	14,447,258.875	1,686,785.889	39.781625894	-80.834950356
21,400.00	91.00	318.80	10,983.79	6,531.74	-10,474.47	14,447,334.110	1,686,720.036	39.781832844	-80.835184273
21,500.00	91.00	318.80	10,982.05	6,606.98	-10,540.32	14,447,409.345	1,686,654.183	39.782039794	-80.835418181
21,600.00	91.00	318.80	10,980.31	6,682.21	-10,606.17	14,447,484.580	1,686,588.330	39.782246743	-80.835652091
21,700.00	91.00	318.80	10,978.57	6,757.45	-10,672.03	14,447,559.815	1,686,522.477	39.782453692	-80.835886003
21,800.00	91.00	318.80	10,976.83	6,832.69	-10,737.88	14,447,635.051	1,686,456.624	39.782660641	-80.836119915
21,900.00	91.00	318.80	10,975.09	6,907.92	-10,803.73	14,447,710.286	1,686,390.771	39.782867589	-80.836353830
22,000.00	91.00	318.80	10,973.35	6,983.16	-10,869.58	14,447,785.521	1,686,324.918	39.783074538	-80.836587745
22,100.00	91.00	318.80	10,971.61	7,058.39	-10,935.44	14,447,860.756	1,686,259.065	39.783281483	-80.836821662
22,200.00	91.00	318.80	10,969.87	7,133.63	-10,001.29	14,447,935.991	1,686,193.213	39.783488430	-80.837055531
22,300.00	91.00	318.80	10,968.13	7,208.86	-10,067.14	14,448,011.226	1,686,127.360	39.783695378	-80.837289501
22,400.00	91.00	318.80	10,966.39	7,284.10	-10,133.00	14,448,086.461	1,686,061.507	39.783902322	-80.837523422
22,500.00	91.00	318.80	10,964.65	7,359.33	-10,198.85	14,448,161.697	1,685,995.654	39.784109272	-80.837757344
22,600.00	91.00	318.80	10,962.91	7,434.57	-10,264.70	14,448,236.932	1,685,929.801	39.784316212	-80.837991269
22,700.00	91.00	318.80	10,961.17	7,509.80	-10,330.56	14,448,312.167	1,685,863.948	39.784523158	-80.838225194
22,800.00	91.00	318.80	10,959.43	7,585.04	-10,396.41	14,448,387.402	1,685,798.095	39.784730104	-80.838459121
22,900.00	91.00	318.80	10,957.69	7,660.27	-10,462.26	14,448,462.637	1,685,732.242	39.784937043	-80.838693049
22,911.09	91.00	318.80	10,957.50	7,658.62	-10,469.56	14,448,470.961	1,685,724.939	39.784959993	-80.838718992

PBHL/TD 22911.09 MD 10957.50 TVD





Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Bardstown N-09 HU (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00ft
Project:	Marshall County, West Virginia NAD83 UTM 17N	MD Reference:	GL @ 1326.00ft
Site:	Blake / Bardstown Pad	North Reference:	Grid
Well:	Bardstown N-09 HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Bardstown 09 HU PBHL - plan hits target center - Point	0.00	0.00	10,957.50	7,668.62	-9,489.57	14,448,470.984	1,685,724.937	39.784960000	-80.838719000
Bardstown 09 HU Int tgt - plan hits target center - Point	0.00	0.00	11,029.00	4,663.42	-6,690.46	14,445,465.786	1,688,504.037	39.778692700	-80.828846900
Bardstown 09 HU LP - plan misses target center by 0.02ft at 11639.60ft MD (11154.00 TVD, 787.25 N, -661.40 E) - Point	0.00	0.00	11,154.00	787.23	-661.41	14,441,589.609	1,694,533.073	39.766013980	-80.807418060

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
22,911.09	10,957.50	20" Casing	20	24

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,100.00	1,100.00	0.00	0.00	KOP Begin 1°/100' build
1,400.00	1,399.86	1.77	-7.65	Begin 3.00° tangent
1,650.00	1,649.52	4.71	-20.40	Begin 1°/100' turn
1,795.09	1,794.42	4.58	-27.77	Begin 3.00° tangent
2,745.09	2,743.12	-6.29	-75.79	Begin 1°/100' drop
3,045.09	3,042.98	-10.32	-83.38	Begin vertical hold
9,002.11	9,000.00	-10.32	-83.38	Begin 2°/100' build
9,649.62	9,642.01	62.24	-76.68	Begin 12.95° tangent
10,394.99	10,368.43	228.57	-81.34	Begin 6°/100' build/turn
11,118.98	10,983.65	503.71	-274.23	Begin 8°/100' build/turn
11,639.60	11,154.00	787.25	-861.40	Begin 91.00° lateral
16,808.27	11,029.00	4,663.42	-6,690.46	Begin 2°/100' turn
19,611.50	11,014.92	5,186.16	-7,296.68	Begin 91.00° lateral
22,911.09	10,957.50	7,668.62	-9,469.56	PBHL/TD 22911.09 MD 10957.50 TVD

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APR 11 2022
WV Department of
Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Bardstown N-9HU

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) French Creek - Ohio River Quadrangle Powhatan Point 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 contain⁺

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? _____

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0105155) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP ED9130426), Chester Valley Landfill (100419)

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

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Subscribed and sworn before me this 6th day of April, 2022

WV Department of
Environmental Protection

My commission expires 11/21/2024

Notary Public
Commonwealth of Pennsylvania - Notary Seal
SEAN COTTER - Notary Public
Washington County
My Commission Expires 05/13/2022
Commission Number 1264582

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 5.94 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

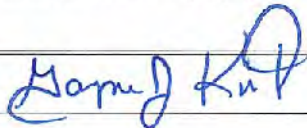
Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by:



Comments:

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WV Department of
Environmental Protection

Title: Oil and Gas Inspector

Date: 1/19/2022

Field Reviewed?

