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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, November 22, 2019  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for ARMSTRONG N-13HU  
47-051-02259-00-00

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: ARMSTRONG N-13HU  
Farm Name: CONSOL RCPC, LLC.  
U.S. WELL NUMBER: 47-051-02259-00-00  
Horizontal 6A New Drill  
Date Issued: 11/22/2019

# 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.

## 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](mailto:DEPOOGNotify@wv.gov).



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

Barry K. Lay, Chairman  
dep.wv.gov

October 2, 2019

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

RE: Application for Deep Well Permit – API #47-051-02259

COMPANY: Tug Hill Operating, LLC

FARM: CONSOL RCPC, LLC Armstrong 1N-13HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

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

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: \*\*yes; Docket 287-284 Exception Location Hearing
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,

A handwritten signature in blue ink that reads "Susan Rose".

Susan Rose  
Administrator

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin Powhatan Point 7  
Operator ID County District Quadrangle

2) Operator's Well Number: Armstrong N-13HU Well Pad Name: Armstrong

3) Farm Name/Surface Owner: CONSOL RCPC, LLC Public Road Access: Burch Ridge Road - CR 29

4) Elevation, current ground: 1279.12' Elevation, proposed post-construction: 1279.12'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow \_\_\_\_\_ Deep

Horizontal

*Handwritten signature and date: 7/18/19*

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 11,208' - 11,088' - thickness of 120' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,358'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 24,077'

11) Proposed Horizontal Leg Length: 12,311.92'

12) Approximate Fresh Water Strata Depths: 70' ; 870'

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 - 776' ; Pittsburgh Coal - 869'

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

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

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18) CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	970'	970'	1,568FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2701'	2701'	1,906FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,127'	10,127'	3,306FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	24,077'	24,077'	5,688FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		10,848'	
Liners							

*Handwritten signature*  
2/18/19

<u>TYPE</u>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
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			

*Handwritten signature and date: 7/18/19*

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 30,775,000 lb proppant and 475,804 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12.64 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.21 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

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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.



WELL NAME: Armstrong N-13HU COUNTY: Marshall  
 STATE: WV DISTRICT: Franklin  
 DE Elev: 1,279' GL Elev: 1,279'  
 TD: 24,077'  
 TH Latitude: 39.75374748  
 TH Longitude: -80.8083956  
 BH Latitude: 39.77821697  
 BH Longitude: 80.84024211

30" Csg @ 120' MD / 120' TVD

20" Csg @ 970' MD / 970' TVD

13 3/8" Csg @ 2,701' MD / 2,700' TVD

9 5/8" Csg @ 10,127' MD / 9,980' TVD

KOP @ 10,348' ft MD

Pilot Hole PH TD @ 11,358'

Landing Point @ 1,767' MD / 11,138' TVD

PH TVD @ 150' below Trenton Top

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FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	870'
Sewickley Coal	776'
Pittsburgh Coal	869'
Big Lime	1,989'
Berea	2,531'
Tully	6,331'
Marcellus	6,390'
Onondaga	6,442'
Salina	7,135'
Lockport	8,163'
Utica	10,833'
Point Pleasant	11,088'
Landing Depth	11,138'
Trenton	11,208'
Pilot Hole TD	11,358'

CASING SUMMARY						
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade
Conductor	36	30	120'	120'	BW	BW
Surface	26	20	970'	970'	106.5	J55
Intermediate 1	17 1/2	13 3/8	2,701'	2,700'	54.5	J55
Intermediate 2	12 1/4	9 5/8	10,127'	9,980'	47	HPP110
Production	8 1/2	5 1/2	24,077'	10,924'	23	HCP110

CEMENT SUMMARY				DRILLING DETAILS			
Sacks	Class	Density	Fluid Type	Centralizer Notes			
338	A	15.6	Air	None			
1,691	A	15.6	Air	3 Centralizers at equal distance			
2,065	A	15	Air	1 Centralizer every other jt			
2,802	A	14.5	Air	1 Centralizer every other jt			
5,052	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc			

*Handwritten signature and date: 2/18/19*

Lateral TD @ 24,077' ft MD  
 10,924' ft TVD





## Tug Hill Operating, LLC Casing and Cement Program

### Armstrong N-13HU

#### Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	970'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,701'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,127'	CTS
Production	5 1/2"	HCP110	8 1/2"	24,077'	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

