west virginia department of environmental protection

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

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

Wednesday, September 4, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
CANONSBURG, PA 15317

Re: Permit approval for BLAKE N-9HU
47-051-02203-00-00

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: BLAKE N-9HU
Farm Name: RUSSELL BLAKE, ET AL
U.S. WELL NUMBER: 47-051-02203-00-00
Horizontal 6A New Drill
Date Issued: 9/4/2019

API Number: 51-02203

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: 51-02203

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.

4705102203

west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

June 18, 2019

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

RE: Application for Deep Well Permit – API #47-051-02203

COMPANY: Tug Hill Operating, LLC

FARM: Russell Blake, et al Blake 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? Yes; withdrawn prior to hearing

2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes

3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: yes; 47-051-02193; 47-051-02194, 47-051-01766, 47-051-02204, 47-051-02205, 47-051-01896, 47-051-01895, 47-051-01894, 47-051-02143, 47-051-02147

4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Susan Rose
Administrator

47 05 1 02203

WW-6B
(04/15)

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

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 7.5
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Blake 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: 1326.20' Elevation, proposed post-construction: 1326.20'

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

JCL 3/27/19

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 11,226' - 11,104' - thickness of 122' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,376'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 22,694'

11) Proposed Horizontal Leg Length: 11,080.17'

12) Approximate Fresh Water Strata Depths: 70' ; 805'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 816' ; Pittsburgh Coal - 916'

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

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

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

47 05 102203

API NO. 47- 051 -
OPERATOR WELL NO. Blake 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	20"	NEW	J55	106.5#	1020'	1020'	1,644FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2802'	2802'	1,976FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,049'	10,049'	3,286FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	22,694'	22,694'	5,370FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,070'	
Liners							

3/27/19

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	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,385	11,624		
Liners							

PACKERS

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

WW-6B
(10/14)

API NO. 47- 051 - 4705102203
OPERATOR WELL NO. Blake N-9HU
Well Pad Name: Blake

3/27/19

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 27,695,000 lb proppant and 428,185 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

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 will have 1 centralizer every third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

*See Attachment

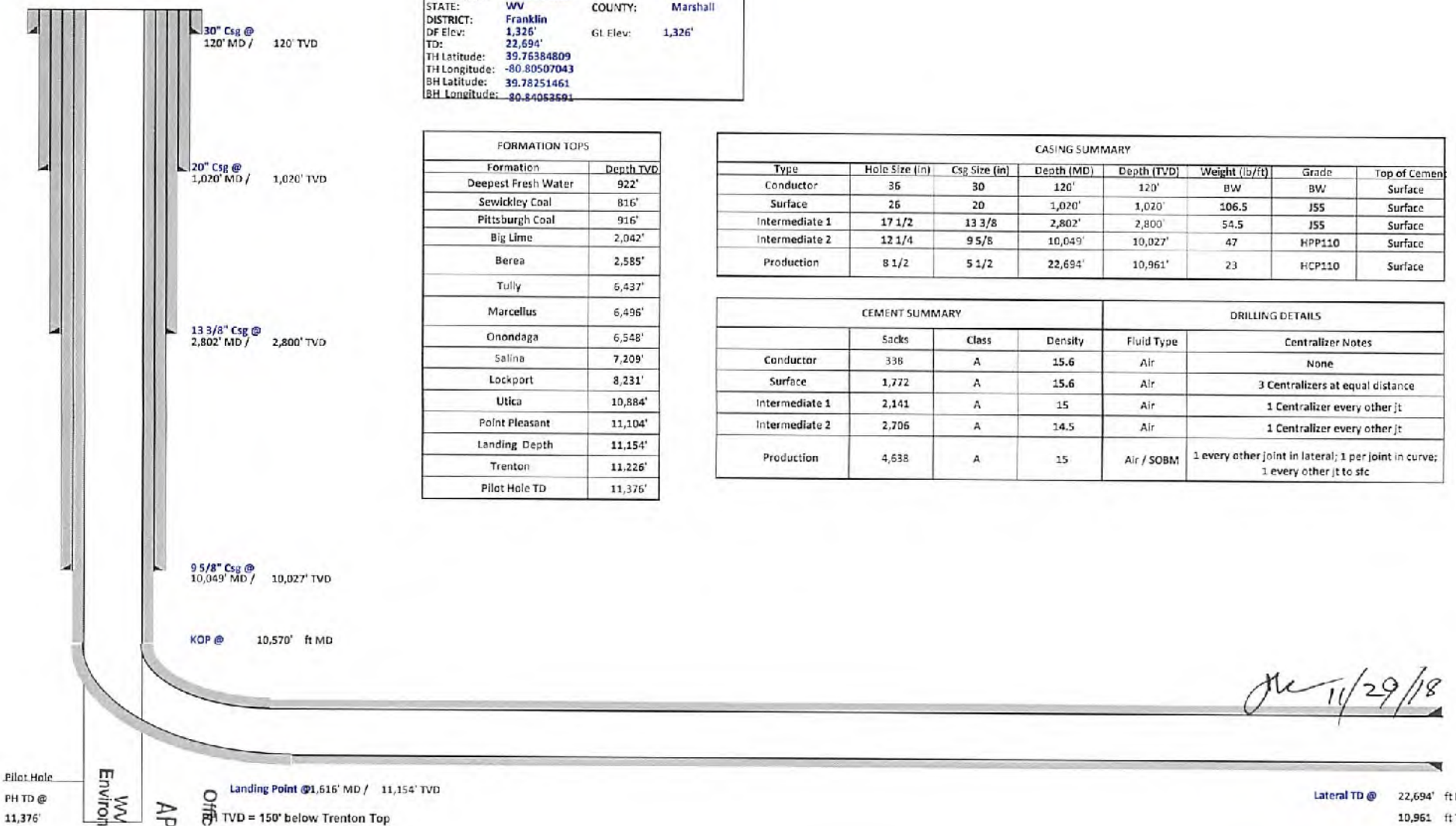
25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.

TUG HILL OPERATING

WELL NAME:	Blake N-9HU		
STATE:	WV	COUNTY:	Marshall
DISTRICT:	Franklin		
DF Elev:	1,326'	GL Elev:	1,326'
TD:	22,694'		
TH Latitude:	39.76384809		
TH Longitude:	-80.80507043		
BH Latitude:	39.78251461		
BH Longitude:	-80.84053591		



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	922'
Sewickley Coal	816'
Pittsburgh Coal	916'
Big Lime	2,042'
Berea	2,585'
Tully	6,437'
Marcellus	6,496'
Onondaga	6,548'
Salina	7,209'
Lockport	8,231'
Utica	10,884'
Point Pleasant	11,104'
Landing Depth	11,154'
Trenton	11,226'
Pilot Hole TD	11,376'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	1,020'	1,020'	106.5	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	10,049'	10,027'	47	HPP110	Surface
Production	8 1/2	5 1/2	22,694'	10,961'	23	HCP110	Surface

	CEMENT SUMMARY			DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,772	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,141	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,706	A	14.5	Air	1 Centralizer every other jt
Production	4,638	A	15	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to stc

11/29/18

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TUG HILL OPERATING

Tug Hill Operating, LLC Casing and Cement Program

Blake N-9HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,020'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,802'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,049'	CTS
Production	5 1/2"	HCP110	8 1/2"	22,694'	CTS

Cement

Surface:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
Intermediate 1:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2
Intermediate 2:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99
Production:	50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

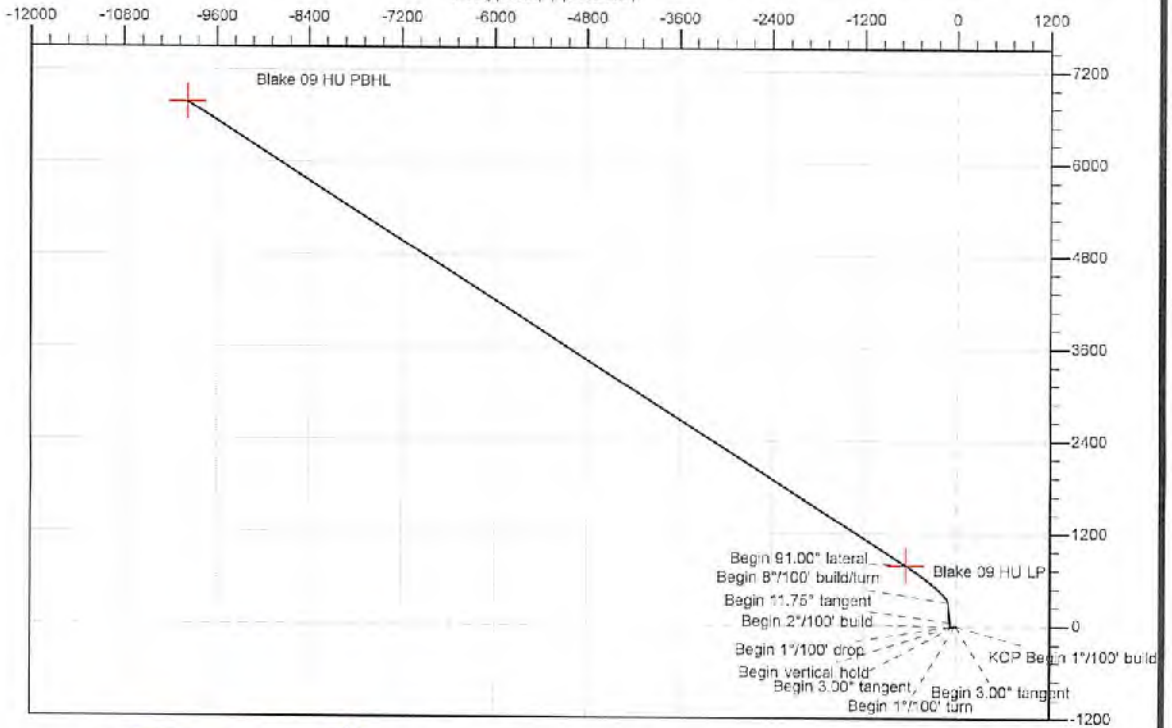
TUG HILL OPERATING

Well: Blake 09 HU (slot O)
Site: Blake Pad
Project: Marshall County, West Virginia.
Design: rev1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	1500.00	3.00	280.00	1499.85	1.35	-7.73	1.00	280.00	7.15	Begin 3.00° tangent
4	1800.00	3.00	280.00	1799.45	4.09	-23.20	0.00	0.00	21.49	Begin 1°/100' turn
5	1929.81	3.00	255.00	1929.09	3.80	-29.82	1.00	-102.48	26.80	Begin 3.00° tangent
6	2729.81	3.00	255.00	2727.99	-7.04	-70.26	0.00	0.00	54.17	Begin 1°/100' drop
7	3029.81	0.00	255.00	3027.85	-9.07	-77.85	1.00	180.00	59.30	Begin vertical hold
8	8701.95	0.00	255.00	8700.00	-9.07	-77.85	0.00	255.00	59.30	Begin 2°/100' build
9	9289.30	11.75	354.44	9283.24	50.65	-83.86	2.00	354.44	97.65	Begin 11.75° tangent
10	10569.60	11.75	354.44	10536.73	310.08	-108.90	0.00	0.00	264.31	Begin 8°/100' build/turn
11	11616.32	91.00	302.74	11154.00	787.23	-661.41	8.00	-52.13	989.45	Begin 91.00° lateral
12	22694.41	91.00	302.74	10961.00	6777.27	-9978.40	0.00	0.00	12062.33	PBHL/TD 22694.41 MD/10961.00 TVD

West(-)/East(+) (2400 ft/in)



Azimuths to Grid North
True North: -0.12°
Magnetic North: -8.77°

Magnetic Field
Strength: 52059.5nT
Dip Angle: 66.87°
Date: 6/9/2018
Model: IGRF2015

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

System Datum: Mean Sea Level
Depth Reference: GL @ 1326.00ft

Northing	Easting	Latitude	Longitude
14440802.38	1695194.48	39.76384809	-80.80507043

Total Corr (M->G)

To convert a Magnetic Direction to a Grid Direction, Subtract 8.77°

20:05, June 16 2018

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4705102203

TUG HILL OPERATING

Planning Report - Geographic

4705102203

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Blake Pad				
Site Position:		**Northing:**	14,440,917.72 usft	**Latitude:**	39.76416471
From:	Lat/Long	**Easting:**	1,695,217.29 usft	**Longitude:**	-80.80498839
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.12 °

Well	Blake 09 HU (slot O)					
Well Position	**+N/-S**	0.00 ft	**Northing:**	14,440,802.38 usft	**Latitude:**	39.76384809
	+E/-W	0.00 ft	**Easting:**	1,695,194.48 usft	**Longitude:**	-80.80507043
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	1,326.00 ft

Wellbore	Original Hole			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	6/9/2018	-8.65	66.87	52,059.53876011

Design	rev1				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**	
	0.00	0.00	0.00	304.18	

Plan Survey Tool Program **Date** 6/16/2018

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,693.47	rev1 (Original Hole)	MWD MWD - Standard	

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TUG HILL OPERATING

Planning Report - Geographic

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Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	3.00	280.00	1,499.86	1.36	-7.73	1.00	1.00	0.00	280.00	
1,800.00	3.00	280.00	1,799.45	4.09	-23.20	0.00	0.00	0.00	0.00	
1,929.81	3.00	255.00	1,929.09	3.80	-29.82	1.00	0.00	-19.26	-102.48	
2,729.81	3.00	255.00	2,727.99	-7.04	-70.26	0.00	0.00	0.00	0.00	
3,029.81	0.00	255.00	3,027.85	-9.07	-77.85	1.00	-1.00	0.00	180.00	
8,701.95	0.00	255.00	8,700.00	-9.07	-77.85	0.00	0.00	0.00	255.00	
9,289.30	11.75	354.44	9,283.24	50.65	-83.66	2.00	2.00	16.93	354.44	
10,569.60	11.75	354.44	10,536.73	310.08	-108.90	0.00	0.00	0.00	0.00	
11,616.32	91.00	302.74	11,154.00	787.23	-661.41	8.00	7.57	-4.94	-52.13	Blake 09 HU LP
22,694.41	91.00	302.74	10,961.00	6,777.27	-9,978.40	0.00	0.00	0.00	0.00	Blake 09 HU PBHL