() Yes

() No

WW-9

Proposed Bardstown Wells

SUPPLEMENT PG 1

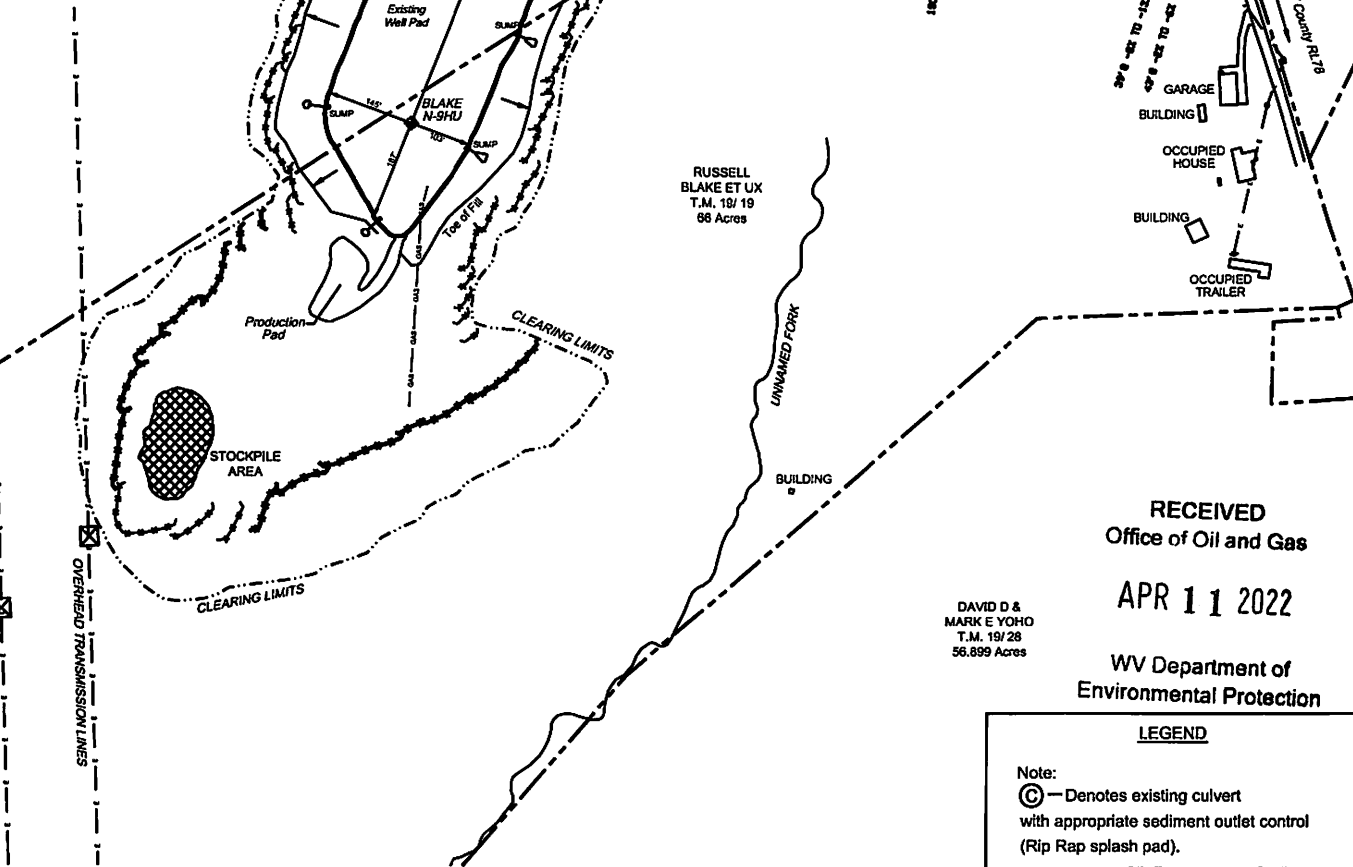
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES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

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

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

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

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



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DAVID D &
MARK E YOHO
T.M. 19/28
56,899 Acres

LEGEND

- Note:
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 - - - - - Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary

DATE: 11-20-2018

PROJECT NO: 494510851

DRAWN BY: J.A.H.



TUG HILL
OPERATING

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

Well Name: Bardstown N-9HU

Pad Name: Blake

County: Marshall

UTM (meters), NAD83, Zone 17

Northing: 4,401,565.37

Easting: 516,696.31

Handwritten signature and date: 4/19/2022

**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

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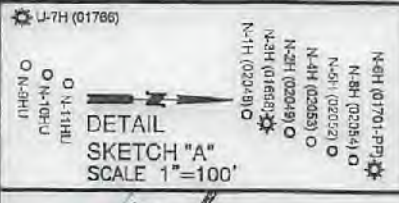
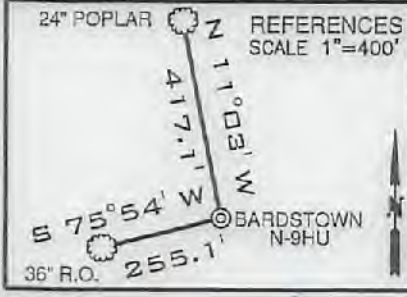
WV Department of
Environmental Protection

05/13/2022

BOTTOM HOLE LATITUDE: 39°47'30"

TOP HOLE LATITUDE: 39°47'30"

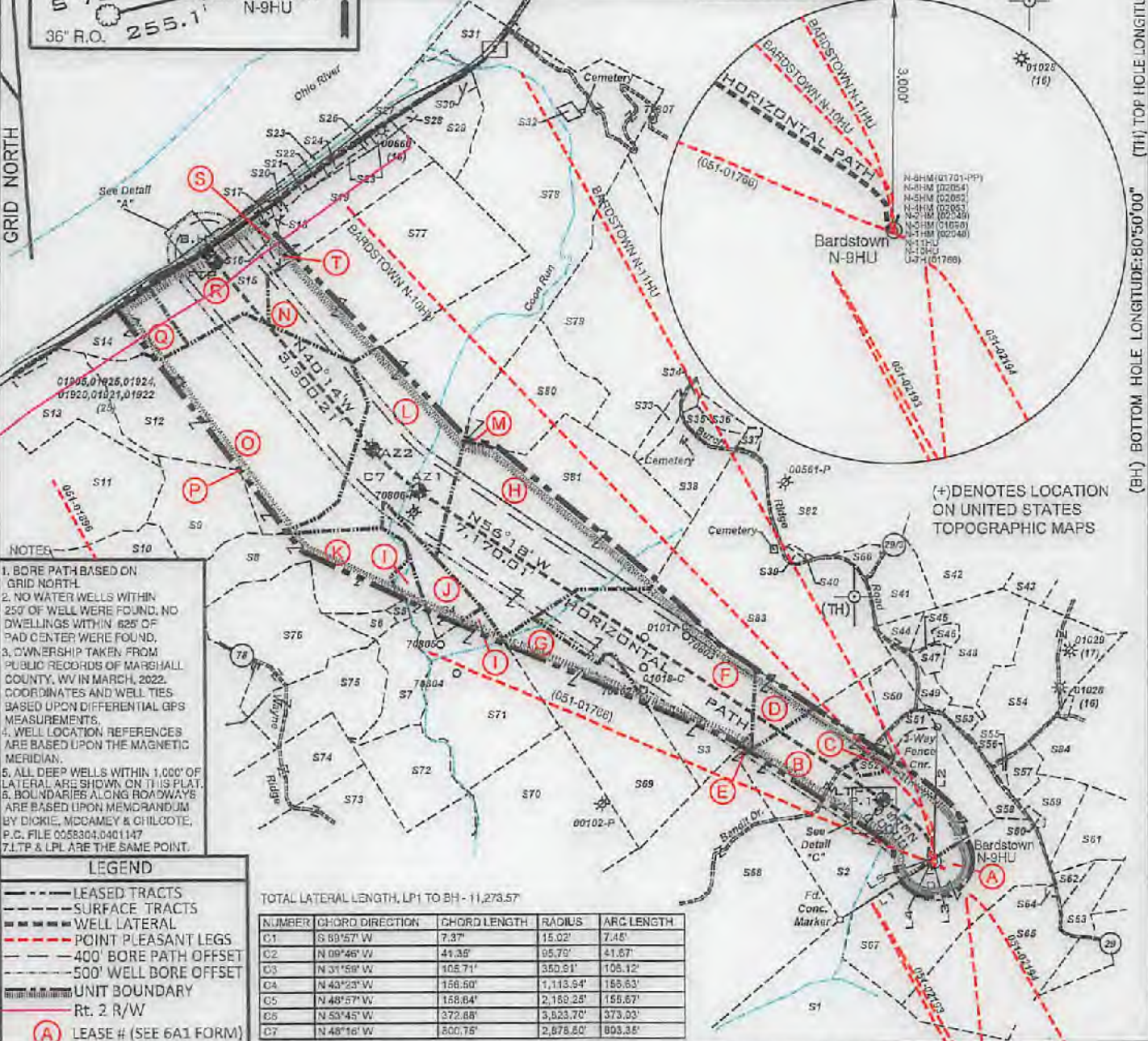
(BH) 1,574' (TH) 3,815'