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Well: **Armstrong 1N-02 HU (slot J)**  
 Site: **Armstrong Pad**  
 Project: **Marshall County, West Virginia**  
 Design: **rev0**

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

System Datum: Mean Sea Level  
 Depth Reference: GL @ 1279.00ft  
 Northing 14437122.47  
 Easting 1694267.93  
 Latitude 39.75374748  
 Longitude -80.80839560

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 6.78°

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	KOP Begin 1°/100' build
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	Begin 2.00° tangent
3	500.00	2.00	180.00	499.96	-3.49	0.00	1.00	180.00	-2.46	Begin 2°/100' build/turn
4	4802.66	2.00	180.00	4800.00	-153.65	0.00	0.00	0.00	-108.20	Begin 13.89° tangent
5	5413.54	13.89	210.88	5404.05	-227.53	-37.78	2.00	35.61	-133.39	Begin 6°/100' build/turn
6	10347.63	13.89	210.88	10193.83	-1244.20	-645.81	0.00	0.00	-417.58	Begin 8°/100' build/turn
7	11231.10	50.00	307.84	10962.18	-1118.54	-892.57	6.00	107.82	-82.88	Begin 91.00° lateral
8	11767.43	91.00	321.69	11138.19	-765.46	-1337.27	8.00	20.59	410.49	PBHL/TD 24077.04 MD/10924.00 TVD
9	24077.04	91.00	321.69	10924.00	8892.44	-8966.52	0.00	0.00	0.00	

Azimuths to Grid North  
 True North: -0.12°  
 Magnetic North: -8.78°  
 Magnetic Field Strength: 51992.25nT  
 Dip Angle: 66.82°  
 Date: 12/25/2018  
 Model: IGRF2015

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23:22, December 25, 2018

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<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Armstrong 1N-02 HU (slot J)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1279.00ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1279.00ft
<b>Site:</b>	Armstrong Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Armstrong 1N-02 HU (slot J)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev0		

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.00	300.00	0.00	0.00	KOP Begin 1°/100' build
500.00	499.96	-3.49	0.00	Begin 2.00° tangent
4,802.66	4,800.00	-153.65	0.00	Begin 2°/100' build/turn
5,413.54	5,404.05	-227.53	-37.78	Begin 13.89° tangent
10,347.63	10,193.83	-1,244.20	-645.81	Begin 6°/100' build/turn
11,231.10	10,962.18	-1,118.54	-992.57	Begin 8°/100' build/turn
11,767.43	11,138.19	-765.46	-1,337.27	Begin 91.00° lateral
24,077.04	10,924.00	8,892.44	-8,966.52	PBHL/TD 24077.04 MD/10924.00 TVD



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Armstrong 1N-02 HU (slot J)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1279.00ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1279.00ft
<b>Site:</b>	Armstrong Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Armstrong 1N-02 HU (slot J)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev0		

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

<b>Site</b>	Armstrong Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,437,151.34 usft	<b>Latitude:</b>	39.75382662
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,694,289.43 usft	<b>Longitude:</b>	-80.80831890
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.12 °

<b>Well</b>	Armstrong 1N-02 HU (slot J)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,437,122.48 usft	<b>Latitude:</b>	39.75374748
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,694,267.93 usft	<b>Longitude:</b>	-80.80839560
<b>Position Uncertainty</b>	0.00 ft		<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	1,279.00 ft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	12/25/2018	-8.66	66.82	51,992.22943945

<b>Design</b>	rev0			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	314.76

<b>Plan Survey Tool Program</b>	<b>Date</b>	12/25/2018		
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	24,077.04 rev0 (Original Hole)	MWD	MWD - Standard

<b>Plan Sections</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	2.00	180.00	499.96	-3.49	0.00	1.00	1.00	0.00	180.00	
4,802.66	2.00	180.00	4,800.00	-153.65	0.00	0.00	0.00	0.00	0.00	
5,413.54	13.89	210.88	5,404.05	-227.53	-37.78	2.00	1.95	5.06	35.61	
10,347.63	13.89	210.88	10,193.83	-1,244.20	-645.81	0.00	0.00	0.00	0.00	
11,231.10	50.00	307.84	10,962.18	-1,118.54	-992.57	6.00	4.09	10.97	107.82	
11,767.43	91.00	321.69	11,138.19	-765.46	-1,337.27	8.00	7.64	2.58	20.59	
24,077.04	91.00	321.69	10,924.00	8,892.44	-8,966.52	0.00	0.00	0.00	0.00	Armstrong 1N-02 HU