TUG HILL OPERATING

Planning Report - Geographic

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
100.00	0.00	0.00	100.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
200.00	0.00	0.00	200.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
300.00	0.00	0.00	300.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
400.00	0.00	0.00	400.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
500.00	0.00	0.00	500.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
600.00	0.00	0.00	600.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
700.00	0.00	0.00	700.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
800.00	0.00	0.00	800.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
900.00	0.00	0.00	900.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,440,802.38	1,695,194.48	39.76384809	-80.80507043
KOP Begin 1°/100' build									
1,300.00	1.00	280.00	1,299.99	0.15	-0.86	14,440,802.53	1,695,193.62	39.76384851	-80.80507349
1,400.00	2.00	280.00	1,399.96	0.61	-3.44	14,440,802.99	1,695,191.05	39.76384978	-80.80508266
1,500.00	3.00	280.00	1,499.86	1.36	-7.73	14,440,803.75	1,695,186.75	39.76385188	-80.80509794
Begin 3.00° tangent									
1,600.00	3.00	280.00	1,599.73	2.27	-12.89	14,440,804.65	1,695,181.60	39.76385441	-80.80511627
1,700.00	3.00	280.00	1,699.59	3.18	-18.04	14,440,805.56	1,695,176.44	39.76385694	-80.80513461
1,800.00	3.00	280.00	1,799.45	4.09	-23.20	14,440,806.47	1,695,171.29	39.76385946	-80.80515294
Begin 1°/100' turn									
1,900.00	2.95	260.66	1,899.32	4.13	-28.31	14,440,806.51	1,695,166.17	39.76385959	-80.80517115
1,929.81	3.00	255.00	1,929.09	3.80	-29.82	14,440,806.18	1,695,164.66	39.76385871	-80.80517652
Begin 3.00° tangent									
2,000.00	3.00	255.00	1,999.18	2.85	-33.37	14,440,805.23	1,695,161.11	39.76385612	-80.80518916
2,100.00	3.00	255.00	2,099.05	1.50	-38.43	14,440,803.88	1,695,156.06	39.76385243	-80.80520716
2,200.00	3.00	255.00	2,198.91	0.14	-43.48	14,440,802.52	1,695,151.00	39.76384874	-80.80522516
2,300.00	3.00	255.00	2,298.77	-1.21	-48.54	14,440,801.17	1,695,145.95	39.76384505	-80.80524316
2,400.00	3.00	255.00	2,398.64	-2.57	-53.59	14,440,799.81	1,695,140.89	39.76384136	-80.80526116
2,500.00	3.00	255.00	2,498.50	-3.92	-58.65	14,440,798.46	1,695,135.84	39.76383767	-80.80527916
2,600.00	3.00	255.00	2,598.36	-5.28	-63.70	14,440,797.10	1,695,130.78	39.76383398	-80.80529716
2,700.00	3.00	255.00	2,698.22	-6.63	-68.76	14,440,795.75	1,695,125.73	39.76383029	-80.80531516
2,729.81	3.00	255.00	2,727.99	-7.04	-70.26	14,440,795.35	1,695,124.22	39.76382919	-80.80532052
Begin 1°/100' drop									
2,800.00	2.30	255.00	2,798.11	-7.88	-73.40	14,440,794.51	1,695,121.08	39.76382690	-80.80533168
2,900.00	1.30	255.00	2,898.06	-8.69	-76.43	14,440,793.69	1,695,118.05	39.76382469	-80.80534247
3,000.00	0.30	255.00	2,998.05	-9.05	-77.77	14,440,793.33	1,695,116.71	39.76382371	-80.80534726
3,029.81	0.00	0.00	3,027.85	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
Begin vertical hold									
3,100.00	0.00	0.00	3,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,200.00	0.00	255.00	3,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,300.00	0.00	255.00	3,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,400.00	0.00	255.00	3,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,500.00	0.00	0.00	3,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,600.00	0.00	255.00	3,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,700.00	0.00	255.00	3,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,800.00	0.00	255.00	3,798.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
3,900.00	0.00	0.00	3,898.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,000.00	0.00	255.00	3,998.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,100.00	0.00	255.00	4,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,200.00	0.00	255.00	4,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,300.00	0.00	0.00	4,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,400.00	0.00	255.00	4,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753

TUG HILL OPERATING

Planning Report - Geographic

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,500.00	0.00	0.00	4,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,600.00	0.00	255.00	4,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,700.00	0.00	0.00	4,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,800.00	0.00	255.00	4,798.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
4,900.00	0.00	0.00	4,898.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,000.00	0.00	255.00	4,998.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,100.00	0.00	0.00	5,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,200.00	0.00	255.00	5,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,300.00	0.00	0.00	5,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,400.00	0.00	255.00	5,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,500.00	0.00	0.00	5,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,600.00	0.00	255.00	5,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,700.00	0.00	0.00	5,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,800.00	0.00	255.00	5,798.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
5,900.00	0.00	255.00	5,898.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,000.00	0.00	0.00	5,998.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,100.00	0.00	255.00	6,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,200.00	0.00	0.00	6,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,300.00	0.00	255.00	6,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,400.00	0.00	0.00	6,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,500.00	0.00	255.00	6,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,600.00	0.00	0.00	6,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,700.00	0.00	255.00	6,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,800.00	0.00	0.00	6,798.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
6,900.00	0.00	255.00	6,898.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,000.00	0.00	0.00	6,998.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,100.00	0.00	255.00	7,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,200.00	0.00	0.00	7,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,300.00	0.00	255.00	7,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,400.00	0.00	0.00	7,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,500.00	0.00	255.00	7,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,600.00	0.00	0.00	7,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,700.00	0.00	255.00	7,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,800.00	0.00	0.00	7,798.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
7,900.00	0.00	255.00	7,898.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,000.00	0.00	255.00	7,998.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,100.00	0.00	255.00	8,098.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,200.00	0.00	0.00	8,198.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,300.00	0.00	255.00	8,298.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,400.00	0.00	255.00	8,398.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,500.00	0.00	255.00	8,498.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,600.00	0.00	0.00	8,598.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,700.00	0.00	255.00	8,698.05	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
8,701.95	0.00	255.00	8,700.00	-9.07	-77.85	14,440,793.31	1,695,116.63	39.76382365	-80.80534753
Begin 2°/100' build									
8,800.00	1.96	354.44	8,798.03	-7.40	-78.01	14,440,794.98	1,695,116.47	39.76382824	-80.80534809
8,900.00	3.96	354.44	8,897.89	-2.26	-78.51	14,440,800.12	1,695,115.97	39.76384236	-80.80534983
9,000.00	5.96	354.44	8,997.51	6.35	-79.35	14,440,808.73	1,695,115.13	39.76386600	-80.80535275
9,100.00	7.96	354.44	9,096.77	18.41	-80.52	14,440,820.79	1,695,113.96	39.76389913	-80.80535683
9,200.00	9.96	354.44	9,195.54	33.91	-82.03	14,440,836.29	1,695,112.45	39.76394172	-80.80536208
9,269.30	11.75	354.44	9,263.24	50.65	-83.66	14,440,853.03	1,695,110.82	39.76398769	-80.80536774
Begin 11.75° tangent									
9,300.00	11.75	354.44	9,293.72	52.82	-83.87	14,440,855.20	1,695,110.61	39.76399364	-80.80536848
9,400.00	11.75	354.44	9,391.62	73.08	-85.84	14,440,875.46	1,695,108.64	39.76404930	-80.80537534

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,500.00	11.75	354.44	9,489.53	93.34	-87.81	14,440,895.73	1,695,106.67	39.76410496	-80.80538220
9,600.00	11.75	354.44	9,587.43	113.61	-89.79	14,440,915.99	1,695,104.70	39.76416062	-80.80538906
9,700.00	11.75	354.44	9,685.34	133.87	-91.76	14,440,936.25	1,695,102.73	39.76421629	-80.80539592
9,800.00	11.75	354.44	9,783.24	154.13	-93.73	14,440,956.52	1,695,100.75	39.76427195	-80.80540277
9,900.00	11.75	354.44	9,881.15	174.40	-95.70	14,440,976.78	1,695,098.78	39.76432761	-80.80540963
10,000.00	11.75	354.44	9,979.06	194.66	-97.67	14,440,997.04	1,695,096.81	39.76438327	-80.80541649
10,100.00	11.75	354.44	10,076.96	214.92	-99.64	14,441,017.31	1,695,094.84	39.76443893	-80.80542335
10,200.00	11.75	354.44	10,174.87	235.19	-101.62	14,441,037.57	1,695,092.87	39.76449459	-80.80543021
10,300.00	11.75	354.44	10,272.77	255.45	-103.59	14,441,057.83	1,695,090.90	39.76455025	-80.80543707
10,400.00	11.75	354.44	10,370.68	275.71	-105.56	14,441,078.10	1,695,088.92	39.76460591	-80.80544393
10,500.00	11.75	354.44	10,468.58	295.98	-107.53	14,441,098.36	1,695,086.95	39.76466157	-80.80545079
10,569.60	11.75	354.44	10,536.73	310.08	-108.90	14,441,112.46	1,695,085.58	39.76470031	-80.80545557
Begin 8°/100' build/turn									
10,600.00	13.38	346.12	10,566.40	316.57	-110.05	14,441,118.96	1,695,084.44	39.76471815	-80.80545959
10,700.00	19.91	329.62	10,662.21	342.53	-121.45	14,441,144.92	1,695,073.03	39.76478951	-80.80549997
10,800.00	27.21	321.36	10,753.84	375.13	-144.37	14,441,177.52	1,695,050.11	39.76487918	-80.80558129
10,900.00	34.81	316.45	10,839.50	413.74	-178.37	14,441,216.12	1,695,016.11	39.76498540	-80.80570197
11,000.00	42.54	313.12	10,917.52	457.60	-222.78	14,441,259.98	1,694,971.70	39.76510613	-80.80585967
11,100.00	50.33	310.66	10,986.39	505.87	-276.74	14,441,308.25	1,694,917.75	39.76523899	-80.80605130
11,200.00	58.18	308.70	11,044.77	557.59	-339.19	14,441,359.97	1,694,855.29	39.76538141	-80.80627316
11,300.00	66.04	307.05	11,091.51	611.77	-408.93	14,441,414.15	1,694,785.56	39.76553062	-80.80652090
11,400.00	73.92	305.59	11,125.72	667.35	-484.59	14,441,469.73	1,694,709.90	39.76568371	-80.80678972
11,500.00	81.81	304.24	11,146.72	723.25	-564.70	14,441,525.63	1,694,629.78	39.76583770	-80.80707438
11,600.00	89.71	302.95	11,154.10	778.36	-647.70	14,441,580.76	1,694,546.78	39.76598960	-80.80736934
11,616.32	91.00	302.74	11,154.00	787.23	-661.41	14,441,589.61	1,694,533.07	39.76601398	-80.80741806
Begin 91.00° lateral									
11,700.00	91.00	302.74	11,152.54	832.48	-731.79	14,441,634.86	1,694,462.69	39.76613866	-80.80766817
11,800.00	91.00	302.74	11,150.80	886.55	-815.90	14,441,688.93	1,694,378.59	39.76628765	-80.80796705
11,900.00	91.00	302.74	11,149.06	940.62	-900.00	14,441,743.00	1,694,294.49	39.76643664	-80.80826593
12,000.00	91.00	302.74	11,147.32	994.69	-984.10	14,441,797.07	1,694,210.38	39.76658563	-80.80856481
12,100.00	91.00	302.74	11,145.57	1,048.76	-1,068.20	14,441,851.14	1,694,126.28	39.76673462	-80.80886370
12,200.00	91.00	302.74	11,143.83	1,102.83	-1,152.31	14,441,905.21	1,694,042.18	39.76688360	-80.80916258
12,300.00	91.00	302.74	11,142.09	1,156.91	-1,236.41	14,441,959.29	1,693,958.08	39.76703259	-80.80946147
12,400.00	91.00	302.74	11,140.35	1,210.98	-1,320.51	14,442,013.36	1,693,873.97	39.76718157	-80.80976035
12,500.00	91.00	302.74	11,138.60	1,265.05	-1,404.62	14,442,067.43	1,693,789.87	39.76733056	-80.81005924
12,600.00	91.00	302.74	11,136.86	1,319.12	-1,488.72	14,442,121.50	1,693,705.77	39.76747954	-80.81035813
12,700.00	91.00	302.74	11,135.12	1,373.19	-1,572.82	14,442,175.57	1,693,621.66	39.76762853	-80.81065702
12,800.00	91.00	302.74	11,133.38	1,427.26	-1,656.92	14,442,229.64	1,693,537.56	39.76777751	-80.81095591
12,900.00	91.00	302.74	11,131.64	1,481.33	-1,741.03	14,442,283.71	1,693,453.46	39.76792649	-80.81125481
13,000.00	91.00	302.74	11,129.89	1,535.40	-1,825.13	14,442,337.78	1,693,369.36	39.76807547	-80.81155370
13,100.00	91.00	302.74	11,128.15	1,589.47	-1,909.23	14,442,391.85	1,693,285.25	39.76822445	-80.81185260
13,200.00	91.00	302.74	11,126.41	1,643.55	-1,993.34	14,442,445.92	1,693,201.15	39.76837343	-80.81215150
13,300.00	91.00	302.74	11,124.67	1,697.62	-2,077.44	14,442,500.00	1,693,117.05	39.76852241	-80.81245039
13,400.00	91.00	302.74	11,122.93	1,751.69	-2,161.54	14,442,554.07	1,693,032.95	39.76867139	-80.81274929
13,500.00	91.00	302.74	11,121.18	1,805.76	-2,245.64	14,442,608.14	1,692,948.84	39.76882036	-80.81304820
13,600.00	91.00	302.74	11,119.44	1,859.83	-2,329.75	14,442,662.21	1,692,864.74	39.76896934	-80.81334710
13,700.00	91.00	302.74	11,117.70	1,913.90	-2,413.85	14,442,716.28	1,692,780.64	39.76911831	-80.81364600
13,800.00	91.00	302.74	11,115.96	1,967.97	-2,497.95	14,442,770.35	1,692,696.54	39.76926729	-80.81394491
13,900.00	91.00	302.74	11,114.21	2,022.04	-2,582.05	14,442,824.42	1,692,612.43	39.76941626	-80.81424381
14,000.00	91.00	302.74	11,112.47	2,076.11	-2,666.16	14,442,878.49	1,692,528.33	39.76956524	-80.81454272
14,100.00	91.00	302.74	11,110.73	2,130.18	-2,750.26	14,442,932.56	1,692,444.23	39.76971421	-80.81484163
14,200.00	91.00	302.74	11,108.99	2,184.26	-2,834.36	14,442,986.63	1,692,360.12	39.76986318	-80.81514054
14,300.00	91.00	302.74	11,107.25	2,238.33	-2,918.47	14,443,040.70	1,692,276.02	39.77001215	-80.81543945
14,400.00	91.00	302.74	11,105.50	2,292.40	-3,002.57	14,443,094.78	1,692,191.92	39.77016112	-80.81573836