BARDSTOWN LEASE WELL N-9HU
501.5708± ACRES

LINE	BEARING	DISTANCE
L1	S 58°40' W	1421.44'
L2	N 01°37' E	1732.65'
L3	N 76°02' W	20.94'
L4	S 75°57' W	57.55'
L5	N 05°14' E	239.99'

COORDINATES LOCATED ON PAGE 2



- 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 MARCH, 2022. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 5. ALL DEEP WELLS WITHIN 1,000' OF LATERAL ARE SHOWN ON THIS PLAT.
 6. BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCGAMEY & CHILCOTE, P.C., FILE 0058304, 0401147.
 7. LTP & LPL ARE THE SAME POINT.

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- 400' BORE PATH OFFSET
- 500' WELL BORE OFFSET
- UNIT BOUNDARY
- Rt. 2 R/W
- (A) LEASE # (SEE 6A1 FORM)

TOTAL LATERAL LENGTH, LP1 TO BH - 11,273.57'

NUMBER	CHORD DIRECTION	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 89°57' W	7.37'	15.02'	7.45'
C2	N 09°46' W	41.35'	95.79'	41.67'
C3	N 31°59' W	105.71'	350.81'	105.12'
C4	N 43°23' W	158.50'	1,113.94'	155.63'
C5	N 48°57' W	158.64'	2,159.25'	155.67'
C6	N 53°45' W	372.88'	3,523.70'	373.03'
C7	N 48°16' W	500.75'	2,678.60'	503.35'

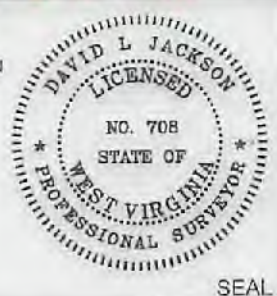
FILE NUMBER _____
DRAWING NUMBER **BARDSTOWN_N-9HU REV 3**
SCALE **1" = 2000'**
MINIMUM DEGREE OF ACCURACY **1/200**
PROVEN SOURCE OF ELEVATION **SUBMETER MAPPING**
GRADE GPS

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
304-623-5951



DATE: **APRIL 08, 2022**
OPERATORS WELL NO. **BARDSTOWN N-9HU**
API WELL NO. **47-051-02445**
STATE COUNTY PERMIT

LOCATION ELEVATION **1326.2'** WATERSHED (HUC 10) **FRENCH CREEK - OHIO RIVER**
DISTRICT **FRANKLIN** COUNTY **MARSHALL**
QUADRANGLE **POWHATAN POINT 7.5'** LEASE NUMBER **SEE WW-6A1 Form**

SURFACE OWNER **RUSSELL & MARY BLAKE** ACREAGE **64.148**
OIL & GAS ROYALTY OWNER **RUSSELL & MARY BLAKE** LEASE ACREAGE **64.148**
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION **POINT PLEASANT** ESTIMATED DEPTH **TVD: 11,373' TMD: 22,911'**

WELL OPERATOR **TUG HILL OPERATING, LLC** DESIGNATED AGENT **DARREN BROWN, CT CORP**
ADDRESS **1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107** ADDRESS **5098 WASHINGTON STREET WEST, SUITE 407 CHARLESTON, WV 25313-1561**

05/13/2022

COUNTY NAME PERMIT

**BARDSTOWN LEASE
WELL N-9HU
501.5708 ± ACRES**

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,401,565.37
E) 516,696.31

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,401,805.32
E) 516,494.72

AZIMUTH 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,986.78
E) 514,657.06

AZIMUTH 2
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,146.11
E) 514,472.28