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Planning Report - Geographic

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Database: DB\_Jul2216dt\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Armstrong Pad  
 Well: Armstrong 1N-02 HU (slot J)  
 Wellbore: Original Hole  
 Design: rev0

Local Co-ordinate Reference: Well Armstrong 1N-02 HU (slot J)  
 TVD Reference: GL @ 1279.00ft  
 MD Reference: GL @ 1279.00ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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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	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
100.00	0.00	0.00	100.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
200.00	0.00	0.00	200.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
300.00	0.00	0.00	300.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
<b>KOP Begin 1°/100' build</b>									
400.00	1.00	180.00	400.00	-0.87	0.00	14,437,121.60	1,694,267.93	39.75374509	-80.80839561
500.00	2.00	180.00	499.96	-3.49	0.00	14,437,118.99	1,694,267.93	39.75373790	-80.80839563
<b>Begin 2.00° tangent</b>									
600.00	2.00	180.00	599.90	-6.98	0.00	14,437,115.50	1,694,267.93	39.75372831	-80.80839565
700.00	2.00	180.00	699.84	-10.47	0.00	14,437,112.01	1,694,267.93	39.75371873	-80.80839568
800.00	2.00	180.00	799.78	-13.96	0.00	14,437,108.52	1,694,267.93	39.75370914	-80.80839571
900.00	2.00	180.00	899.72	-17.45	0.00	14,437,105.03	1,694,267.93	39.75369956	-80.80839573
1,000.00	2.00	180.00	999.66	-20.94	0.00	14,437,101.54	1,694,267.93	39.75368997	-80.80839576
1,100.00	2.00	180.00	1,099.60	-24.43	0.00	14,437,098.05	1,694,267.93	39.75368039	-80.80839579
1,200.00	2.00	180.00	1,199.54	-27.92	0.00	14,437,094.56	1,694,267.93	39.75367081	-80.80839581
1,300.00	2.00	180.00	1,299.47	-31.41	0.00	14,437,091.07	1,694,267.93	39.75366122	-80.80839584
1,400.00	2.00	180.00	1,399.41	-34.90	0.00	14,437,087.58	1,694,267.93	39.75365164	-80.80839587
1,500.00	2.00	180.00	1,499.35	-38.39	0.00	14,437,084.09	1,694,267.93	39.75364205	-80.80839589
1,600.00	2.00	180.00	1,599.29	-41.88	0.00	14,437,080.60	1,694,267.93	39.75363247	-80.80839592
1,700.00	2.00	180.00	1,699.23	-45.37	0.00	14,437,077.11	1,694,267.93	39.75362288	-80.80839595
1,800.00	2.00	180.00	1,799.17	-48.86	0.00	14,437,073.62	1,694,267.93	39.75361330	-80.80839597
1,900.00	2.00	180.00	1,899.11	-52.35	0.00	14,437,070.13	1,694,267.93	39.75360371	-80.80839600
2,000.00	2.00	180.00	1,999.05	-55.84	0.00	14,437,066.64	1,694,267.93	39.75359413	-80.80839603
2,100.00	2.00	180.00	2,098.99	-59.33	0.00	14,437,063.15	1,694,267.93	39.75358455	-80.80839605
2,200.00	2.00	180.00	2,198.93	-62.82	0.00	14,437,059.66	1,694,267.93	39.75357496	-80.80839608
2,300.00	2.00	180.00	2,298.87	-66.31	0.00	14,437,056.17	1,694,267.93	39.75356538	-80.80839611
2,400.00	2.00	180.00	2,398.81	-69.80	0.00	14,437,052.68	1,694,267.93	39.75355579	-80.80839613
2,500.01	2.00	180.00	2,498.75	-73.29	0.00	14,437,049.19	1,694,267.93	39.75354621	-80.80839616
2,600.01	2.00	180.00	2,598.69	-76.78	0.00	14,437,045.70	1,694,267.93	39.75353662	-80.80839619
2,700.01	2.00	180.00	2,698.62	-80.27	0.00	14,437,042.21	1,694,267.93	39.75352704	-80.80839621
2,800.01	2.00	180.00	2,798.56	-83.76	0.00	14,437,038.72	1,694,267.93	39.75351745	-80.80839624
2,900.01	2.00	180.00	2,898.50	-87.25	0.00	14,437,035.23	1,694,267.93	39.75350787	-80.80839626
3,000.01	2.00	180.00	2,998.44	-90.74	0.00	14,437,031.74	1,694,267.93	39.75349829	-80.80839629
3,100.01	2.00	180.00	3,098.38	-94.23	0.00	14,437,028.25	1,694,267.93	39.75348870	-80.80839632
3,200.01	2.00	180.00	3,198.32	-97.72	0.00	14,437,024.76	1,694,267.93	39.75347912	-80.80839634
3,300.01	2.00	180.00	3,298.26	-101.21	0.00	14,437,021.27	1,694,267.93	39.75346953	-80.80839637
3,400.01	2.00	180.00	3,398.20	-104.70	0.00	14,437,017.78	1,694,267.93	39.75345995	-80.80839640
3,500.01	2.00	180.00	3,498.14	-108.19	0.00	14,437,014.29	1,694,267.93	39.75345036	-80.80839642
3,600.01	2.00	180.00	3,598.08	-111.68	0.00	14,437,010.80	1,694,267.93	39.75344078	-80.80839645
3,700.01	2.00	180.00	3,698.02	-115.17	0.00	14,437,007.31	1,694,267.93	39.75343119	-80.80839648
3,800.01	2.00	180.00	3,797.96	-118.66	0.00	14,437,003.82	1,694,267.93	39.75342161	-80.80839650
3,900.01	2.00	180.00	3,897.90	-122.15	0.00	14,437,000.33	1,694,267.93	39.75341203	-80.80839653
4,000.01	2.00	180.00	3,997.84	-125.64	0.00	14,436,996.84	1,694,267.93	39.75340244	-80.80839656
4,100.01	2.00	180.00	4,097.77	-129.13	0.00	14,436,993.35	1,694,267.93	39.75339286	-80.80839658
4,200.01	2.00	180.00	4,197.71	-132.62	0.00	14,436,989.86	1,694,267.93	39.75338327	-80.80839661
4,300.01	2.00	180.00	4,297.65	-136.11	0.00	14,436,986.37	1,694,267.93	39.75337369	-80.80839664
4,400.01	2.00	180.00	4,397.59	-139.60	0.00	14,436,982.88	1,694,267.93	39.75336410	-80.80839666
4,500.01	2.00	180.00	4,497.53	-143.09	0.00	14,436,979.39	1,694,267.93	39.75335452	-80.80839669
4,600.01	2.00	180.00	4,597.47	-146.58	0.00	14,436,975.90	1,694,267.93	39.75334493	-80.80839672
4,700.01	2.00	180.00	4,697.41	-150.07	0.00	14,436,972.41	1,694,267.93	39.75333535	-80.80839674
4,800.01	2.00	180.00	4,797.35	-153.56	0.00	14,436,968.92	1,694,267.93	39.75332577	-80.80839677
4,802.66	2.00	180.00	4,800.00	-153.65	0.00	14,436,968.82	1,694,267.93	39.75332551	-80.80839677
<b>Begin 2°/100' build/turn</b>									
4,900.01	3.76	197.57	4,897.22	-158.39	-0.96	14,436,964.08	1,694,266.97	39.75331250	-80.80840023