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,500.00	91.00	302.74	11,103.76	2,346.47	-3,086.67	14,443,146.65	1,692,107.82	39.77031009	-80.81603728
14,600.00	91.00	302.74	11,102.02	2,400.54	-3,170.77	14,443,202.92	1,692,023.71	39.77045906	-80.81633619
14,700.00	91.00	302.74	11,100.28	2,454.61	-3,254.88	14,443,256.99	1,691,939.61	39.77060803	-80.81663511
14,800.00	91.00	302.74	11,098.53	2,508.68	-3,338.98	14,443,311.06	1,691,855.51	39.77075699	-80.81693403
14,900.00	91.00	302.74	11,096.79	2,562.75	-3,423.08	14,443,365.13	1,691,771.41	39.77090596	-80.81723295
15,000.00	91.00	302.74	11,095.05	2,616.82	-3,507.19	14,443,419.20	1,691,687.30	39.77105492	-80.81753187
15,100.00	91.00	302.74	11,093.31	2,670.90	-3,591.29	14,443,473.27	1,691,603.20	39.77120389	-80.81783079
15,200.00	91.00	302.74	11,091.57	2,724.97	-3,675.39	14,443,527.34	1,691,519.10	39.77135285	-80.81812971
15,300.00	91.00	302.74	11,089.82	2,779.04	-3,759.49	14,443,581.41	1,691,435.00	39.77150181	-80.81842864
15,400.00	91.00	302.74	11,088.08	2,833.11	-3,843.60	14,443,635.48	1,691,350.89	39.77165078	-80.81872756
15,500.00	91.00	302.74	11,086.34	2,887.18	-3,927.70	14,443,689.56	1,691,266.79	39.77179974	-80.81902649
15,600.00	91.00	302.74	11,084.60	2,941.25	-4,011.80	14,443,743.63	1,691,182.69	39.77194870	-80.81932542
15,700.00	91.00	302.74	11,082.86	2,995.32	-4,095.91	14,443,797.70	1,691,098.58	39.77209766	-80.81962435
15,800.00	91.00	302.74	11,081.11	3,049.39	-4,180.01	14,443,851.77	1,691,014.48	39.77224662	-80.81992328
15,900.00	91.00	302.74	11,079.37	3,103.46	-4,264.11	14,443,905.84	1,690,930.38	39.77239558	-80.82022221
16,000.00	91.00	302.74	11,077.63	3,157.53	-4,348.21	14,443,959.91	1,690,846.28	39.77254453	-80.82052115
16,100.00	91.00	302.74	11,075.89	3,211.61	-4,432.32	14,444,013.98	1,690,762.17	39.77269349	-80.82082008
16,200.00	91.00	302.74	11,074.14	3,265.68	-4,516.42	14,444,068.05	1,690,678.07	39.77284245	-80.82111902
16,300.00	91.00	302.74	11,072.40	3,319.75	-4,600.52	14,444,122.12	1,690,593.97	39.77299140	-80.82141795
16,400.00	91.00	302.74	11,070.66	3,373.82	-4,684.63	14,444,176.19	1,690,509.87	39.77314036	-80.82171689
16,500.00	91.00	302.74	11,068.92	3,427.89	-4,768.73	14,444,230.27	1,690,425.76	39.77328931	-80.82201583
16,600.00	91.00	302.74	11,067.18	3,481.96	-4,852.83	14,444,284.34	1,690,341.66	39.77343826	-80.82231477
16,700.00	91.00	302.74	11,065.43	3,536.03	-4,936.93	14,444,338.41	1,690,257.56	39.77358722	-80.82261372
16,800.00	91.00	302.74	11,063.69	3,590.10	-5,021.04	14,444,392.48	1,690,173.46	39.77373617	-80.82291266
16,900.00	91.00	302.74	11,061.95	3,644.17	-5,105.14	14,444,446.55	1,690,089.35	39.77388512	-80.82321161
17,000.00	91.00	302.74	11,060.21	3,698.24	-5,189.24	14,444,500.62	1,690,005.25	39.77403407	-80.82351055
17,100.00	91.00	302.74	11,058.46	3,752.32	-5,273.35	14,444,554.69	1,689,921.15	39.77418302	-80.82380950
17,200.00	91.00	302.74	11,056.72	3,806.39	-5,357.45	14,444,608.76	1,689,837.04	39.77433197	-80.82410845
17,300.00	91.00	302.74	11,054.98	3,860.46	-5,441.55	14,444,662.83	1,689,752.94	39.77448091	-80.82440740
17,400.00	91.00	302.74	11,053.24	3,914.53	-5,525.65	14,444,716.90	1,689,668.84	39.77462986	-80.82470635
17,500.00	91.00	302.74	11,051.50	3,968.60	-5,609.76	14,444,770.97	1,689,584.74	39.77477881	-80.82500530
17,600.00	91.00	302.74	11,049.75	4,022.67	-5,693.86	14,444,825.05	1,689,500.63	39.77492775	-80.82530426
17,700.00	91.00	302.74	11,048.01	4,076.74	-5,777.96	14,444,879.12	1,689,416.53	39.77507670	-80.82560321
17,800.00	91.00	302.74	11,046.27	4,130.81	-5,862.07	14,444,933.19	1,689,332.43	39.77522564	-80.82590217
17,900.00	91.00	302.74	11,044.53	4,184.88	-5,946.17	14,444,987.26	1,689,248.33	39.77537458	-80.82620113
18,000.00	91.00	302.74	11,042.79	4,238.96	-6,030.27	14,445,041.33	1,689,164.22	39.77552352	-80.82650009
18,100.00	91.00	302.74	11,041.04	4,293.03	-6,114.37	14,445,095.40	1,689,080.12	39.77567247	-80.82679905
18,200.00	91.00	302.74	11,039.30	4,347.10	-6,198.48	14,445,149.47	1,688,996.02	39.77582141	-80.82709801
18,300.00	91.00	302.74	11,037.56	4,401.17	-6,282.58	14,445,203.54	1,688,911.92	39.77597035	-80.82739697
18,400.00	91.00	302.74	11,035.82	4,455.24	-6,366.68	14,445,257.61	1,688,827.81	39.77611929	-80.82769594
18,500.00	91.00	302.74	11,034.07	4,509.31	-6,450.79	14,445,311.68	1,688,743.71	39.77626822	-80.82799490
18,600.00	91.00	302.74	11,032.33	4,563.38	-6,534.89	14,445,365.75	1,688,659.61	39.77641716	-80.82829387
18,700.00	91.00	302.74	11,030.59	4,617.45	-6,618.99	14,445,419.83	1,688,575.50	39.77656610	-80.82859284
18,800.00	91.00	302.74	11,028.85	4,671.52	-6,703.09	14,445,473.90	1,688,491.40	39.77671503	-80.82889181
18,900.00	91.00	302.74	11,027.11	4,725.59	-6,787.20	14,445,527.97	1,688,407.30	39.77686397	-80.82919078
19,000.00	91.00	302.74	11,025.36	4,779.67	-6,871.30	14,445,582.04	1,688,323.20	39.77701290	-80.82948975
19,100.00	91.00	302.74	11,023.62	4,833.74	-6,955.40	14,445,636.11	1,688,239.09	39.77716184	-80.82978872
19,200.00	91.00	302.74	11,021.88	4,887.81	-7,039.51	14,445,690.18	1,688,154.99	39.77731077	-80.83008770
19,300.00	91.00	302.74	11,020.14	4,941.88	-7,123.61	14,445,744.25	1,688,070.89	39.77745970	-80.83038668
19,400.00	91.00	302.74	11,018.39	4,995.95	-7,207.71	14,445,798.32	1,687,986.79	39.77760863	-80.83068565
19,500.00	91.00	302.74	11,016.65	5,050.02	-7,291.81	14,445,852.39	1,687,902.68	39.77775756	-80.83098463
19,600.00	91.00	302.74	11,014.91	5,104.09	-7,375.92	14,445,906.46	1,687,818.58	39.77790649	-80.83128361
19,700.00	91.00	302.74	11,013.17	5,158.16	-7,460.02	14,445,960.54	1,687,734.48	39.77805542	-80.83158259
19,800.00	91.00	302.74	11,011.43	5,212.23	-7,544.12	14,446,014.61	1,687,650.38	39.77820435	-80.83188158
19,900.00	91.00	302.74	11,009.68	5,266.31	-7,628.23	14,446,068.68	1,687,566.27	39.77835328	-80.83218056

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,000.00	91.00	302.74	11,007.94	5,320.38	-7,712.33	14,446,122.75	1,687,482.17	39.77850221	-80.83247954
20,100.00	91.00	302.74	11,006.20	5,374.45	-7,796.43	14,446,176.82	1,687,398.07	39.77865113	-80.83277853
20,200.00	91.00	302.74	11,004.46	5,428.52	-7,880.53	14,446,230.89	1,687,313.96	39.77880006	-80.83307752
20,300.00	91.00	302.74	11,002.72	5,482.59	-7,964.64	14,446,284.96	1,687,229.86	39.77894898	-80.83337651
20,400.00	91.00	302.74	11,000.97	5,536.66	-8,048.74	14,446,339.03	1,687,145.76	39.77909791	-80.83367550
20,500.00	91.00	302.74	10,999.23	5,590.73	-8,132.84	14,446,393.10	1,687,061.66	39.77924683	-80.83397449
20,600.00	91.00	302.74	10,997.49	5,644.80	-8,216.95	14,446,447.17	1,686,977.55	39.77939575	-80.83427348
20,700.00	91.00	302.74	10,995.75	5,698.87	-8,301.05	14,446,501.24	1,686,893.45	39.77954467	-80.83457248
20,800.00	91.00	302.74	10,994.00	5,752.94	-8,385.15	14,446,555.32	1,686,809.35	39.77969359	-80.83487147
20,900.00	91.00	302.74	10,992.26	5,807.02	-8,469.25	14,446,609.39	1,686,725.25	39.77984251	-80.83517047
21,000.00	91.00	302.74	10,990.52	5,861.09	-8,553.36	14,446,663.46	1,686,641.14	39.77999143	-80.83546947
21,100.00	91.00	302.74	10,988.78	5,915.16	-8,637.46	14,446,717.53	1,686,557.04	39.78014035	-80.83576847
21,200.00	91.00	302.74	10,987.04	5,969.23	-8,721.56	14,446,771.60	1,686,472.94	39.78028927	-80.83606747
21,300.00	91.00	302.74	10,985.29	6,023.30	-8,805.66	14,446,825.67	1,686,388.84	39.78043818	-80.83636647
21,400.00	91.00	302.74	10,983.55	6,077.37	-8,889.77	14,446,879.74	1,686,304.73	39.78058710	-80.83666547
21,500.00	91.00	302.74	10,981.81	6,131.44	-8,973.87	14,446,933.81	1,686,220.63	39.78073602	-80.83696446
21,600.00	91.00	302.74	10,980.07	6,185.51	-9,057.97	14,446,987.88	1,686,136.53	39.78088493	-80.83726348
21,700.00	91.00	302.74	10,978.32	6,239.58	-9,142.08	14,447,041.95	1,686,052.42	39.78103384	-80.83756249
21,800.00	91.00	302.74	10,976.58	6,293.66	-9,226.18	14,447,096.02	1,685,968.32	39.78118276	-80.83786150
21,900.00	91.00	302.74	10,974.84	6,347.73	-9,310.28	14,447,150.10	1,685,884.22	39.78133167	-80.83816051
22,000.00	91.00	302.74	10,973.10	6,401.80	-9,394.38	14,447,204.17	1,685,800.12	39.78148058	-80.83845952
22,100.00	91.00	302.74	10,971.36	6,455.87	-9,478.49	14,447,258.24	1,685,716.01	39.78162949	-80.83875853
22,200.00	91.00	302.74	10,969.61	6,509.94	-9,562.59	14,447,312.31	1,685,631.91	39.78177840	-80.83905754
22,300.00	91.00	302.74	10,967.87	6,564.01	-9,646.69	14,447,366.38	1,685,547.81	39.78192731	-80.83935656
22,400.00	91.00	302.74	10,966.13	6,618.08	-9,730.80	14,447,420.45	1,685,463.71	39.78207622	-80.83965557
22,500.00	91.00	302.74	10,964.39	6,672.15	-9,814.90	14,447,474.52	1,685,379.60	39.78222512	-80.83995459
22,600.00	91.00	302.74	10,962.65	6,726.22	-9,899.00	14,447,528.59	1,685,295.50	39.78237403	-80.84025361
22,694.41	91.00	302.74	10,961.00	6,777.27	-9,978.40	14,447,579.64	1,685,216.10	39.78251461	-80.84053591
PBHL/TD 22694.41 MD/10961.00 TVD									

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
Blake 09 HU PBHL - plan hits target center - Point	0.00	0.00	10,961.00	6,777.27	-9,978.40	14,447,579.64	1,685,216.10	39.78251461	-80.84053591
Blake 09 HU LP - plan hits target center - Point	0.00	0.00	11,154.00	787.23	-661.41	14,441,589.61	1,694,533.07	39.76601398	-80.80741806

Database:	DB_Jul2216dt_v14	**Local Co-ordinate Reference:**	Well Blake 09 HU (slot O)
Company:	Tug Hill Operating LLC	**TVD Reference:**	GL @ 1326.00ft
Project:	Marshall County, West Virginia.	**MD Reference:**	GL @ 1326.00ft
Site:	Blake Pad	**North Reference:**	Grid
Well:	Blake 09 HU (slot O)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,200.00	1,200.00	0.00	0.00	KOP Begin 1°/100' build
1,500.00	1,499.86	1.36	-7.73	Begin 3.00° tangent
1,800.00	1,799.45	4.09	-23.20	Begin 1°/100' turn
1,929.81	1,929.09	3.80	-29.82	Begin 3.00° tangent
2,729.81	2,727.99	-7.04	-70.26	Begin 1°/100' drop
3,029.81	3,027.85	-9.07	-77.85	Begin vertical hold
8,701.95	8,700.00	-9.07	-77.85	Begin 2°/100' build
9,289.30	9,283.24	50.65	-83.66	Begin 11.75° tangent
10,569.60	10,536.73	310.08	-106.90	Begin 8°/100' build/turn
11,616.32	11,154.00	787.23	-661.41	Begin 91.00° lateral
22,694.41	10,961.00	6,777.27	-9,978.40	PBHL/TD 22694.41 MD/10961.00 TVD