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,902.76
E) 513,809.99

Detail "A"
NTS



Detail "B"
NTS



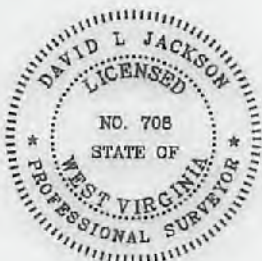
Detail "C"
NTS



Tags	Number	Tax Map Parcel	Surface Owner	Acres
	S1	05-22-04	CNX RCPC, LLC	136.32
A	S2	05-19-20	WILBERT H BUNGARD ET UX	114.989
F	S3	05-19-04	JUSTIN E RINE	82.75
J	S4	05-14-02	JOHN B WILLIAMS, ET AL	20.17
	S5	05-13-41C	HEIRS OF BENTON DARRAH, LILLIE MAE DUGAN ALMA BITZER, ALBERTA PALMER & AUDREY HOWARD	1.0
	S6	05-13-41B	LARRY & JUDY DARRAH	2.50
	S7	05-13-41A	RODNEY & RHONDA JACKSON	17.05
K	S8	05-13-42	THOMAS & VICTORIA BOWMAN	45.0
P	S9	05-13-34	DAVID J. MAST	40.0
	S10	05-13-35	DAVID J. MAST	24.90
	S11	05-13-23	DAVID J. MAST	69.59
Q	S12	05-13-33	NATHAN D. YODER	140.90
	S13	05-13-25	AARON PAUL HOLDREN, ET UX	30.0
Q	S14	05-13-27	AARON PAUL HOLDREN, ET UX	25.0
R	S15	05-13-28	AARON PAUL HOLDREN, ET UX	17.0
S	S16	05-13-30	CINDY DALIFF	3.0
	S17	05-13-28.1	CINDY DALIFF	1.80
	S18	05-13-29	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	1.0
T	S19	05-13-31	CNX LAND RESOURCES, INC.	31.723
	S20	05-13-31.1	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	0.277
	S21	05-13-31.2	CNX LAND RESOURCES, INC.	0.938
	S22	05-12-27	CNX RCPC, LLC	0.67
	S23	05-12-26	CSX	4.00
	S24	05-12-28	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	1.1
	S26	05-12-24.2	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	0.539
	S27	05-12-25	CSX	12.8
	S28	05-12-24	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	0.964
	S29	05-12-24.3	CNX RCPC, LLC	18.523
	S30	05-12-24.1	WEST VIRGINIA DEPARTMENT OF HIGHWAYS	0.994
	S31	05-12-23.2	MARSHALL COUNTY COAL RESOURCES, INC.	12.50
	S32	05-13-22	CNX RCPC, LLC	0.944
	S33	05-14-07	DONNA K. & LEROY ANDERSON	4.60
	S34	05-14-15	GEORGE A KNUTH	1,638.6
	S35	05-14-9.3	VERNEE A RINE, ET UX	4,118
	S36	05-14-9.4	VERNEE A RINE, ET UX	3,404
	S37	05-14-10.3	VERNEE A & JODY K RINE	1.54
	S38	05-14-08	LAWRENCE EUGENE ANDERSON	18.29
	S39	05-14-10.1	IDA BELLE RUTAN (LIFE), RALPH R HOYT	0.50
	S40	05-14-10.2	IDA BELLE RUTAN (LIFE), RALPH R HOYT	0.495
	S41	05-14-11	DALE R GALLAHER, ET AL	12
	S42	05-14-12	DALE R GALLAHER & HARRY E GALLAHER	135.100
	S43	05-14-14	ROBERT L SHIELDS, ET AL	29.05
	S44	05-19-06	MARTHA M RUTAN	5,109.9
	S45	05-19-7.3	OLAN V RUTAN, ET UX	0.341
	S46	05-19-7.4	OLAN V RUTAN, ET UX	1,787
	S47	05-19-7.2	OLAN RUTAN	2,783
	S48	05-19-07	OLAN V RUTAN, ET UX	32,480.1
	S49	05-19-7.1	ROBERT L SHIELDS, ET UX	3,399
	S50	05-19-20.2	CASANDRA L. HARMON	7,448
	S51	05-19-20.1	JOHN J EBERT, LIFE	3,848
C	S52	05-19-20.3	SIDNEY HARMON	3,715
	S53	05-19-7.5	ADAM T & JESSIE L ROBINSON	2,640
	S54	05-19-08	CNX RCPC, LLC	40
	S55	05-19-11	ERNE L ANDERSON, ET UX	0.08
	S56	05-19-10	ERNE L ANDERSON, ET UX	0,812.5
	S57	05-19-12	ERNE L ANDERSON, ET UX	5.33
	S58	05-19-09	PENNY ELAINE ASHCRAFT	10.44
	S59	05-19-29	ERNIE L & TAMMY LANDERSON	10,961
	S60	05-19-15	CARLY HERRAN	0.72
	S61	05-19-30	ERNE & TAMMY ANDERSON	19,037
	S62	05-19-30.1	ERIC R W & ASHLEY A HUGGINS	2,911
	S63	05-19-31	CHARLES F & DIANA L HAYNES	8,779
	S64	05-19-32	JASPER N BUACH ET AL - TRUSTEES	0,597
	S65	05-19-28	DAVID E YOHO & MARK E YOHO	56,899
	S66	05-14-10.4	ADAM R & JESSIE L ROBINSON	3,343
A	S67	05-19-19	RUSSELL & MARY BLAKE	64,148
E	S68	05-19-21	SAMMY E WHITLATCH, ET AL	116,45
G	S69	05-19-03	MILTON R & LINDA L NEAL	72.01
	S70	05-19-22	GEORGE A & KELLY A KNUTH	71.0
I	S71	05-19-02	MILTON R & LINDA L NEAL	63.1
	S72	05-19-01	ROBERT RINE	30.80
	S73	05-20-26	ROBERT RINE	60.52
	S74	05-20-25	ROBERT RINE	43.82
	S75	05-13-40	ROBERT RINE	29.76
	S76	05-13-39	THOMAS BOWMAN & VICTORIA BOWMAN	46
N	S77	05-13-32	C PATRICIA WOBIG ET AL	103.66
L	S78	05-12-23	CNX RCPC, LLC	236.10
	S79	05-14-05	DONNA K. & LEROY ANDERSON	110.5
M	S80	05-14-04	LEROY & DONNA K ANDERSON	29.29
H	S81	05-14-03	LEROY & DONNA K ANDERSON	130
	S82	05-14-10	WANDA P RINE - LIFE	107,372
D	S83	05-19-05	MARGIERE KEEFE	126.03
	S84	05-19-13	RONA LEE RICE & CHARLES F MCCARDLE	94,925

NOTES:

- 05-13-41A MAPPED AS PART OF 05-13-41
- 05-13-41B MAPPED AS PART OF 05-13-41. INCORRECTLY ASSESSED AS 05-25-22 4.15 ACRES
- 05-13-41C MAPPED AS PART OF 05-13-41. NOT ASSESSED.



David L Jackson

P.S. 708

05/13/2022
47-051-02745 D
Deep

OPERATOR'S
WELL #: Bardstown N-9HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 2
DATE: 04/08/2022