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Armstrong 1N-02 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong 1N-02 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,000.01	5.69	203.83	4,996.88	-166.05	-3.96	14,436,956.42	1,694,263.97	39.75329147	-80.80841094
5,100.01	7.66	206.91	5,096.20	-176.54	-8.98	14,436,945.94	1,694,258.95	39.75326271	-80.80842889
5,200.01	9.64	208.73	5,195.05	-189.83	-16.02	14,436,932.65	1,694,251.91	39.75322626	-80.80845405
5,300.01	11.63	209.93	5,293.33	-205.91	-25.08	14,436,916.57	1,694,242.86	39.75318214	-80.80848639
5,400.01	13.62	210.78	5,390.91	-224.76	-36.13	14,436,897.71	1,694,231.80	39.75313043	-80.80852587
5,413.54	13.89	210.88	5,404.05	-227.53	-37.78	14,436,894.95	1,694,230.15	39.75312285	-80.80853176
<b>Begin 13.89° tangent</b>									
5,500.01	13.89	210.88	5,487.99	-245.34	-48.44	14,436,877.13	1,694,219.49	39.75307398	-80.80856981
5,600.01	13.89	210.88	5,585.07	-265.95	-60.76	14,436,856.53	1,694,207.17	39.75301747	-80.80861381
5,700.01	13.89	210.88	5,682.14	-286.55	-73.08	14,436,835.92	1,694,194.85	39.75296095	-80.80865781
5,800.01	13.89	210.88	5,779.22	-307.16	-85.41	14,436,815.32	1,694,182.52	39.75290443	-80.80870181
5,900.01	13.89	210.88	5,876.29	-327.76	-97.73	14,436,794.71	1,694,170.20	39.75284792	-80.80874581
6,000.01	13.89	210.88	5,973.37	-348.37	-110.05	14,436,774.11	1,694,157.88	39.75279140	-80.80878982
6,100.01	13.89	210.88	6,070.44	-368.97	-122.38	14,436,753.50	1,694,145.56	39.75273489	-80.80883382
6,200.01	13.89	210.88	6,167.52	-389.58	-134.70	14,436,732.90	1,694,133.23	39.75267837	-80.80887782
6,300.01	13.89	210.88	6,264.59	-410.18	-147.02	14,436,712.29	1,694,120.91	39.75262186	-80.80892182
6,400.01	13.89	210.88	6,361.67	-430.79	-159.34	14,436,691.69	1,694,108.59	39.75256534	-80.80896582
6,500.01	13.89	210.88	6,458.74	-451.40	-171.67	14,436,671.08	1,694,096.26	39.75250883	-80.80900982
6,600.01	13.89	210.88	6,555.82	-472.00	-183.99	14,436,650.48	1,694,083.94	39.75245231	-80.80905382
6,700.01	13.89	210.88	6,652.89	-492.61	-196.31	14,436,629.87	1,694,071.62	39.75239580	-80.80909782
6,800.01	13.89	210.88	6,749.97	-513.21	-208.64	14,436,609.27	1,694,059.29	39.75233928	-80.80914182
6,900.01	13.89	210.88	6,847.05	-533.82	-220.96	14,436,588.66	1,694,046.97	39.75228276	-80.80918582
7,000.01	13.89	210.88	6,944.12	-554.42	-233.28	14,436,568.06	1,694,034.65	39.75222625	-80.80922982
7,100.01	13.89	210.88	7,041.20	-575.03	-245.61	14,436,547.45	1,694,022.33	39.75216973	-80.80927382
7,200.01	13.89	210.88	7,138.27	-595.63	-257.93	14,436,526.85	1,694,010.00	39.75211322	-80.80931782
7,300.01	13.89	210.88	7,235.35	-616.24	-270.25	14,436,506.24	1,693,997.68	39.75205670	-80.80936182
7,400.01	13.89	210.88	7,332.42	-636.84	-282.57	14,436,485.64	1,693,985.36	39.75200019	-80.80940582