Area of Review

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

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

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases

2. Farm Maps

3. Topo Maps: Recent and older (contact WVGES)

4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (03/18/2019) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer

2. Map with Farm lines overlain and any well spots identified on Farm Maps

3. More recent (1970s vintage) topos and older topos

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

4705102203

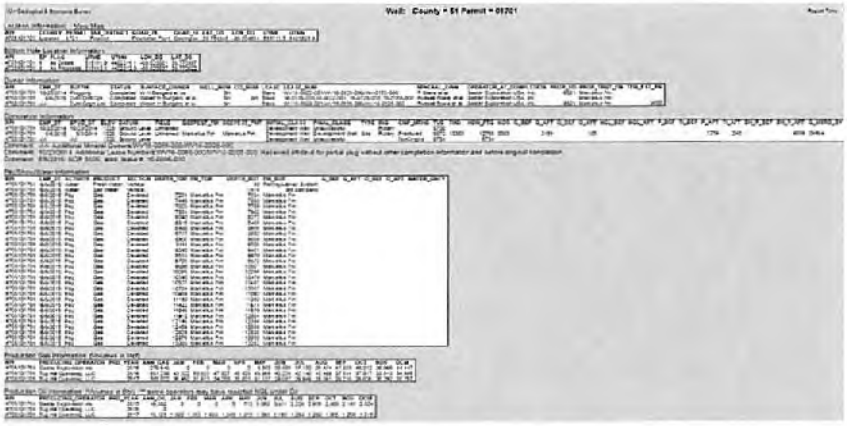
Permit well - Blake N-9HU

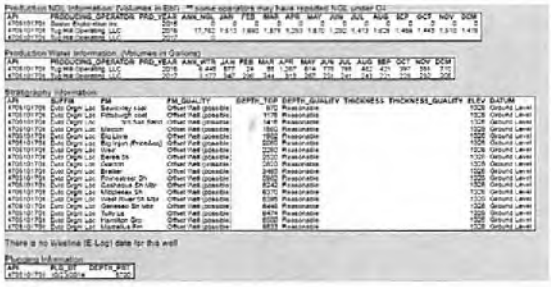
Wells within 500' Buffer

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

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
4705101701	Tug Hill Operating	13,355' TMD 6,572' TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101698	Tug Hill Operating	12,673' TMD 6,562' TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101766	Tug Hill Operating	18,102' TMD 11,131' TVD	Point Pleasar	None	Yes, existing Point Pleasant producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705170806	Unknown	Unknown	Unknown	Unknown	Uknown but unlikley. The well likley represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
7405101018	CNX	N/A	N/A	N/A	No	Cancelled location
4705170803	Manufactures Light & Heat Co.	Unknown	Unknown	Unknown	Uknown but unlikley. The well likley represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
4705102053	Tug Hill Operating	6,650' TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705102048	Tug Hill Operating	6,643 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101539	Tug Hill Operating	11,480 TMD 6,488 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705102052	Tug Hill Operating	6,647 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705102054	Tug Hill Operating	6,647 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705102049	Tug Hill Operating	6,645 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101922	Tug Hill Operating	6,284 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101921	Tug Hill Operating	6,284 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101920	Tug Hill Operating	13,581 TMD 6,192 TVD	Marcellus	None	No,Marcellus producer > 1,000' above the Point Pleasant. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101017	CNX	N/A	N/A	N/A	No	Cancelled location

4705102203





There is no Wireline IE Log1 data for this well

4705102203

Well: County = 51 Permit = 01498

Location Information: [illegible]

[illegible]

Bottom Hole Location Information:

[illegible]

Owner Information:

[illegible]

Completion Information:

[illegible]

Pay/Show/Water Information:

[illegible]

Production Gas Information: (Volumes in Mcf)

[illegible]

Production Oil Information: (Volumes in Bbl)

[illegible]

Production NGL Information: (Volumes in Bbl)

[illegible]

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101498	Tug Hill Operating, LLC	2016	8,002	0	0	39	802	747	701	813	720	660	600	597	881
4705101498	Tug Hill Operating, LLC	2017	4,245	517	297	545	505	597	575	540	355	477	562	405	375

Stratigraphy Information

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705101498	Orig Loc	Sewickley coal	Offset Well (possible)	870	Reasonable			1326	Ground Level
4705101498	Orig Loc	Pittsburgh coal	Offset Well (possible)	1175	Reasonable			1326	Ground Level
4705101498	Orig Loc	3rd Salt Sand	Offset Well (possible)	1415	Reasonable			1326	Ground Level
4705101498	Orig Loc	Maxton	Offset Well (possible)	1585	Reasonable			1326	Ground Level
4705101498	Orig Loc	Big Lime	Offset Well (possible)	1902	Reasonable			1326	Ground Level
4705101498	Orig Loc	Big Injun (Price&eq)	Offset Well (possible)	2000	Reasonable			1326	Ground Level
4705101498	Orig Loc	Weir	Offset Well (possible)	2260	Reasonable			1326	Ground Level
4705101498	Orig Loc	Berea Ss	Offset Well (possible)	2620	Reasonable			1326	Ground Level
4705101498	Orig Loc	Gordon	Offset Well (possible)	3005	Reasonable			1326	Ground Level
4705101498	Orig Loc	Benson	Offset Well (possible)	3463	Reasonable			1326	Ground Level
4705101498	Orig Loc	Rhinestreet Sh	Offset Well (possible)	5962	Reasonable			1326	Ground Level
4705101498	Orig Loc	Cashaqua Sh Base	Offset Well (possible)	6287	Reasonable			1326	Ground Level
4705101498	Orig Loc	Middlesex Sh	Offset Well (possible)	6372	Reasonable			1326	Ground Level
4705101498	Orig Loc	West River Sh	Offset Well (possible)	6395	Reasonable			1326	Ground Level
4705101498	Orig Loc	Geneseo Sh	Offset Well (possible)	6445	Reasonable			1326	Ground Level
4705101498	Orig Loc	Tully Ls	Offset Well (possible)	6474	Reasonable			1326	Ground Level
4705101498	Orig Loc	Hamilton Grp	Offset Well (possible)	6500	Reasonable			1326	Ground Level
4705101498	Orig Loc	Marcellus Fm	Offset Well (possible)	6531	Reasonable			1326	Ground Level

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

There is no Plugging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 01798

Location Information: [illegible]

[illegible]

Bottom Hole Location Information:

[illegible]

Owner Information:

[illegible]

Completion Information:

[illegible]

Pay/Show/Water Information:

[illegible]

Production Gas Information: (Volumes in Mcf)

[illegible]

Production Oil Information: (Volumes in Bbl)

[illegible]

4705102203

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

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
[illegible]	Dozier Exploration Inc.	2015	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	Tug Hill Operating, LLC	2016	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	Tug Hill Operating, LLC	2017	0												

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
[illegible]	Tug Hill Operating, LLC	2016	14,733	0	0	164	1,616	2,080	1,301	1,346	1,768	1,334	1,405	1,201	1,339
[illegible]	Tug Hill Operating, LLC	2017	9,002	1,106	802	1,094	981	882	631	710	741	882	720	721	[illegible]

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
[illegible]	Dvtd Orgnl Loc	Sewickley coal	Well Record	870	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Pittsburgh coal	Well Record	1176	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	3rd Salt Sand	Well Record	1416	Reasonable	50	Reasonable	[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	[illegible]	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Big Lime	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Greenbrier Group	WVGES Staff Geologist	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Big Injun (Price&eq)	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Weir	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Berea Ss	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Gordon	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Benson	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Java, Pipe Creek	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Rhinestreet Sh	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Cashaqua Sh Mbr	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Middlesex Sh	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	West River Sh Mbr	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Geneseo Sh Mbr	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Tully Ls	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Hamilton Grp	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Marcellus Fm	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Onondaga Ls	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Oriskany	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Helderberg	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Bass Islands Dol	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Salina	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	McKenzie Fm	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Rose Hill Fm	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Clinton Group	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Tuscarora Ss	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Queenston Sh	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Reedsville Sh	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Utica Sh	Well Record	[illegible]	Reasonable			[illegible]	Ground Level
[illegible]	Dvtd Orgnl Loc	Pt Pleasant Fm	Well Record	[illegible]	Reasonable			[illegible]	Ground Level

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

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey

Well: County = 51 Permit = 70806

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
[illegible]	Marshall	70806	Franklin	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	unclassified	unclassified	[illegible]	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey

Well: County = 51 Permit = 01018

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
[illegible]	Marshall	1018	Franklin	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey

Well: County = 51 Permit = 70803

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
[illegible]	Marshall	70803	Franklin	Powhatan Point	Clarington	[illegible]	[illegible]	[illegible]	[illegible]

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
[illegible]	---		unknown	[illegible]		[illegible]				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
[illegible]	---	---						unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 02050

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 02048

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

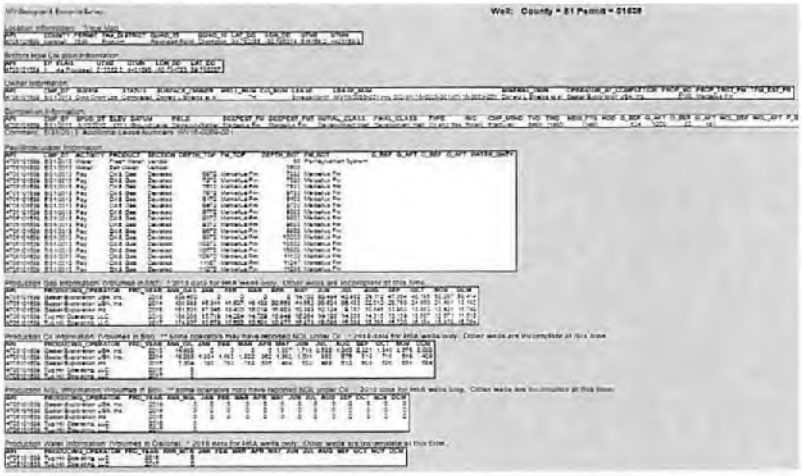
There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well



Well: County = 51 Permit = 01628

Well: County = 51 Permit = 02052

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

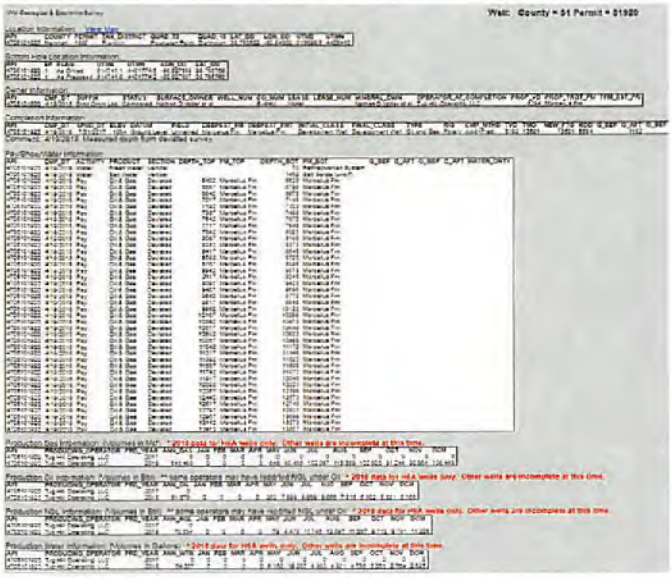
Well: County = 51 Permit = 02051

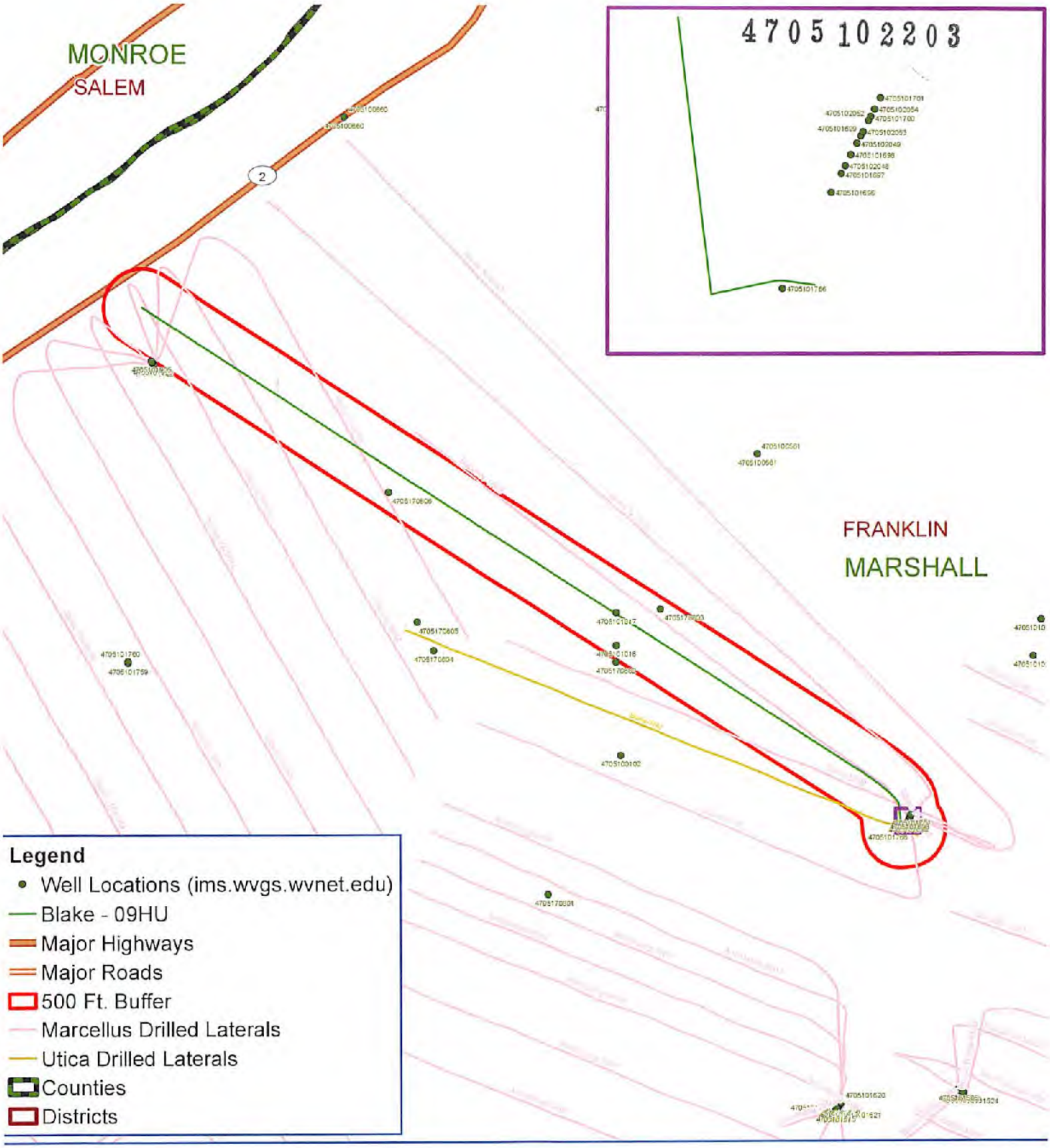
There is no Pay data for this well
There is no Production Gas data for this well
There is no Production Oil data for this well ** some operators may have reported NGL under Oil
There is no Production NGL data for this well ** some operators may have reported NGL under Oil
There is no Production Water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