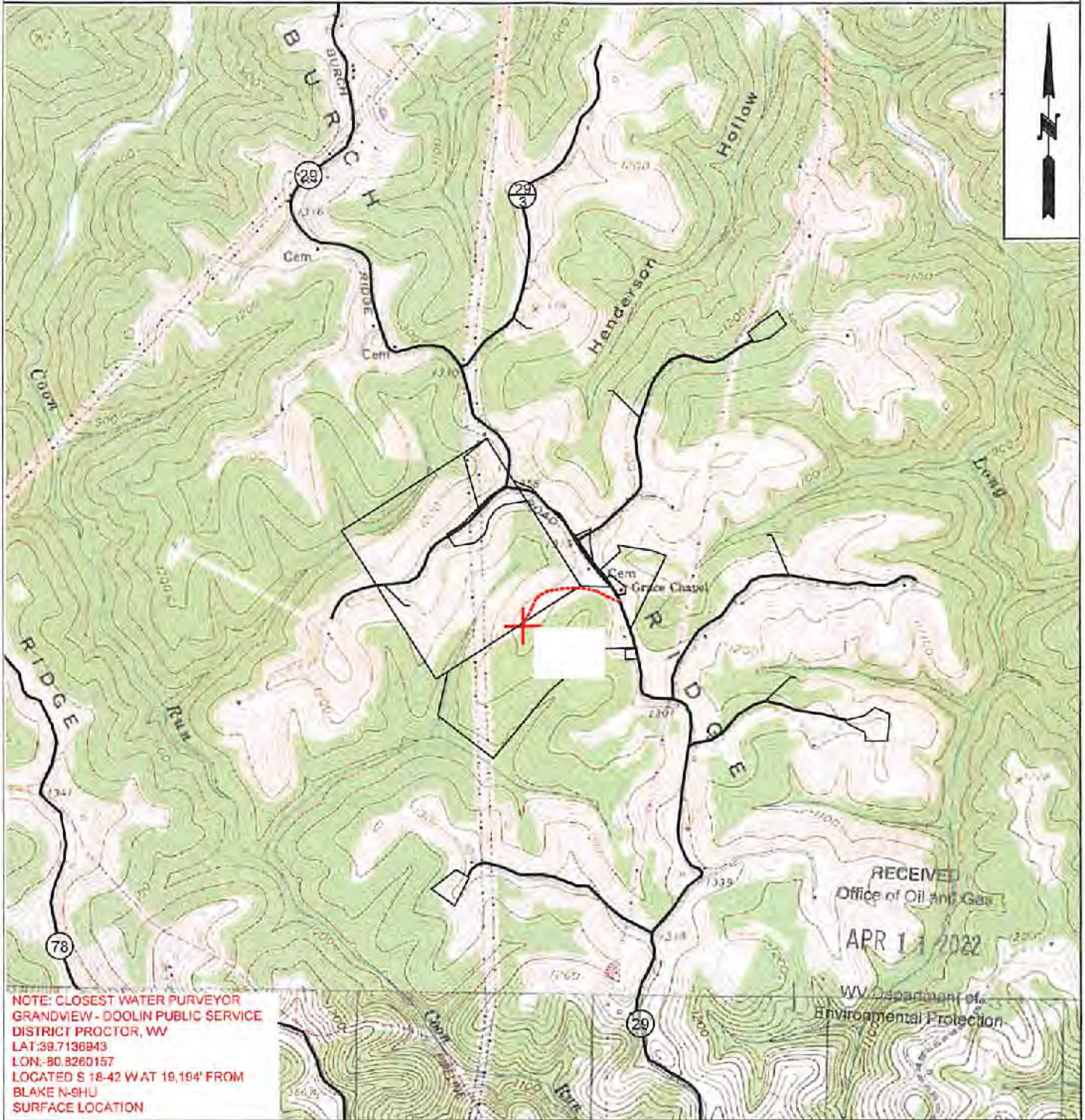


**TUG HILL
OPERATING**

WW-9

PROPOSED BARDSTOWN WELLS

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE
 DISTRICT PROCTOR, WV
 LAT: 39.7136943
 LON: -80.8260157
 LOCATED S 18-42 W AT 19,194' FROM
 BLAKE N-9HU
 SURFACE LOCATION

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 Office of Oil and Gas
 APR 11 2022
 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		POWHATAN POINT 7.5'	BLAKE
		SCALE:	DATE:
		1" = 2000'	DATE: 11-20-2018

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

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

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

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

*See attached pages

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

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

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

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Office of Oil and Gas

APR 11 2022

WV Department of
Environmental Protection

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

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

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
✓ 10*14634	5-19-19	A	RUSSELL & MARY BLAKE	GASTAR EXPLORATION USA INC	1/8+	773 568	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 28/499	Gastar Exploration USA Inc merged with and into 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*14141	5-19-20	B	DAVID & DEBORAH TAKACH	GASTAR EXPLORATION USA INC	1/8+	720 233	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 43/563
✓ 10*14925	5-19-5	D	MOUNTAIN TOP PRODUCTIONS LLC	GASTAR EXPLORATION INC	1/8+	840 444	N/A	N/A	N/A	Gastar Exploration Inc fka Gastar Exploration USA 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*14613	5-19-4	F	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827 556	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
✓ 10*14568	5-14-3	H	LEROY AND DONNA KAY ANDERSON	GASTAR EXPLORATION USA INC	1/8+	772 69	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 27/639	Gastar Exploration USA Inc merged with and into 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
✓ 041111	5-12-23	L	EDWARD DOUGLAS GUIRE ET AL	CNX LAND RESOURCES INC	1/8+	663 91	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
041112	5-12-23	L	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691 363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 851/220	CNX Gas Company LLC to Noble Energy Inc: 909/94	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
✓ 10*14701	5-13-33	O	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885 600	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/575	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14701	5-13-33	O	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885 600	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 35/575	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14702	5-13-33	O	NATHAN D YODER	CHESAPEAKE APPALACHIA LLC	1/8+	708 71	N/A	N/A	Chesapeake Appalachia LLC & Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc & Atinum Marcellus I LLC: 27/321	Gastar Exploration USA Inc merged with and into 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*17627	5-13-33	O	NATHAN D YODER	TH EXPLORATION LLC	1/8+	917 62	N/A	N/A	N/A	N/A	N/A	N/A
✓ 10*14635	5-13-28	R	KATHY JO RUNYON	GASTAR EXPLORATION USA INC	1/8+	775 21	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 28/499	Gastar Exploration USA Inc merged with and into 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*14635	5-13-28	R	KATHY JO RUNYON	GASTAR EXPLORATION USA INC	1/8+	775 21	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 28/499	Gastar Exploration USA Inc merged with and into 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*14636	5-13-28	R	WANDA JUNE RIDING	GASTAR EXPLORATION USA INC	1/8+	794 503	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14637	5-13-28	R	KIMBERLY S DENNY	GASTAR EXPLORATION USA INC	1/8+	794 511	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14638	5-13-28	R	HUGH YOHO	GASTAR EXPLORATION USA INC	1/8+	794 478	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14639	5-13-28	R	GARY PARSONS	GASTAR EXPLORATION USA INC	1/8+	794 521	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14640	5-13-28	R	SHERRY SNYDER	GASTAR EXPLORATION USA INC	1/8+	799 545	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14640	5-13-28	R	SHERRY SNYDER	GASTAR EXPLORATION USA INC	1/8+	799 545	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14641	5-13-28	R	LORA LANGLEY	GASTAR EXPLORATION USA INC	1/8+	800 621	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14641	5-13-28	R	LORA LANGLEY	GASTAR EXPLORATION USA INC	1/8+	800 621	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 806/1 & 30/136	Gastar Exploration USA Inc merged with and into 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*14642	5-13-28	R	MARY BAUMBERGER FERRIS	GASTAR EXPLORATION USA INC	1/8+	808 457	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Gastar Exploration USA Inc merged with and into 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*14642	5-13-28	R	MARY BAUMBERGER FERRIS	GASTAR EXPLORATION USA INC	1/8+	808 457	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Gastar Exploration USA Inc merged with and into 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*14643	5-13-28	R	MARTHA RENEE ROBINSON	GASTAR EXPLORATION USA INC	1/8+	809 541	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Gastar Exploration USA Inc merged with and into 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*14644	5-13-28	R	CHERYL L HILL	GASTAR EXPLORATION USA INC	1/8+	809 517	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Gastar Exploration USA Inc merged with and into 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*14645	5-13-28	R	RANDY BERISFORD	GASTAR EXPLORATION USA INC	1/8+	810 328	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 31/184	Gastar Exploration USA Inc merged with and into 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*14647	5-13-28	R	JAMES W ROBINSON III	GASTAR EXPLORATION INC	1/8+	836 102	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14648	5-13-28	R	LORI ANN ROBINSON	GASTAR EXPLORATION INC	1/8+	836 104	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*14649	5-13-28	R	DONALD GARY GROVES II	GASTAR EXPLORATION INC	1/8+	842 382	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*14650	5-13-28	R	TIMOTHY DWIGHT GROVES	GASTAR EXPLORATION INC	1/8+	842 384	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