7,500.02	13.89	210.88	7,429.50	-657.45	-294.90	14,436,465.03	1,693,973.03	39.75194367	-80.80944982
7,600.02	13.89	210.88	7,526.57	-678.05	-307.22	14,436,444.43	1,693,960.71	39.75188716	-80.80949382
7,700.02	13.89	210.88	7,623.65	-698.66	-319.54	14,436,423.82	1,693,948.39	39.75183064	-80.80953782
7,800.02	13.89	210.88	7,720.72	-719.26	-331.87	14,436,403.22	1,693,936.06	39.75177412	-80.80958182
7,900.02	13.89	210.88	7,817.80	-739.87	-344.19	14,436,382.61	1,693,923.74	39.75171761	-80.80962582
8,000.02	13.89	210.88	7,914.87	-760.47	-356.51	14,436,362.01	1,693,911.42	39.75166109	-80.80966982
8,100.02	13.89	210.88	8,011.95	-781.08	-368.84	14,436,341.40	1,693,899.10	39.75160458	-80.80971382
8,200.02	13.89	210.88	8,109.02	-801.68	-381.16	14,436,320.79	1,693,886.77	39.75154806	-80.80975782
8,300.02	13.89	210.88	8,206.10	-822.29	-393.48	14,436,300.19	1,693,874.45	39.75149154	-80.80980182
8,400.02	13.89	210.88	8,303.17	-842.89	-405.80	14,436,279.58	1,693,862.13	39.75143503	-80.80984582
8,500.02	13.89	210.88	8,400.25	-863.50	-418.13	14,436,258.98	1,693,849.80	39.75137851	-80.80988982
8,600.02	13.89	210.88	8,497.33	-884.10	-430.45	14,436,238.37	1,693,837.48	39.75132200	-80.80993382
8,700.02	13.89	210.88	8,594.40	-904.71	-442.77	14,436,217.77	1,693,825.16	39.75126548	-80.80997782
8,800.02	13.89	210.88	8,691.48	-925.31	-455.10	14,436,197.16	1,693,812.83	39.75120897	-80.81002182
8,900.02	13.89	210.88	8,788.55	-945.92	-467.42	14,436,176.56	1,693,800.51	39.75115245	-80.81006582
9,000.02	13.89	210.88	8,885.63	-966.52	-479.74	14,436,155.95	1,693,788.19	39.75109593	-80.81010982
9,100.02	13.89	210.88	8,982.70	-987.13	-492.07	14,436,135.35	1,693,775.87	39.75103942	-80.81015382
9,200.02	13.89	210.88	9,079.78	-1,007.73	-504.39	14,436,114.74	1,693,763.54	39.75098290	-80.81019781
9,300.02	13.89	210.88	9,176.85	-1,028.34	-516.71	14,436,094.14	1,693,751.22	39.75092639	-80.81024181
9,400.02	13.89	210.88	9,273.93	-1,048.94	-529.03	14,436,073.53	1,693,738.90	39.75086987	-80.81028581
9,500.02	13.89	210.88	9,371.00	-1,069.55	-541.36	14,436,052.93	1,693,726.57	39.75081335	-80.81032981
9,600.02	13.89	210.88	9,468.08	-1,090.15	-553.68	14,436,032.32	1,693,714.25	39.75075684	-80.81037381
9,700.02	13.89	210.88	9,565.15	-1,110.76	-566.00	14,436,011.72	1,693,701.93	39.75070032	-80.81041781
9,800.02	13.89	210.88	9,662.23	-1,131.36	-578.33	14,435,991.11	1,693,689.61	39.75064381	-80.81046181
9,900.02	13.89	210.88	9,759.30	-1,151.97	-590.65	14,435,970.51	1,693,677.28	39.75058729	-80.81050580
10,000.02	13.89	210.88	9,856.38	-1,172.57	-602.97	14,435,949.90	1,693,664.96	39.75053077	-80.81054980
10,100.02	13.89	210.88	9,953.45	-1,193.18	-615.30	14,435,929.30	1,693,652.64	39.75047426	-80.81059380