Well: County = 51 Permit = 02049

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

4705102203





Blake - 09HU
Franklin District
Marshall County, WV

0 650 1,300 2,600 Feet

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

Map Created: March 18, 2019

N
W
S

Map Prepared by:
DPS LAND SERVICES

4705102203

WW-9
(4/16)

API Number 47 - 051 -

Operator's Well No. Blake 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) Fish Creek - Ohio River (Undefined) 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 water for frac and flow back water

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature James A. Pancake

Company Official (Typed Name) James Pancake

Company Official Title Vice President - Geoscience

RECEIVED
Office of Oil and Gas
APR 3 2019
WV Department of
Environmental Protection

Subscribed and sworn before me this 27 day of NOVEMBER , 20 18

Maureen A Stead Notary Public

My commission expires 1/28/19

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
MAUREEN A STEAD
Notary Public
CECIL TWP, WASHINGTON COUNTY
My Commission Expires Jan 28, 2019

4705 102203

Form WW-9

Operator's Well No. Blake N-9HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 20.72 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: Jim Nicholson

Comments:

Title: Oil and Gas Inspector Date: 11/29/18

Field Reviewed? (✓) Yes ( ) No

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Office of Oil and Gas
APR 3 2019
WV Department of
Environmental Protection

47 05 * 02203

TUG HILL OPERATING

Well Site Safety Plan

Tug Hill Operating, LLC

11/29/18

Well Name: Blake N-9HU

Pad Location: Blake

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING - 4,401,565.37

EASTING - 516,696.31

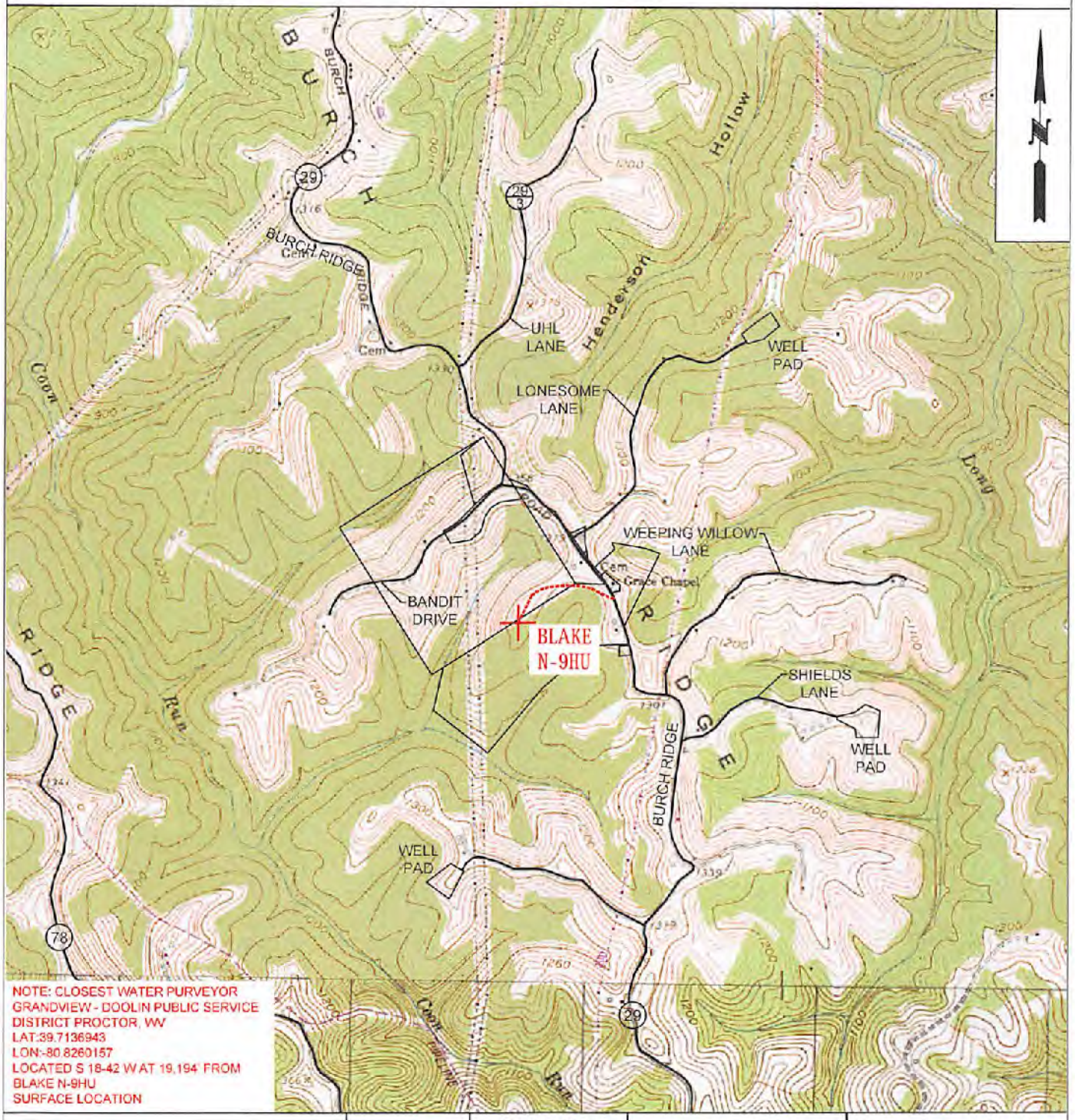
November 2018

4705102203

WW-9

PROPOSED
BLAKE N-9HU

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

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

4705102203

WW-9

PROPOSED BLAKE N-9HU

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.

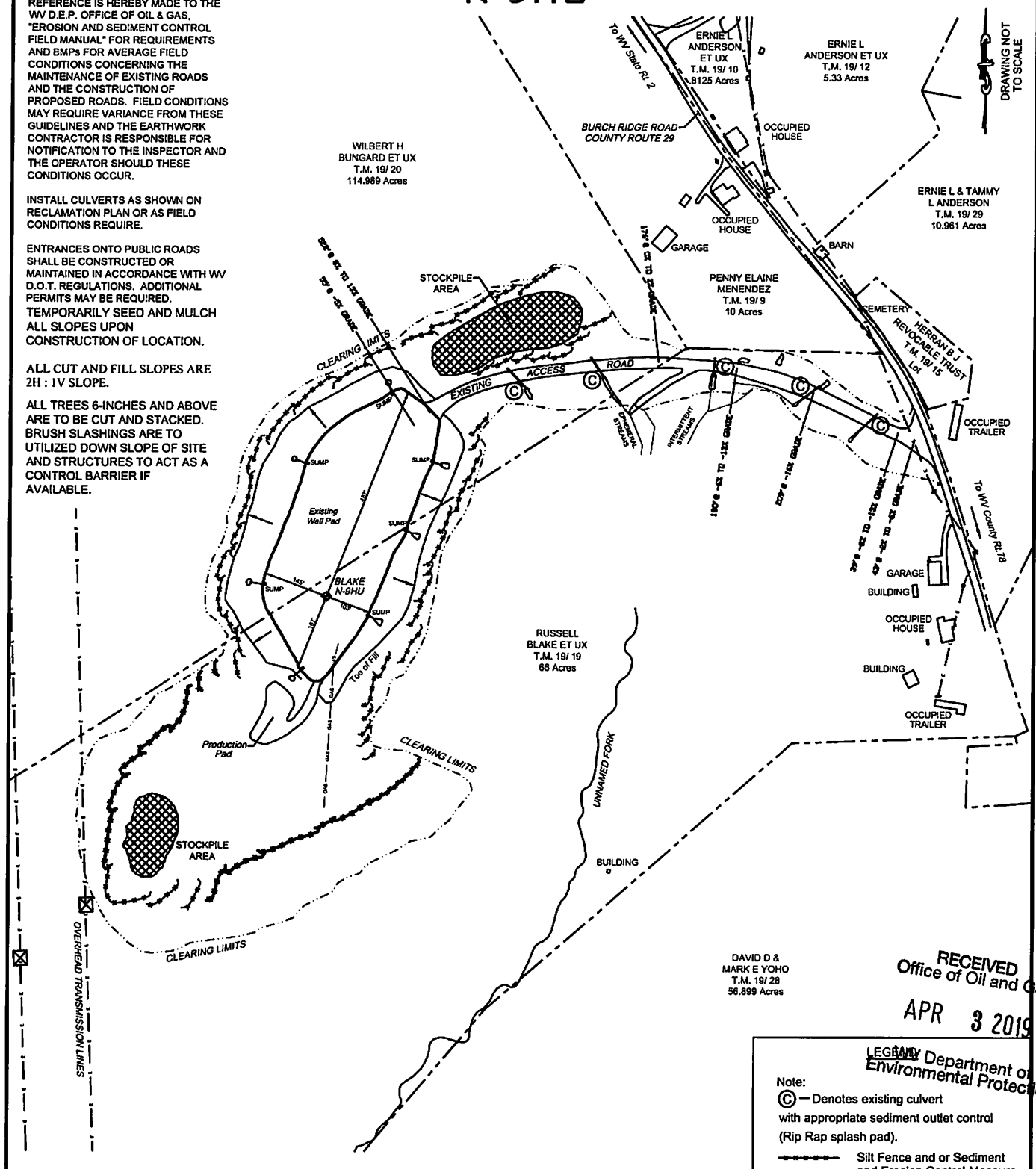
INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

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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APR 3 2019
WV Department of Environmental Protection

LEGEND

Note:
© — 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.

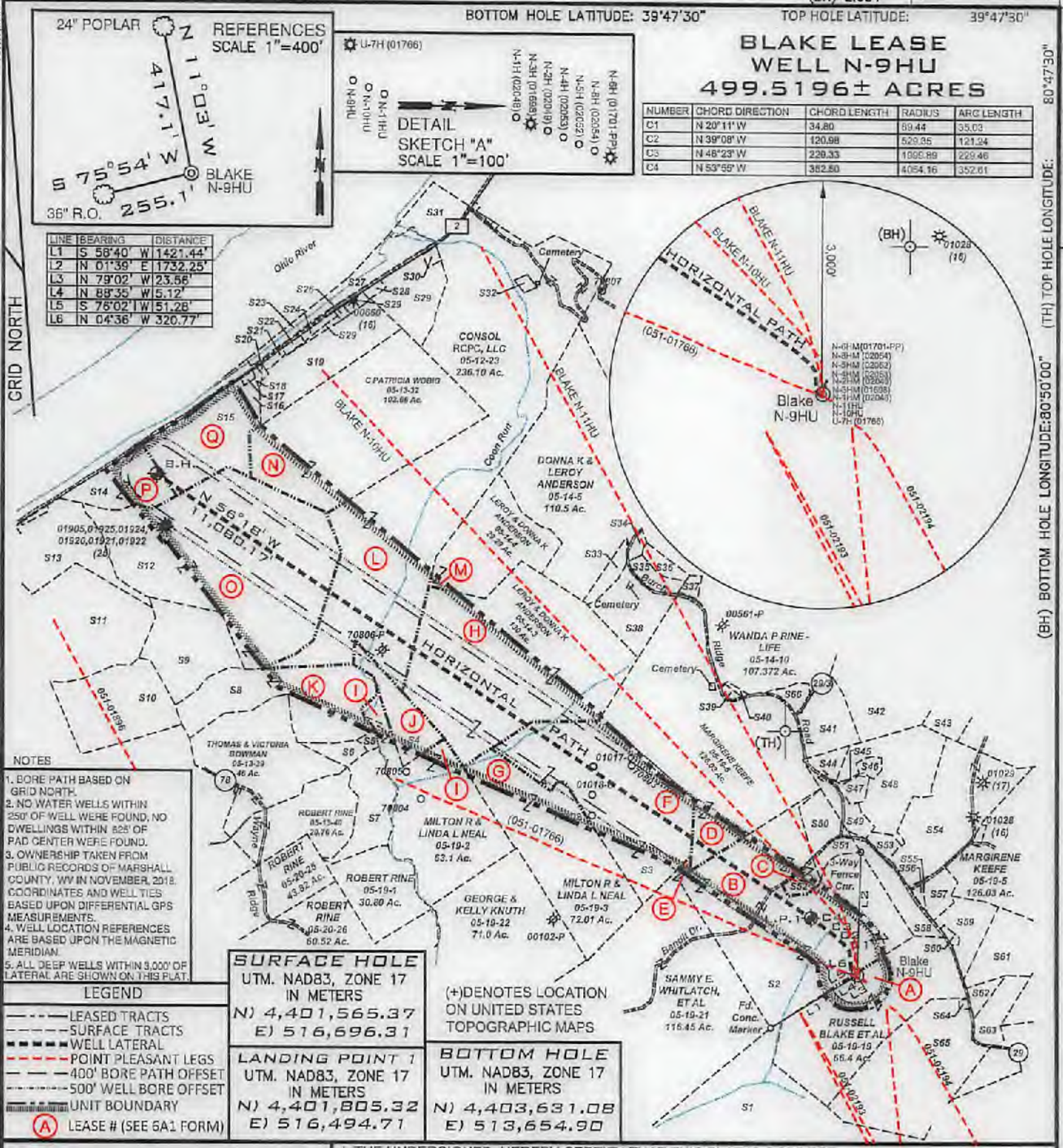
form WW6

(BH) 2,084' (TH) 3,815'

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

BLAKE LEASE
WELL N-9HU
499.5196± ACRES

NUMBER	CHORD DIRECTION	CHORD LENGTH	RADIUS	ARC LENGTH
C1	N 20°11' W	34.80	99.44	35.03
C2	N 39°08' W	120.98	529.35	121.24
C3	N 46°23' W	228.33	1099.99	229.46
C4	N 53°55' W	352.80	4054.16	352.61



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 NOVEMBER, 2018. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
5. ALL DEEP WELLS WITHIN 3,000' OF LATERAL ARE SHOWN ON THIS PLAT.