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14651	5-13-28	R	DAVID V CALDWELL	GASTAR EXPLORATION INC	1/8+	842	386	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*14652	5-13-28	R	CANDICE GUTIERREZ	GASTAR EXPLORATION USA INC	1/8+	842	388	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*14653	5-13-28	R	KRISTIN M DOUGLAS	GASTAR EXPLORATION INC	1/8+	842	390	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*14942	5-13-28	R	AARON PAUL & DEBORAH A HOLDREN	TRIENERGY HOLDINGS, LLC	1/8+	720	132	TriEnergy Holdings LLC to NPAR LLC: 24/430	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to Gastar Exploration Inc & Atinum Marcellus I LLC: 32/355 & 32/370	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Atinum Marcellus I LLC to TH Exploration II LLC: 48/67
10*18373	5-13-28	R	SARAH K & DANIEL E SCHNEIDER	TH EXPLORATION LLC	1/8+	931	391	N/A	N/A	N/A	N/A	N/A	N/A
10*18375	5-13-28	R	DENNIS D AND APRIL N CALDWELL	TH EXPLORATION LLC	1/8+	931	394	N/A	N/A	N/A	N/A	N/A	N/A

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

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;

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Environmental Protection



April 7, 2022

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

RE: Bardstown N-9HU

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 in the area reflected on the Bardstown N-9HU 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,

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

Amy L. Morris
Permitting Specialist – Appalachia Region

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

Date of Notice Certification: 04/06/2022

API No. 47- 051 -

Operator's Well No. Bardstown N-9HU

Well Pad Name: Blake

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	Eastings:	<u>516,696.31</u>
County:	<u>Marshall</u>		Northing:	<u>4,401,565.37</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road - CR 29</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Russell Blake, et ux; William Bungard, et ux</u>	
Watershed:	<u>French Creek - Ohio River (Undefined)</u>			

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
RECEIVED Office of Oil and Gas APR 11 2022 WV Department of Environmental Protection		

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.

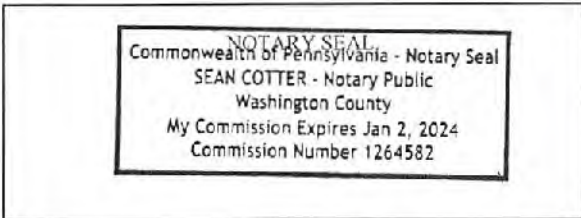
05/13/2022

Certification of Notice is hereby given:

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

Well Operator: Tug Hill Operating, LLC
By: Amy L. Morris *Amy L. Morris*
Its: Permitting Specialist - Appalachia Region
Telephone: 724-749-8388

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



Subscribed and sworn before me this 6 day of April.
[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 deprivacyofficer@wv.gov.

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APR 11 2022
WV Department of
Environmental Protection

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

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

Date of Notice: 4/6/2022 Date Permit Application Filed: 4/8/2022

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

Name: William H. & Pamela June Bungard
 Address: 243 Bandit Drive
 Proctor, WV 28055
 Name: _____
 Address: _____

COAL OWNER OR LESSEE

Name: Consol Energy
 Address: 275 Technology Drive, Suite 101
 Canonsburg, PA 15317-9565

COAL OPERATOR

Name: n/a
 Address: _____

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

Name: Russell & Mary Blake
 Address: 3343 Burch Ridge Road
 Proctor, WV 28055
 Name: _____
 Address: _____

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

Name: *See list attached
 Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: n/a
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: n/a
 Address: _____

*Please attach additional forms if necessary

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WV Department of
Environmental Protection

05/13/2022

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

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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 issues

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Bardstown N-9HU
Well Pad Name: Blake

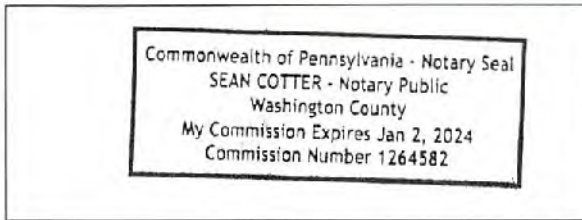
Notice is hereby given by:

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

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

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 6 day of April, 2022.

[Signature]

Notary Public

My Commission Expires 1/2/2024

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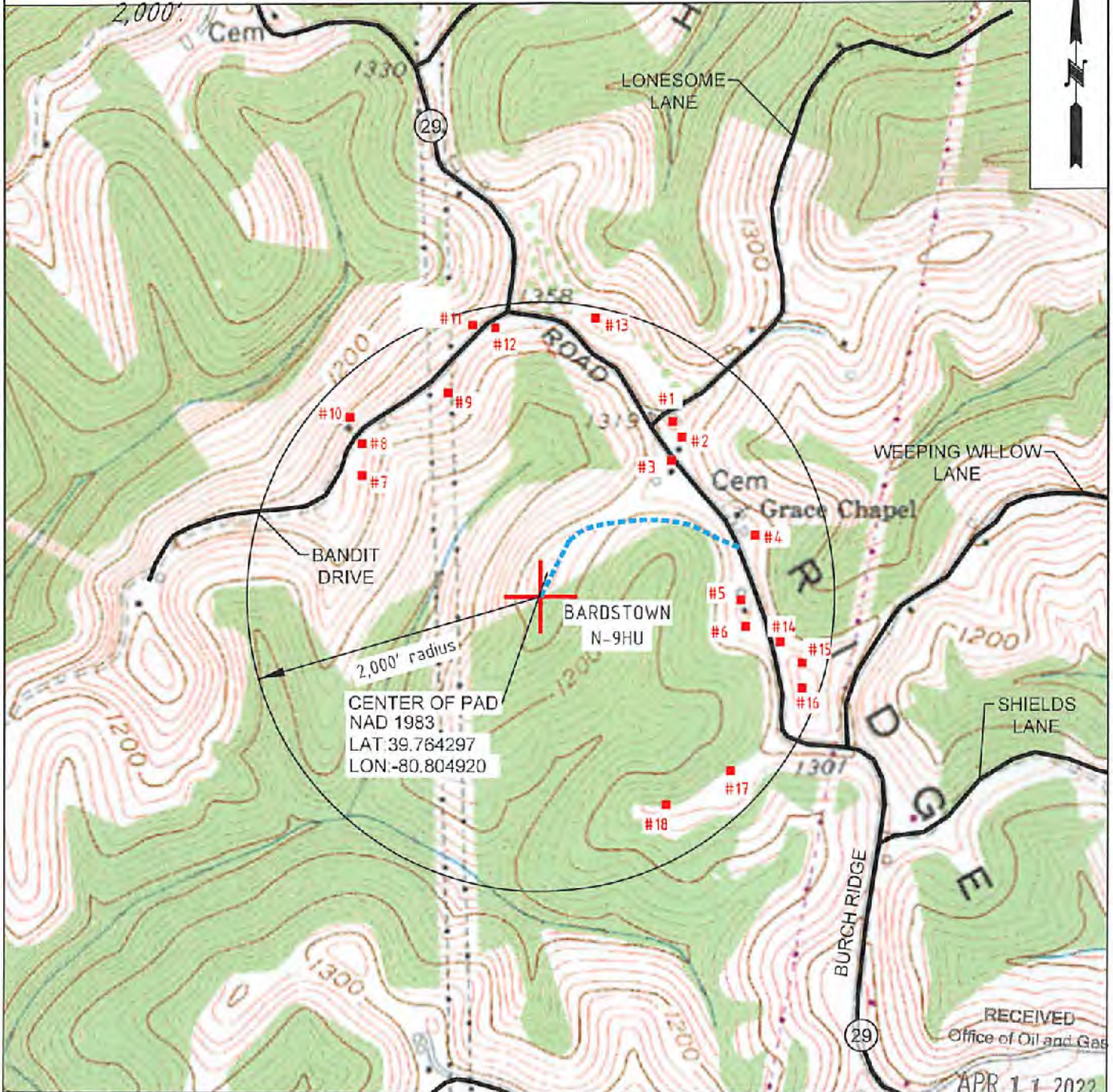
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PROPOSED BARDSTOWN N-9HU