Planning Report - Geographic

Database: DB\_Jul2216dt\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Armstrong Pad  
 Well: Armstrong 1N-02 HU (slot J)  
 Wellbore: Original Hole  
 Design: rev0

Local Co-ordinate Reference: Well Armstrong 1N-02 HU (slot J)  
 TVD Reference: GL @ 1279.00ft  
 MD Reference: GL @ 1279.00ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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JUL 26 2019

Planned Survey

WV Department of Environmental Protection

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,200.02	13.89	210.88	10,050.53	-1,213.78	-627.62	14,435,908.69	1,693,640.31	39.75041774	-80.81063780
10,300.02	13.89	210.88	10,147.61	-1,234.39	-639.94	14,435,888.09	1,693,627.99	39.75036123	-80.81068180
10,347.63	13.89	210.88	10,193.83	-1,244.20	-645.81	14,435,878.28	1,693,622.12	39.75033432	-80.81070275
<b>Begin 6°/100' build/turn</b>									
10,400.02	13.27	224.03	10,244.76	-1,253.92	-653.22	14,435,868.56	1,693,614.72	39.75030766	-80.81072917
10,500.02	14.05	249.43	10,342.02	-1,266.44	-672.57	14,435,856.03	1,693,595.36	39.75027338	-80.81079813
10,600.02	17.01	269.09	10,438.42	-1,270.94	-698.59	14,435,851.53	1,693,569.35	39.75026117	-80.81089072
10,700.02	21.27	282.10	10,532.92	-1,267.37	-730.98	14,435,855.11	1,693,536.95	39.75027117	-80.81100593
10,800.02	26.19	290.68	10,624.47	-1,255.77	-769.39	14,435,866.71	1,693,498.54	39.75030327	-80.81114250
10,900.02	31.46	296.64	10,712.06	-1,236.25	-813.40	14,435,886.22	1,693,454.53	39.75035711	-80.81129894
11,000.02	36.94	301.01	10,794.75	-1,209.05	-862.52	14,435,913.43	1,693,405.41	39.75043211	-80.81147352
11,100.02	42.54	304.38	10,871.62	-1,174.45	-916.23	14,435,948.03	1,693,351.70	39.75052744	-80.81166433
11,200.02	48.22	307.09	10,941.84	-1,132.83	-973.93	14,435,989.65	1,693,294.01	39.75064206	-80.81186930
11,231.10	50.00	307.84	10,962.18	-1,118.54	-992.57	14,436,003.94	1,693,275.36	39.75068142	-80.81193552
<b>Begin 8°/100' build/turn</b>									
11,300.02	55.18	310.20	11,004.04	-1,084.06	-1,035.06	14,436,038.42	1,693,232.87	39.75077637	-80.81208645
11,400.02	62.78	313.14	11,055.54	-1,027.06	-1,098.96	14,436,095.41	1,693,168.97	39.75093325	-80.81231338
11,500.02	70.42	315.71	11,095.22	-962.83	-1,164.41	14,436,159.64	1,693,103.52	39.75111002	-80.81254575
11,600.02	78.10	318.04	11,122.32	-892.62	-1,230.13	14,436,229.86	1,693,037.80	39.75130323	-80.81277906
11,700.02	85.80	320.24	11,136.31	-817.78	-1,294.85	14,436,304.69	1,692,973.09	39.75150912	-80.81300875
11,767.43	91.00	321.69	11,138.19	-765.46	-1,337.27	14,436,357.01	1,692,930.67	39.75165305	-80.81315928
<b>Begin 91.00° lateral</b>									
11,800.02	91.00	321.69	11,137.62	-739.89	-1,357.47	14,436,382.59	1,692,910.47	39.75172340	-80.81323096
11,900.02	91.00	321.69	11,135.88	-661.43	-1,419.45	14,436,461.04	1,692,848.49	39.75193922	-80.81345089
12,000.02	91.00	321.69	11,134.14	-582.97	-1,481.42	14,436,539.50	1,692,786.51	39.75215504	-80.81367083