LEGEND
- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- 400' BORE PATH OFFSET
- 500' WELL BORE OFFSET
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

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) 516,494.71

BOTTOM HOLE
UTM, NAD83, ZONE 17
IN METERS
N) 4,403,631.08
E) 513,654.90

(+)DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

FILE NUMBER
DRAWING NUMBER BLAKE_N-9HU REV 1
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

P.S. 708

David L Jackson

DAVID JACKSON LICENSED NO. 708 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

SEAL

STATE OF WEST VIRGINIA MOUNTAIN STATE LIBERTY

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

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

DATE: APRIL 01, 2019
OPERATORS WELL NO. BLAKE N-9HU
API WELL NO.

6A

47 — 051 — 02203
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___

LOCATION ELEVATION 1326.0' WATERSHED (HUC 10) FRENCH CREEK – OHIO RIVER
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

COUNTY NAME

SURFACE OWNER RUSSELL BLAKE, ET AL ACREAGE 66.0
OIL & GAS ROYALTY OWNER RUSSELL BLAKE, ET AL LEASE ACREAGE 66.0
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) ___
PLUG & ABANDON ___ CLEAN OUT & REPLUG ___

PERMIT

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,376' TMD: 22,694'
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

47-051-02203 H6A -Dcp

form ww6

BLAKE LEASE
WELL N-9HU
499.5196 ± ACRES

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	05–22–04	CONSOL RCPC, LLC	159.05
S2 B	05–19–20	WILBERT H. BUNGARD ET UX	114.989
S3 F	05–19–04	JUSTIN RINE	82.75
S4 J	05–14–02	JOHN B. WILLIAMS, ET AL	20.17
S5	05–13–41C	BENTON DARRAH, LILLIE MAY DUGAN, ALMA BITMER, ALBERTA PALMER & AUDREY HOWARD	1.0
S6	05–13–41B	LARRY & JUDY DARRAH	2.50
S7	05–13–41A	RODNEY & RHONDA JACKSON	17.05
S8 K	05–13–42	THOMAS & VICTORIA BOWMAN	45.0
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
S12 O	05–13–33	NATHAN D. YODER	142.03
S13	05–13–25	AARON PAUL HOLDREN, ET UX	30.0
S14 P	05–13–27	AARON PAUL HOLDREN, ET UX	25.0
S15 Q	05–13–28	AARON PAUL HOLDREN, ET UX	17.0
S16	05–13–30	CINDY D. ALIFF	3.0
S17	05–13–28.1	CINDY D. ALIFF	1.80
S18	05–13–29	W.V. DEPT. OF HIGHWAYS	1.0
S19	05–13–31	CNX LAND RESOURCES, INC.	31.723
S20	05–13–31.1	W.V. DEPT. OF HIGHWAYS	0.277
S21	05–13–31.2	CNX LAND RESOURCES, INC.	0.938
S22	05–12–27	CONSOL RCPC, LLC.	0.67
S23	05–12–26	OHIO RIVER R.R. CO.	4.00
S24	05–12–28	W.V. DEPT. OF HIGHWAYS	1.1
S26	05–12–24.2	W.V. DEPT. OF HIGHWAYS	0.539
S27	05–12–25	OHIO RIVER R.R. CO.	12.8
S28	05–12–24	W.V. DEPT. OF HIGHWAYS	0.964
S29	05–12–24.3	CONSOL RCPC, LLC.	18.523
S30	05–12–24.1	W.V. DEPT. OF HIGHWAYS	0.994
S31	05–12–23.2	CONSOLIDATION COAL COMPANY MURRAY ENERGY & CONSOL RCPC, LLC.	12.50
S32	05–12–22	CONSOL RCPC, LLC.	0.944
S33	05–14–07	DONNA K. & LEROY ANDERSON	4.60
S34	05–14–16	GEORGE A. KNUTH	1.6386
S35	05–14–9.3	VERNIE A. RINE, ET UX	4.118
S36	05–14–9.4	VERNIE A. RINE, ET UX	3.404
S37	05–14–10.3	VERNIE 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, ET AL	135.100
S43	05–14–14	ROBERT L. SHIELDS, ET AL	29.05
S44	05–19–06	BELINDA K. MEADOWS, REBECCA ANN SHIELDS & OLAN RUTAN	5.1099
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	05–19–7	OLAN V. RUTAN, ET UX	32.4801
S49	05–19–7.1	ROBERT L. SHIELDS, ET AL	3.399
S50	05–19–20.2	CASANDRA L. HARMON	7.448
S51	05–19–20.1	JOHN J. EBERT, LIFE	3.848
S52 C	05–19–20.3	SIDNEY HARMON	3.715
S53	05–19–7.5	ADAM T. & JESSE L. ROBINSON	2.640
S54	05–19–8	CONSOL RCPC, LLC	40
S55	05–19–11	ERNIE L. ANDERSON, ET UX	0.08
S56	05–19–10	ERNIE L. ANDERSON, ET UX	0.8125
S57	05–19–12	ERNIE L. ANDERSON, ET UX	5.33
S58	05–19–09	PENNY ELAINE MENENDEZ	10.44
S59	05–19–29	ERNIE L. & TAMMY L. ANDERSON	10.961
S60	05–19–15	B.J. HERRAN REVOCABLE TRUST	0.177
S61	05–19–30	ERNIE & 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. BURCH ET AL - TRUSTEES	0.397
S65	05–19–28	DAVID E. YOHO & MARK E. YOHO	56.899
S66	05–14–10.4	ADAM R. & JESSE L. ROBINSON	3.343

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 JACKSON LICENSED NO. 708 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

4705102203

P.S. 708 David L Jackson

4705102203

TUG HILL OPERATING

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

WELL PLAT

PAGE 2 OF 3

DATE: 04/01/2019

form ww6

PG 3OF 3

BLAKE LEASE
WELL N-9HU
499.5196 ± ACRES

Lease No.	Tag	Parcel	Grantor, Lessor, etc.	Book	Pg
10*14634	A	5-19-19	RUSSELL BLAKE & MARY BLAKE	773	568
10*14141	B	5-19-20	DAVID TAKACH AND WIFE DEBORAH	720	233
10*14141	C	5-19-20.3	DAVID TAKACH AND WIFE DEBORAH	720	233
10*14925	D	5-19-5	MOUNTAIN TOP PRODUCTIONS LLC	840	444
10*14100	E	5-19-21	SAMMY EDWARD WHITLATCH	665	369
10*14101	E	5-19-21	RICHARD P WHITLATCH	665	366
10*14102	E	5-19-21	GLORIA TERRILL	698	633
10*14103	E	5-19-21	ROSE R DAUGHERTY AND JAMES N	698	635
10*14104	E	5-19-21	GLENNA ANDERSON AND DALE ANDERSON	698	625
10*14105	E	5-19-21	WENDELL RINE AND CAROLYN RINE	698	627
10*14106	E	5-19-21	GARY E RINE	698	629
10*14107	E	5-19-21	ARCHIE WAYNE WHIPKEY	698	631
10*14108	E	5-19-21	LOIS M MYERS	698	637
10*14612	F	5-19-4	HAYHURST COMPANY	708	107
10*14613	F	5-19-4	CHESTNUT HOLDINGS INC	827	556
10*14023	G	5-19-3	MILTON R. NEAL AND WIFE, LINDA	665	503
10*14568	H	5-14-3	LEROY ANDERSON & DONNA K ANDERSON	772	69
10*14040	I	5-19-2	MILTON R NEAL AND WIFE LINDA L	665	498
10*14041	I	5-19-2	SHIBEN ESTATES INC	718	496
10*14908	J	5-14-2	MICHAEL WILLIAMS	816	14
10*14909	J	5-14-2	JULIA GRIEWANK	816	346
10*14526	K	5-13-42	THOMAS WILLIAM BOWMAN	761	432
10*14527	K	5-13-42	VICTORIA BOWMAN	761	434
041112	L	5-12-23	COLUMBIAN CHEMICALS COMPANY	691	353
10*14568	M	5-14-4	LEROY ANDERSON & DONNA K ANDE	772	69
10*16609	N	5-13-32	C PATRICIA WOBIG	916	118
10*16610	N	5-13-32	RICHARD B SMITH SR AND EVELYN MARIE SMITH	916	120
10*14701	O	5-13-33	ROSEITA THORNTON	885	600
10*14702	O	5-13-33	BOUNTY MINERALS LLC	708	71
10*17627	O	5-13-33	NATHAN D YODER	917	62
10*16538	P	5-13-27	AMP FUND III LP	915	187
10*14635	Q	5-13-28	COMMERCIAL OPTICAL MANUFACTURING INC	775	21
10*14636	Q	5-13-28	WANDA RIDING	794	503
10*14637	Q	5-13-28	KIMBERLY S. DENNY	794	511
10*14638	Q	5-13-28	HUGH YOHO	794	478
10*14639	Q	5-13-28	GARY PARSONS	794	521
10*14640	Q	5-13-28	SHERRI SNYDER	799	545
10*14641	Q	5-13-28	LORA LANGLEY	800	521
10*14642	Q	5-13-28	MARY B. FERRIS BY ALF REBECCA R. FERRIS SULLIVAN	808	457
10*14643	Q	5-13-28	MARTHA RENEE ROBINSON	809	541
10*14644	Q	5-13-28	CHERYL HILL	809	517
10*14645	Q	5-13-28	RANDY BERISFORD	810	328
10*14647	Q	5-13-28	JAMES W ROBINSON III	836	102
10*14648	Q	5-13-28	LORI ANN ROBINSON	836	104
10*14649	Q	5-13-28	DONALD GARY GROVES II	842	382
10*14650	Q	5-13-28	TIMOTHY DWIGHT GROVES	842	384
10*14651	Q	5-13-28	DAVID V CALDWELL	842	386
10*14652	Q	5-13-28	CANDICE GUTIERREZ	842	388
10*14653	Q	5-13-28	KRISTIN DOUGLAS	842	390
10*14942	Q	5-13-28	AARON PAUL HOLDREN	720	132
10*18373	Q	5-13-28	SARAH K SCHNEIDER AND DANIEL K SCHNEIDER	931	391
10*18375	Q	5-13-28	DENNIS D CALDWELL AND APRIL N CALDWELL	931	394

DAVID JACKSON
LICENSED
NO. 708
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

P.S. 708

David L Jackson

TUG HILL OPERATING

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

WELL PLAT
PAGE 3 OF 3
DATE: 04/01/2019

4705102203

WW-6A1
(5/13)

Operator's Well No. Blake N-9HM

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

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

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

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

*See attached pages

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

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

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

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

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

WW-6A1 Supplement

Blake N 9HU

Lease No.	Tag	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14634	A	5-19-19	RUSSELL BLAKE & MARY BLAKE	GASTAR EXPLORATION USA, INC	1/8+	773	568	NA	NA	NA	NA	28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14141	B	5-19-20	DAVID TAKACH AND WIFE DEBORAH	GASTAR EXPLORATION USA, INC	1/8+	720	233	NA	NA	NA	NA	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14141	C	5-19-20.3	DAVID TAKACH AND WIFE DEBORAH	GASTAR EXPLORATION USA, INC	1/8+	720	233	NA	NA	NA	NA	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14925	D	5-19-5	MOUNTAIN TOP PRODUCTIONS LLC	GASTAR EXPLORATION INC	1/8+	840	444	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14100	E	5-19-21	SAMMY EDWARD WHITLATCH	GASTAR EXPLORATION USA, INC	1/8+	665	369	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14101	E	5-19-21	RICHARD P WHITLATCH	GASTAR EXPLORATION USA, INC	1/8+	665	366	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14102	E	5-19-21	GLORIA TERRILL	GASTAR EXPLORATION USA, INC	1/8+	698	633	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14103	E	5-19-21	ROSE R DAUGHERTY AND JAMES N	GASTAR EXPLORATION USA, INC	1/8+	698	635	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14104	E	5-19-21	GLENNA ANDERSON AND DALE ANDERSON	GASTAR EXPLORATION USA, INC	1/8+	698	625	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14105	E	5-19-21	WENDELL RINE AND CAROLYN RINE	GASTAR EXPLORATION USA, INC	1/8+	698	627	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14106	E	5-19-21	GARY E RINE	GASTAR EXPLORATION USA, INC	1/8+	698	629	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14107	E	5-19-21	ARCHIE WAYNE WHIPKEY	GASTAR EXPLORATION USA, INC	1/8+	698	631	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14108	E	5-19-21	LOIS M MYERS	GASTAR EXPLORATION USA, INC	1/8+	698	637	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC

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10*14612	F	5-19-4	HAYHURST COMPANY	CHESAPEAKE APPALACHIA, LLC	1/8+	708	107	NA	NA	NA	NA	27/321 Chesapeake Appalachia, LLC and Statoil USA Onshore Properties, Inc to Gastar Exploration USA, Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14613	F	5-19-4	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827	556	NA	NA	NA	NA	NA	32/428 Gastar Exploration Inc to Atinum Marcellus I, LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14023	G	5-19-3	MILTON R. NEAL AND WIFE, LINDA	GASTAR EXPLORATION USA, INC	1/8+	665	503	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration, Inc Certificate of Merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14568	H	5-14-3	LEROY ANDERSON & DONNA K ANDERSON	GASTAR EXPLORATION USA, INC	1/8+	772	69	NA	NA	NA	NA	27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14040	I	5-19-2	MILTON R NEAL AND WIFE LINDA L	GASTAR EXPLORATION USA, INC	1/8+	665	498	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14041	I	5-19-2	SHIBEN ESTATES INC	GASTAR EXPLORATION USA, INC	1/8+	718	496	NA	NA	NA	NA	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14908	J	5-14-2	MICHAEL WILLIAMS	GASTAR EXPLORATION USA, INC	1/8+	816	14	NA	NA	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	31/184 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14909	J	5-14-2	JULIA GRIEWANK	GASTAR EXPLORATION USA, INC	1/8+	816	346	NA	NA	NA	NA	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	31/184 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14526	K	5-13-42	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA, INC	1/8+	761	432	NA	NA	NA	NA	27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14527	K	5-13-42	VICTORIA BOWMAN	GASTAR EXPLORATION USA, INC	1/8+	761	434	NA	NA	NA	NA	27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
041112	L	5-12-23	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: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*14568	M	5-14-4	LEROY ANDERSON & DONNA K ANDE	GASTAR EXPLORATION USA, INC	1/8+	772	69	NA	NA	NA	NA	NA	27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*16609	N	5-13-32	C PATRICIA WOBIG	TH EXPLORATION, LLC	1/8+	916	118	NA	NA	NA	NA	NA	NA	NA