There appears to be Eighteen (18) possible water sources within 2,000'



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 TUG HILL OPERATING	OPERATOR 494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	POWHATAN POINT 7.5'	WV Department of Environmental Protection
	SCALE:	1" = 1000'	DATE:
	DATE: 03-28-2022		

RESIDENCES WITHIN 2000' OF BARDSTOWN WELL PAD		There appear to be Eighteen (18) Residences & Zero (0) Businesses, Churches, Schools or Emergency Facilities within 2000' of the Bardstown Well Pad.			
WELL: Bardstown					
DISTRICT: Franklin					
COUNTY: Marshall					
STATE: WV					
Topo Spot #	Description	Property Owner	E-911 Address	Mailing Address	Notes
House/Cabin #1	05-19-10	Anderson, Eric L etux	13 Lonesome Lane, Proctor, WV 26055	3156 Burch Ridge Rd., Proctor, WV 26055	
House/Cabin #2	05-19-10	Anderson, Eric L etux	3156 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #3	05-19-9	Ashcraft, Penny Elaine	3171 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #4	05-19-29	Anderson, Eric L & Tammy L	3298 Burch Ridge Rd., Proctor, WV 26055	3156 Burch Ridge Rd., Proctor, WV 26055	
House/Cabin #5	05-19-19	Blake, Russell & Mary	3343 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #6	05-19-19.1	Blake, Russell & Mary	3455 Burch Ridge Rd., Proctor, WV 26055	3343 Burch Ridge Rd., Proctor, WV 26055	
House/Cabin #7	05-19-20	Bungard, Wilbert H etux	296 Bandit Drive, Proctor, WV 26055	243 Bandit Drive, Proctor, WV 26055	
House/Cabin #8	05-19-20	Bungard, Wilbert H etux	243 Bandit Drive, Proctor, WV 26055		
House/Cabin #9	05-19-20.3	Harmon, Sidney	92 Bandit Drive, Proctor, WV 26055	37 Bandit Drive, Proctor, WV 26055	
House/Cabin #10	05-19-20	Bungard, Wilbert H etux	No E911	243 Bandit Drive, Proctor, WV 26055	
House/Cabin #11	05-19-20.2	Harmon, Casandra L	37 Bandit Drive, Proctor, WV 26055		
House/Cabin #12	05-19-20.1	Eber, John J - Life	26 Bandit Drive, Proctor, WV 26055		
House/Cabin #13	05-19-7.5	Robinson, Adam T & Jesse L	2932 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #14	05-19-30.1	Huggins, Eric R W & Ashley A	3430 Burch Ridge Rd., Proctor, WV 26055	3486 Burch Ridge Rd., Proctor, WV 26055	
House/Cabin #15	05-19-30.1	Huggins, Eric R W & Ashley A	3486 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #16	05-19-31	Haynes, Charles F & Diana L	3508 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #17	05-19-28	Yoho, David E & Mark E Yoho	3555 Burch Ridge Rd., Proctor, WV 26055		
House/Cabin #18	05-19-28	Yoho, David E & Mark E Yoho	No E911 Address.	3555 Burch Ridge Rd., Proctor, WV 26055	

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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: 02/11/2022 **Date Permit Application Filed:** 04/09/2022

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: William H. & Pamela June Bungard (Access Road & Well Pad)
 Address: 243 Bandit Drive
Proctor, WV 26055

Name: Russell & Mary Blake
 Address: 3343 Burch Ridge Road
Proctor, WV 26055

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>516,696.31</u>
County:	<u>Marshall</u>		Northing:	<u>4,401,565.37</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road - CR 29</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Russell Blake, et ux; William Bungard, et ux</u>	
Watershed:	<u>French Creek - Ohio River</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: West Virginia
 Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
 Telephone: 724-749-8388
 Email: amorris@tug-hillop.com
 Facsimile: 724-338-2030

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

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 WV Department of
 Environmental Protection

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 04/05/2022 **Date Permit Application Filed:** 04/08/2022

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: William H. & Pamela June Bungard
Address: 243 Bandit Drive
Proctor, WV 26055

Name: Russell & Mary Blake
Address: 3343 Burch 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>516,696.31</u>
County:	<u>Marshall</u>		Northing:	<u>4,401,565.37</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road - CR 29</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Russell Blake, et ux & William Bungard, et ux</u>	
Watershed:	<u>French Creek - Ohio River (Undefined)</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: 724-749-8338
Email: amorris@tug-hill-op.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.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

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

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

January 21, 2022

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

Subject: DOH Permit for the Blake Pad, Marshall County
Bardstown N-9HU Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2013-0426 which has been issued to Tug Hill Operating LLC for access to the State Road for a well site located off Marshall County Route 29 SLS MP 3.39.

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 Maintenance Engineer
Central Office O&G Coordinator

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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Bardstown Wells

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

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Blake Well Site

As-Built
Tug Hill Operating
Marshall County
Franklin District
Latitude 39.76429745°
Longitude -80.80492031°

Stillhouse Run - Ohio River Watershed

Pertinent Site Information
Blake Well Site
Emergency Number: 304.845.1920
Franklin District, Marshall County, WV
Watershed: Stillhouse Run - Ohio River Watershed
Tug Hill Contact Number: 1-817-632-3400

Property Owner Information - Blake Well Site
Table with 13 columns: Parcel ID, Area, Easement, etc.

Exhibit A: Site As-Built



WVDEP OOG
ACCEPTED AS-BUILT
5/11/2022



Adjacent Road
Table with 6 columns: Easement, Right of Way, Easement, etc.

Disturbed Area
Table with 2 columns: Disturbed Area, Construction

Blake Well Site Overview
Table with 5 columns: Property, Easement, Area, etc.



Table with 4 columns: Block #, Parcel #, Owner Name, and Address/Notes.



Site Location (NAD 83) and Site Location (NAD 83) coordinate tables.

Site Location Restrictions
1. All of the site is in general view...
2. All of the site is in general view...