12,100.02	91.00	321.69	11,132.40	-504.52	-1,543.40	14,436,617.96	1,692,724.53	39.75237087	-80.81389076
12,200.02	91.00	321.69	11,130.66	-426.06	-1,605.38	14,436,696.42	1,692,662.55	39.75258669	-80.81411069
12,300.02	91.00	321.69	11,128.92	-347.60	-1,667.36	14,436,774.88	1,692,600.58	39.75280251	-80.81433063
12,400.03	91.00	321.69	11,127.18	-269.14	-1,729.34	14,436,853.33	1,692,538.60	39.75301834	-80.81455057
12,500.03	91.00	321.69	11,125.44	-190.68	-1,791.31	14,436,931.79	1,692,476.62	39.75323416	-80.81477051
12,600.03	91.00	321.69	11,123.70	-112.22	-1,853.29	14,437,010.25	1,692,414.64	39.75344998	-80.81499045
12,700.03	91.00	321.69	11,121.96	-33.77	-1,915.27	14,437,088.71	1,692,352.66	39.75366580	-80.81521039
12,800.03	91.00	321.69	11,120.22	44.69	-1,977.25	14,437,167.17	1,692,290.69	39.75388162	-80.81543033
12,900.03	91.00	321.69	11,118.48	123.15	-2,039.23	14,437,245.63	1,692,228.71	39.75409744	-80.81565028
13,000.03	91.00	321.69	11,116.74	201.61	-2,101.20	14,437,324.08	1,692,166.73	39.75431326	-80.81587022
13,100.03	91.00	321.69	11,115.00	280.07	-2,163.18	14,437,402.54	1,692,104.75	39.75452908	-80.81609017
13,200.03	91.00	321.69	11,113.26	358.53	-2,225.16	14,437,481.00	1,692,042.77	39.75474490	-80.81631012
13,300.03	91.00	321.69	11,111.52	436.98	-2,287.14	14,437,559.46	1,691,980.80	39.75496072	-80.81653007
13,400.03	91.00	321.69	11,109.78	515.44	-2,349.12	14,437,637.92	1,691,918.82	39.75517653	-80.81675002
13,500.03	91.00	321.69	11,108.04	593.90	-2,411.10	14,437,716.38	1,691,856.84	39.75539235	-80.81696997
13,600.03	91.00	321.69	11,106.30	672.36	-2,473.07	14,437,794.83	1,691,794.86	39.75560817	-80.81718993
13,700.03	91.00	321.69	11,104.56	750.82	-2,535.05	14,437,873.29	1,691,732.88	39.75582398	-80.81740988
13,800.03	91.00	321.69	11,102.82	829.28	-2,597.03	14,437,951.75	1,691,670.91	39.75603980	-80.81762984
13,900.03	91.00	321.69	11,101.08	907.74	-2,659.01	14,438,030.21	1,691,608.93	39.75625562	-80.81784980
14,000.03	91.00	321.69	11,099.34	986.19	-2,720.99	14,438,108.67	1,691,546.95	39.75647143	-80.81806976
14,100.03	91.00	321.69	11,097.60	1,064.65	-2,782.96	14,438,187.13	1,691,484.97	39.75668725	-80.81828972
14,200.03	91.00	321.69	11,095.86	1,143.11	-2,844.94	14,438,265.58	1,691,422.99	39.75690306	-80.81850968
14,300.03	91.00	321.69	11,094.12	1,221.57	-2,906.92	14,438,344.04	1,691,361.02	39.75711888	-80.81872965
14,400.03	91.00	321.69	11,092.38	1,300.03	-2,968.90	14,438,422.50	1,691,299.04	39.75733469	-80.81894961
14,500.03	91.00	321.69	11,090.64	1,378.49	-3,030.88	14,438,500.96	1,691,237.06	39.75755050	-80.81916958
14,600.03	91.00	321.69	11,088.90	1,456.94	-3,092.85	14,438,579.42	1,691,175.08	39.75776632	-80.81938954
14,700.03	91.00	321.69	11,087.16	1,535.40	-3,154.83	14,438,657.87	1,691,113.10	39.75798213	-80.81960951
14,800.03	91.00	321.69	11,085.42	1,613.86	-3,216.81	14,438,736.33	1,691,051.13	39.75819794	-80.81982948
14,900.03	91.00	321.69	11,083.68	1,692.32	-3,278.79	14,438,814.79	1,690,989.15	39.75841375	-80.82004946