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10*16610	N	5-13-32	RICHARD B SMITH SR AND EVELYN MARIE SMITH	TH EXPLORATION, LLC	1/8+	916	120	NA	NA	NA	NA	NA	NA	NA
10*14701	O	5-13-33	ROSEITA THORNTON	GASTAR EXPLORATION INC	1/8+	885	600	NA	NA	NA	NA	NA	35/575 Gastar Exploration Inc to Atinum Marcelius I, LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14702	O	5-13-33	BOUNTY MINERALS LLC	CHESAPEAKE APPALACHIA, LLC	1/8+	708	71	NA	NA	NA	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA, INC and Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*17627	O	5-13-33	NATHAN D YODER	TH EXPLORATION, LLC	1/8+	917	62	NA	NA	NA	NA	NA	NA	NA
10*16538	P	5-13-27	AMP FUND III LP	TH EXPLORATION, LLC	1/8+	915	187	NA	NA	NA	NA	NA	NA	NA
10*14635	Q	5-13-28	COMMERCIAL OPTICAL MANUFACTURING INC	GASTAR EXPLORATION USA, INC	1/8+	775	21	NA	NA	NA	NA	28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14636	Q	5-13-28	WANDA RIDING	GASTAR EXPLORATION USA, INC	1/8+	794	503	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14637	Q	5-13-28	KIMBERLY S. DENNY	GASTAR EXPLORATION USA, INC	1/8+	794	511	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14638	Q	5-13-28	HUGH YOHO	GASTAR EXPLORATION USA, INC	1/8+	794	478	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14639	Q	5-13-28	GARY PARSONS	GASTAR EXPLORATION USA, INC	1/8+	794	521	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14640	Q	5-13-28	SHERRI SNYDER	GASTAR EXPLORATION USA, INC	1/8+	799	545	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14641	Q	5-13-28	LORA LANGLEY	GASTAR EXPLORATION USA, INC	1/8+	800	621	NA	NA	NA	806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	30/136 Gastar Exploration USA, Inc to Atinum Marcellus LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14642	Q	5-13-28	MARY B. FERRIS BY AIF REBECCA R. FERRIS SULLIVAN	GASTAR EXPLORATION USA, INC	1/8+	808	457	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC

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10*14643	Q	5-13-28	MARTHA RENEE ROBINSON	GASTAR EXPLORATION USA, INC	1/8+	809	541	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14644	Q	5-13-28	CHERYL HILL	GASTAR EXPLORATION USA, INC	1/8+	809	517	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14645	Q	5-13-28	RANDY BERISFORD	GASTAR EXPLORATION USA, INC	1/8+	810	328	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14647	Q	5-13-28	JAMES W ROBINSON III	GASTAR EXPLORATION INC	1/8+	836	102	NA	NA	NA	NA	NA	32/428 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14648	Q	5-13-28	LORI ANN ROBINSON	GASTAR EXPLORATION INC	1/8+	836	104	NA	NA	NA	NA	NA	32/428 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14649	Q	5-13-28	DONALD GARY GROVES II	GASTAR EXPLORATION USA, INC	1/8+	842	382	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14650	Q	5-13-28	TIMOTHY DWIGHT GROVES	GASTAR EXPLORATION INC	1/8+	842	384	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14651	Q	5-13-28	DAVID V CALDWELL	GASTAR EXPLORATION INC	1/8+	842	386	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14652	Q	5-13-28	CANDICE GUTIERREZ	GASTAR EXPLORATION INC	1/8+	842	388	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14653	Q	5-13-28	KRISTIN DOUGLAS	GASTAR EXPLORATION INC	1/8+	842	390	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14942	Q	5-13-28	AARON PAUL HOLDREN	TRIENERGY HOLDINGS, LLC	1/8+	720	132	24/430 TriEnergy Holdings, LLC to NPAR, LLC	756/332 NPAR, LLC to Chevron USA InC	28/284 TriEnergy Holdings, LLC and TriEnergy, Inc to WPP LLC	28/356 TriEnergy Holdings, LLC and TriEnergy Inc to Chevron USA Inc	32/355 Chevron USA Inc to Gastar Exploration Inc and Atinum Marcellus I LLC	32/370 Chevron USA Inc to Gastar Exploration Inc and Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*18373	Q	5-13-28	SARAH K SCHNEIDER AND DANIEL K SCHNEIDER	TH EXPLORATION, LLC	1/8+	931	391	NA	NA	NA	NA	NA	NA	NA
10*18375	Q	5-13-28	DENNIS D CALDWELL AND APRIL N CALDWELL	TH EXPLORATION, LLC	1/8+	931	394	NA	NA	NA	NA	NA	NA	NA

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STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

Jan Pest
MARSHALL County 03:44:28 PM
Instrument No 1416299
Date Recorded 10/19/2016
Document Type MIS
Pages Recorded 1
Book-Page 28-62
Recording Fee $5.00
Additional $6.00

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STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish.

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

ROBIN BOCK
Notary Public, State of Texas
Comm. Expires 10-05-2020
Notary ID 129163360

My Commission Expires: 10-05-2020

Signature/Notary Public: Robin Bock

Name/Notary Public (Print): Robin Bock

RECEIVED
Office of Oil and Gas
APR 3 2019
WV Department of
Environmental Protection

Jan Pest
MARSHALL County 01:22:38 PM
Instrument No 1403489
Date Recorded 04/27/2016
Document Type ASN
Pages Recorded 77
Book-Page 36-9
Recording Fee $77.00
Additional $13.00

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WHEN RECORDED RETURN TO:
TH Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF MARSHALL §

THIS ASSIGNMENT AND BILL OF SALE (this "*Assignment*"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "*Effective Time*"), is between Gastar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("*Assignor*"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South 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 Purchase and Sale Agreement (the "*Purchase Agreement*"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

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, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in *subsections (a)* through *(b)* of this Section 1, less and except the Excluded Assets, collectively, the "*Conveyed Interests*"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzel, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "*Leases*");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANONSBURG PA 15317-5841

BOOK 0988 PAGE 0286

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MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

This Memorandum of Operating Agreement and Financing Statement (hereinafter referred to as "Memorandum") is executed to be effective concurrently with that certain Operating Agreement (the "Operating Agreement") by and between TH Exploration, LLC, as Operator, and HG Energy II Appalachia, LLC and TH Exploration II, LLC, as Non-Operators, covering, among other things, the development and production of crude oil, natural gas and associated substances from the leases (hereinafter called the "Contract Area") described on Exhibit "A-1" and Exhibit "A-2" attached hereto and owned by Operator and Non-Operator in the respective percentages of shares indicated on Exhibit "A" to the Operating Agreement.

The Operating Agreement contains an Accounting Procedure, along with provisions giving the parties hereto mutual liens and security interests where one or more parties hereto are or may become Debtors to one or more other parties hereto. This Memorandum incorporates by reference all of the terms and conditions of the Operating Agreement, including but not limited to the lien and security interest provisions.

The purpose of this Memorandum is to place third parties on notice of the Operating Agreement, and to secure and perfect the mutual liens and security interests of the parties hereto.

The Operating Agreement specifically provides and the parties do hereby confirm and agree that:

1. The Operator shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of, the Operating Agreement.

2. The liability of the parties under the Operating Agreement shall be several, not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for its proportionate share of costs.

3. Each Non-Operator grants to Operator a lien upon its oil and gas rights, oil and gas leases and mineral interests in the Contract Area, and a security interest in its share of oil and/or gas when extracted and its interest in all fixtures, inventory, personal property and equipment located on or used on the Contract Area and in all its contract rights and receivables related thereto and arising therefrom to secure payment of its present and future share of costs and expenses, together with interest thereon at the rate provided in the Accounting Procedure referred to above. To the extent that Operator has a security interest under the Uniform Commercial Code ("Code") of the state or states in which the Contract Area is located, Operator without prejudice and in addition to all other legal, equitable and contractual remedies which are expressly reserved, shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the rights or security interests for the payment thereof.

4. The Operator grants to Non-Operator a lien and security interest equivalent to that granted to Operator as described in Paragraph 3 above, to secure payment by Operator of its own share of costs and expenses when due.

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TUG HILL

March 29, 2019

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

RE: Blake N-9HU

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Blake N-9HU well plat.

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 amiller@tug-hillop.com.

Sincerely,

Amy L. Miller
Permitting Specialist – Appalachia Region

WW-6AC
(1/12)

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

4705102203

Date of Notice Certification: 03/29/2019

API No. 47- 051 -
Operator's Well No. Blake 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:	West Virginia	UTM NAD 83 Easting:	516,696.31
County:	Marshall	Northing:	4,401,565.37
District:	Franklin	Public Road Access:	Burch Ridge Road - County Route 29
Quadrangle:	Powhatan Point 7.5'	Generally used farm name:	Wibert H. Bungard, et ux
Watershed:	French Creek - Ohio River (HUC 10)		

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY	OOG OFFICE USE ONLY
☐ 1. NOTICE OF SEISMIC ACTIVITY or ☑ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED	☐ RECEIVED/ NOT REQUIRED
☑ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ☐ NO PLAT SURVEY WAS CONDUCTED	☐ RECEIVED
☐ 3. NOTICE OF INTENT TO DRILL or ☑ NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or ☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)	☐ RECEIVED/ NOT REQUIRED
☑ 4. NOTICE OF PLANNED OPERATION	☐ RECEIVED
☑ 5. PUBLIC NOTICE	☐ RECEIVED
☑ 6. NOTICE OF APPLICATION	☐ RECEIVED

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

WW-6AC
(1/12)

4705102203

Certification of Notice is hereby given:

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

Well Operator:	Tug Hill Operating, LLC	Address:	380 Southpointe Boulevard, Plaza II, Suite 200
By:	Amy L. Miller		Canonsburg, PA 15317
Its:	Permitting Speicialist	Facsimile:	724-338-2030
Telephone:	724-749-8388	Email:	amiller@tug-hillop.com

NOTARY SEAL
Commonwealth of Pennsylvania - Notary Seal
MAUREEN A STEAD - Notary Public
Washington County
My Commission Expires Jan 28, 2023
Commission Number 1259926

Subscribed and sworn before me this 29 day of MARCH, 2019.

Maureen A Stead Notary Public

My Commission Expires 1/28/23

Oil and Gas Privacy Notice:

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

WW-6A
(9-13)

API NO. 47-105-10220B
OPERATOR WELL NO. Blake MBH
Well Pad Name: Blake

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: 3/26/2019 **Date Permit Application Filed:** 3/29/2019

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: Wilbert H. and Pamela June Bungard (access road and well pad)
Address: 243 Bandit Drive
Proctor, WV 26055
Name: Russell and Mary Blake (access road and well pad)
Address: 3343 Burch Ridge Road
Proctor, WV 26055

☐ SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
Name: _____
Address: _____

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

☑ COAL OWNER OR LESSEE
Name: CNX Land Resources, Attn: Casey Saunders
Address: 1000 Consol Energy Drive
Canonsburg, PA 15318

☐ COAL OPERATOR
Name: _____
Address: _____

☐ SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: Wilbert H. Bungard and Pamela June Bungard (*See attached list)
Address: 243 Bandit Drive
Proctor, WV 26055

☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

4705102203

WW-6A
(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Blake N-5H
Well Pad Name: Blake

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

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

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

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

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

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

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

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

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.**

4705102203

WW-6A
(8-13)

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

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.

WW-6A
(8-13)

API NO. 47- 051 - 4705102203
OPERATOR WELL NO. Blake N-9HU
Well Pad Name: Blake

Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Telephone: 724-749-8388
Email: amiller@tug-hillop.com
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

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

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Matthew W. Reese, Notary Public
Cranberry Twp., Butler County
My Commission Expires June 30, 2019
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Subscribed and sworn before me this 26 day of MAR 2019.

Notary Public

My Commission Expires 6-30-2019

4705102203

WW-6A

Supplement Pg. 1A

Tug Hill Operating, LLC
380 Southpointe BLVD, Suite 200
Canonsburg, PA 15317

WATER WELL REPORT

Well: BLAKE N -9HU
District: Franklin
County: Marshall
State: WV

There appears to be Sixteen (16) possible water sources within 2,000 feet of the above referenced well location.