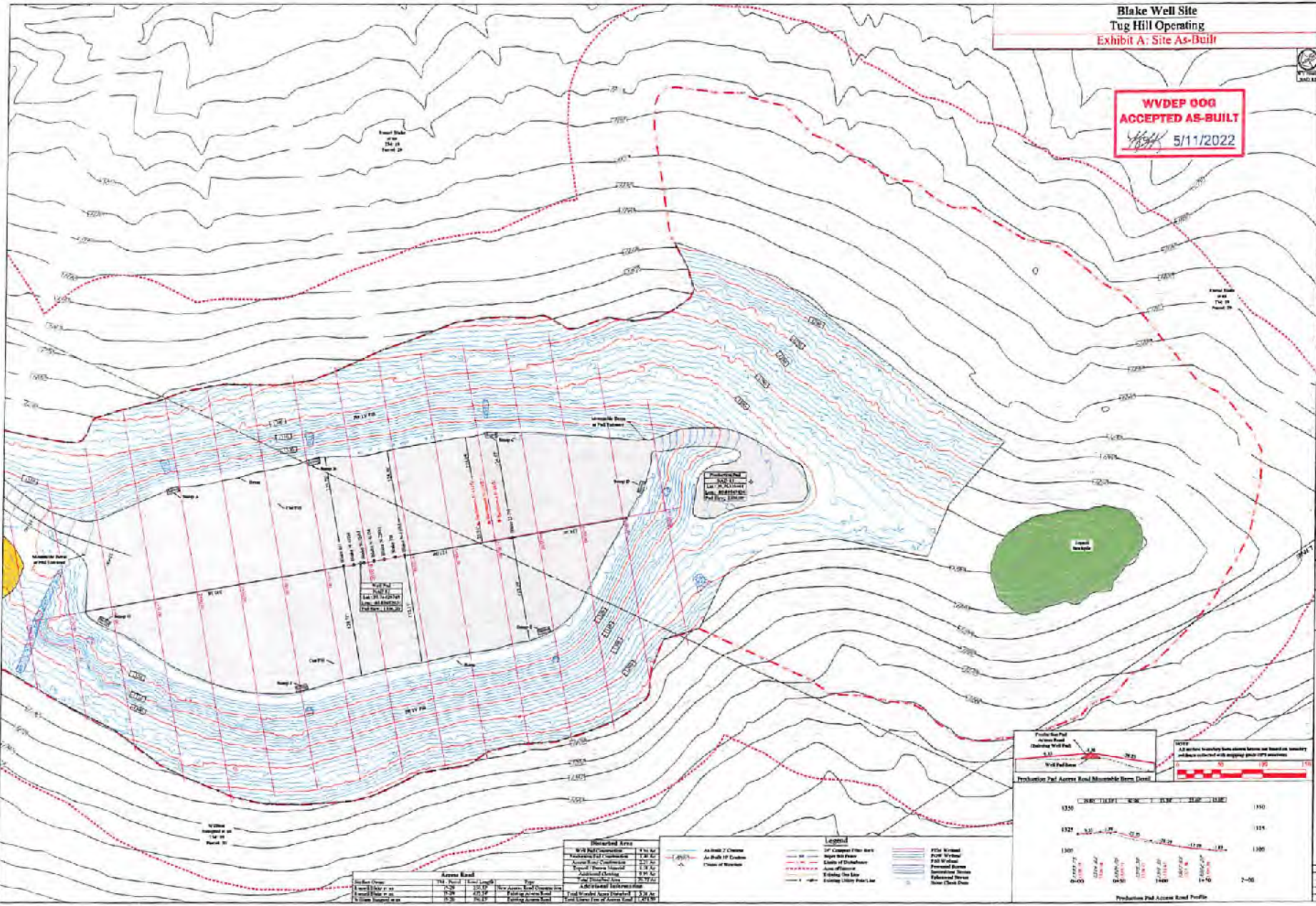
Table with 2 columns: Sheet, Description

Project Contacts
Tug Hill Operating, LLC
360 Southpark Drive
Franklin, WV 25761

WEST VIRGINIA
MISS UTILITY OF
800-245-4848
811
Call us or call your utility providers

**Blake Well Site
Tug Hill Operating
Exhibit A: Site As-Built**

**WVDEP 000
ACCEPTED AS-BUILT**
5/11/2022

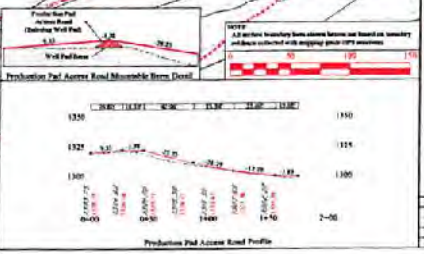


Access Road	TM	North	East	Length	Type
Access Road 1	100	100	100	100	Gravel
Access Road 2	100	100	100	100	Gravel
Access Road 3	100	100	100	100	Gravel
Access Road 4	100	100	100	100	Gravel
Access Road 5	100	100	100	100	Gravel
Access Road 6	100	100	100	100	Gravel
Access Road 7	100	100	100	100	Gravel
Access Road 8	100	100	100	100	Gravel
Access Road 9	100	100	100	100	Gravel
Access Road 10	100	100	100	100	Gravel

Material Area	W/S	Material	Area
1	100	100	100
2	100	100	100
3	100	100	100
4	100	100	100
5	100	100	100
6	100	100	100
7	100	100	100
8	100	100	100
9	100	100	100
10	100	100	100

Legend	Description
—	As-Built 2' Contour
—	As-Built 10' Contour
—	Contour of Nearest
—	10' Contour
—	20' Contour
—	30' Contour
—	40' Contour
—	50' Contour
—	60' Contour
—	70' Contour
—	80' Contour
—	90' Contour
—	100' Contour
—	110' Contour
—	120' Contour
—	130' Contour
—	140' Contour
—	150' Contour
—	160' Contour
—	170' Contour
—	180' Contour
—	190' Contour
—	200' Contour
—	210' Contour
—	220' Contour
—	230' Contour
—	240' Contour
—	250' Contour
—	260' Contour
—	270' Contour
—	280' Contour
—	290' Contour
—	300' Contour

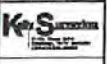
Legend	Description
—	10' Contour
—	20' Contour
—	30' Contour
—	40' Contour
—	50' Contour
—	60' Contour
—	70' Contour
—	80' Contour
—	90' Contour
—	100' Contour
—	110' Contour
—	120' Contour
—	130' Contour
—	140' Contour
—	150' Contour
—	160' Contour
—	170' Contour
—	180' Contour
—	190' Contour
—	200' Contour
—	210' Contour
—	220' Contour
—	230' Contour
—	240' Contour
—	250' Contour
—	260' Contour
—	270' Contour
—	280' Contour
—	290' Contour
—	300' Contour



**TUG HILL
OPERATING**



THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING



Blake Well Site
Franklin District
Marshall County, WV

Date: 12/15/2011
Scale: As Shown
Designed By: JLS
Sheet 1 of 1