Topo Spot # 1 (House) TM 19 Par. 20 Wilbert H. Bungard, et ux 304-476-6494 243 Bandit Drive Proctor, WV 26055	Topo Spot #2 (Abandoned House) TM 19 Par. 20 Wilbert H. Bungard, et ux 304-476-6494 243 Bandit Drive Proctor, WV 26055	Topo Spot # 3 (House) TM 19 Par. 20.2 Casandra L. Harmon 304-639-9837 37 Bandit Drive Proctor, WV 26055
Topo Spot # 4 (House) TM 19 Par. 20.1 John J. Ebert (Life) 304-455-3967 26 Bandit Drive Proctor, WV 26055	Topo Spot # 5 (House) TM 19 Par. 7.1 Robert L. Shields, et ux 304-455-5387 2756 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 6 (House) TM 19 Par. 7.5 Adam & Jesse Robinson 304-280-9745 2932 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 7 (House-New) TM 19 Par. 10 Ernie L. Anderson, et ux 304-455-3818 3156 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 8 (House) TM 19 Par. 10 Ernie L. Anderson, et ux 304-455-3818 3156 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 9 (House) TM 19 Par. 9 Penny E. Menendez 304-455-5338 3171 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 10 (Trailer) TM 19 Par. 29 Ernie L. & Tammy L. Anderson 304-455-3818 3156 Burch Ridge Rd. (3298 Burch Ridge Rd.) Proctor, WV 26055	Topo Spot # 11 (House) TM 19 Par. 19 Russell Blake, et al 304-455-1158 3343 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 12 (Trailer) TM 19 Par. 19 Russell Blake, et al 304-455-1158 3343 Burch Ridge Rd. (3435 Burch Ridge Rd.) Proctor, WV 26055

4705102203

Topo Spot # 13 (House) TM 19 Par. 30 Ernie & Tammy Anderson 304-455-3818 3156 Burch Ridge Rd. (3486 Burch Ridge Rd.) Proctor, WV 26055	Topo Spot # 14 (House) TM 19 Par. 31 Charles F. & Diana L. Haynes 304-312-5210 3508 Burch Ridge Rd. Proctor, WV 26055	Topo Spot # 15 (House) TM 19 Par. 28 David D. Yoho & Mark E. Yoho 304-455-3176 3555 Burch Ridge Rd. Proctor, WV 26055
Topo Spot # 16 (House) TM 19 Par. 28 David D. Yoho & Mark E. Yoho 304-455-3176 3555 Burch Ridge Rd. Proctor, WV 26055		

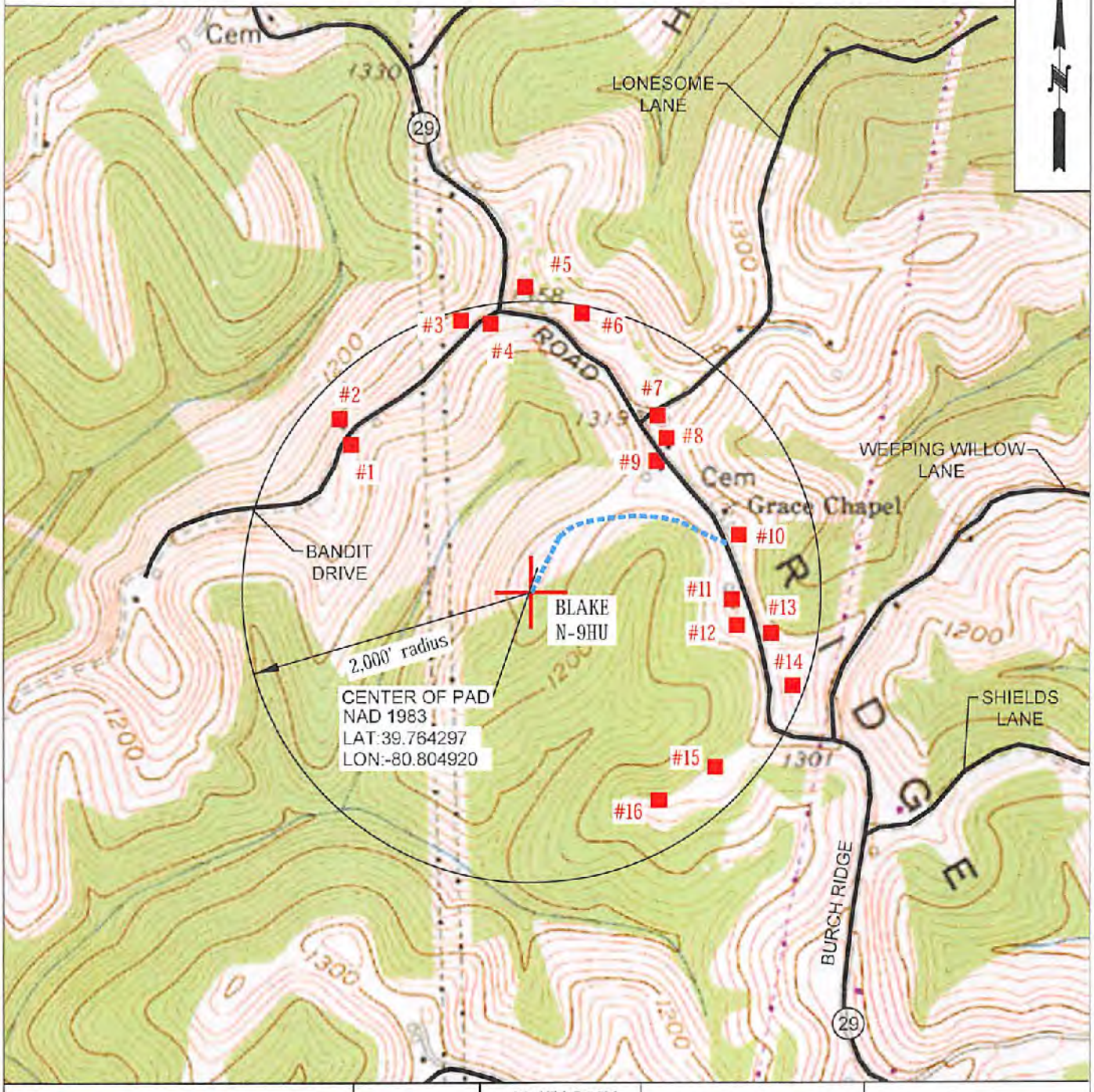
4705102203

WW-6A

PROPOSED
BLAKE N-9HU

SUPPLEMENT PG 1

There appears to be Sixteen (16) possible water sources within 2,000'.



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" = 1000'	DATE: 11-20-2018

WW-6A3
(1/12)

Operator Well No. Blake N-1HU

4705102203

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

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

Date of Notice: 10/22/2018 **Date of Planned Entry:** 10/29/2018

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

☒ SURFACE OWNER(s)

Name: Wilbert H. and Pamela June Bungard (access road and well pad)
Address: 243 Bandit Drive
Proctor, WV 26055

Name: Russell and Mary Blake (access road and well pad)
Address: 3343 Burch Ridge Road
Proctor, WV 26055

Name:
Address:

☒ COAL OWNER OR LESSEE

Name: CNX Land Resources
Address: 1000 Consol Energy Drive
Canonsburg, PA 15318

☒ MINERAL OWNER(s)

Name: David A. and Deborah Takach (*See Attached List)
Address: 14 Zilko Terrace
Glen Dale, WV 26038

*please attach additional forms if necessary

Notice is hereby given:

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

State: West Virginia
County: Marshall
District: Franklin
Quadrangle: Powhatan Point 7.5'

Approx. Latitude & Longitude: 39.76422598; -80.60495697
Public Road Access: Burch Ridge Road - CR 29
Watershed: huc-10: FRENCH CREEK - OHIO RIVER (UNDEFINDED)
Generally used farm name: Blake, Russell Et Al

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

Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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

4705102203

WW-6A3 Notice Attachment
Blake N-9HU

Mineral Owners

Russell and Mary Blake
3343 Burch Ridge Road
Proctor, WV 26055

Gary L. and Pamela S. Witschey
2645 Paden Fork Road
New Martinsville, WV 26155

Gordon L. Witschey
160 E. Thistle Drive
New Martinsville, WV 26155

Carl Coffield
970 Allendale Avenue
Akron, OH 44306

4705102203

WW-6A5
(1/12)

Operator Well No. Blake N-9HU

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: 03/28/2019 **Date Permit Application Filed:** 03/29/2019

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

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND 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: Wilbert H. and Pamela June Bungard
Address: 243 Bandit Drive
Proctor, WV 26055

Name: Russell and 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: West Virginia
County: Marshall
District: Franklin
Quadrangle: Powhatan Point 7.5'
Watershed: French Creek - Ohio River

UTM NAD 83 Easting: 516,696.31
Northing: 4,401,565.37
Public Road Access: Burch Ridge Road - County Route 29
Generally used farm name: Blake, Russell, et al

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

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

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

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

4705 02203

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

Jill M. Newman
Deputy Commissioner

June 19, 2018

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

Subject: DOH Permits for the Blake Well Pad, Marshall County

Blake N-9HU

Dear Mr. Martin,

This well site will be accessed from Permit #06-2013-0426 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 29 SLS.

The 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 January 3, 2012.

Very Truly Yours,

Gary K. Clayton

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

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

4705 02203

TUG HILL

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Blake N-9HU

PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quatemary 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

380 SOUTHPOINTE BLVD • SUITE 200 • CANONSBURG, PA 15317 • T 724.485-2000 • F 724.338.2030

Blake Well Site

Site Design, Construction Plan, &
Erosion and Sediment Control Plans
Tug Hill Operating
Marshall County
Franklin District
Latitude 39.76429745°
Longitude -80.80492031°
Stillhouse Run - Ohio River Watershed

WVDEP OOG ACCEPTED AS-BUILT
6 / 14 / 2018

Pertinent Site Information
Blake Well Site
Emergency Number: 304-845-1920
Franklin District, Marshall County, WV
Watershed: Stillhouse Run - Ohio River Watershed
Site 911 Address:
Tug Hill Contact Number: 1-817-632-3400

Property Owner Information - Blake Well Site
Franklin District - Marshall County

Owner	TM - Parcel	Well Pad	Prod. Pad	Access Road	Topsoil/Stockpile	Add. Clearing	Total Disturbed
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Site Totals (Ac)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Exhibit A: Final Design: Issue for Permitting

USGS 7.5' Quadrangle: Powhatan Point
Watershed: Stillhouse Run - Ohio River

WV State Plane Coordinate System
North Zone, NAD 83
Elevations Based on NAVD88
Established By Survey Grade GPS

Access Road

Disturbed Area

Additional Information

Blake Well Site Quantities

Site Locations (NAD 27)

Site Locations (NAD 83)

Well Table

Project Contacts

Tug Hill Operating

Survey and Engineer

Geotechnical Engineer

Environmental:

Topographic Information:

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
IT'S THE LAW

Know what's below. Call before you dig.

Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities.

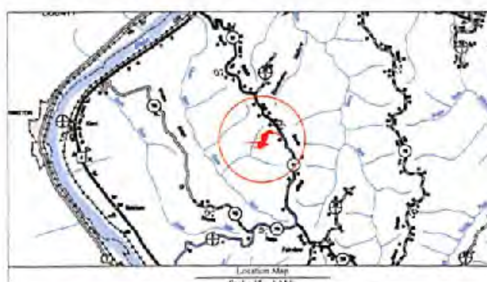
The WV Mines Website was consulted. Previous (Current) mining activities are not within the AOI.

WVDEP Website files show that there are active and/or abandoned gas wells within the AOI.

Floodplain Conditions

Approach Routes:

From the intersection of WV Rt 2 and OH Rt 7 near New Martinsville, WV. Travel North on WV Rt 2 for 0.1 mi. Turn Right onto Co Rt 2/2 (Wells Hill Rd). Follow Co Rt 2/2 for 2.4 mi. Turn Right onto Co Rt 78 (Waynes Ridge). Follow Co Rt 78 for 0.8 mi. Turn Left onto Co Rt 29 (Birch Ridge Rd). Follow Co Rt 29 for 1.55 mi. The site entrance will be on the Left (West side of the road).

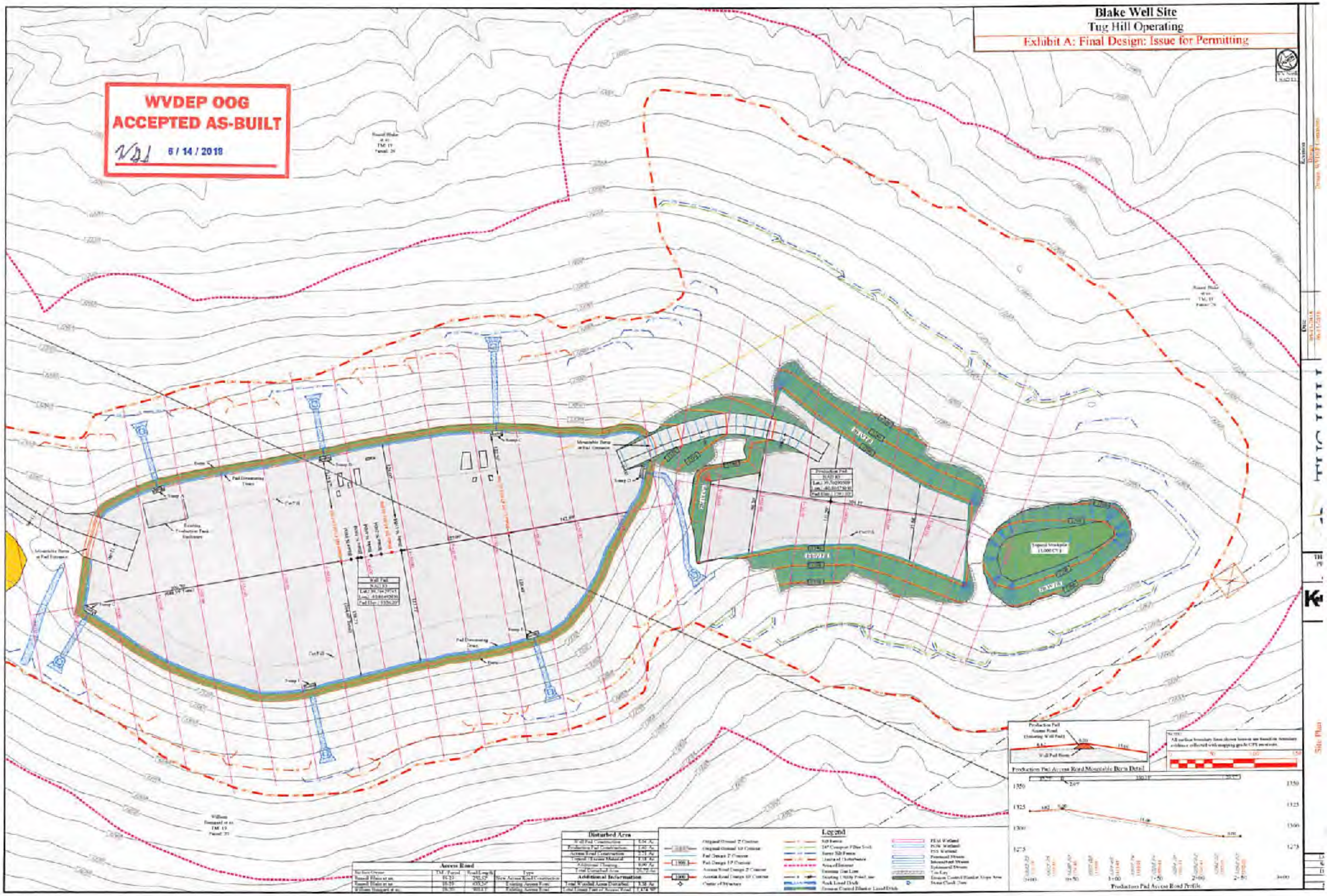


Location Map
Scale: 1" = 1 Mile

Well Location Restrictions

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N4	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6-7	E&S Plan View
8	Tie Key Exhibit
9-10	Plan View
11	Cross Sections - Well Pad
12	Cross Sections - Production Pad
13	Cross Sections - Access Road
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M3	Production Exhibit
D1-D2	Erosion and Sediment Control Details
E1	Access Road Details
P1	Pad Details

Cover Sheet


Blake Well Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting
WVDEP OOG
ACCEPTED AS-BUILT
6 / 14 / 2018
Disturbed Area
Additional Information
Access Road
Legend
Production Pad Access Road Mountable Berm Detail
Production Pad Access Road Profile
Site Plan