Planning Report - Geographic

4705 02259

Database: DB\_Jul2216dt\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Armstrong Pad  
 Well: Armstrong 1N-02 HU (slot J)  
 Wellbore: Original Hole  
 Design: rev0

Local Co-ordinate Reference: Well Armstrong 1N-02 HU (slot J)  
 TVD Reference: GL @ 1279.00ft  
 MD Reference: GL @ 1279.00ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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JUL 26 2019

Planned Survey

WV Department of  
 Environmental Protection

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,000.03	91.00	321.69	11,081.94	1,770.78	-3,340.77	14,438,893.25	1,690,927.17	39.75862956	-80.82026943
15,100.03	91.00	321.69	11,080.20	1,849.24	-3,402.75	14,438,971.71	1,690,865.19	39.75884537	-80.82048940
15,200.03	91.00	321.69	11,078.46	1,927.69	-3,464.72	14,439,050.17	1,690,803.21	39.75908118	-80.82070938
15,300.03	91.00	321.69	11,076.72	2,006.15	-3,526.70	14,439,128.62	1,690,741.24	39.75927699	-80.82092936
15,400.03	91.00	321.69	11,074.98	2,084.61	-3,588.68	14,439,207.08	1,690,679.26	39.75949280	-80.82114934
15,500.03	91.00	321.69	11,073.24	2,163.07	-3,650.66	14,439,285.54	1,690,617.28	39.75970861	-80.82136932
15,600.03	91.00	321.69	11,071.50	2,241.53	-3,712.64	14,439,364.00	1,690,555.30	39.75992442	-80.82158930
15,700.03	91.00	321.69	11,069.76	2,319.99	-3,774.61	14,439,442.46	1,690,493.32	39.76014023	-80.82180928
15,800.03	91.00	321.69	11,068.02	2,398.45	-3,836.59	14,439,520.92	1,690,431.35	39.76035604	-80.82202927
15,900.03	91.00	321.69	11,066.28	2,476.90	-3,898.57	14,439,599.37	1,690,369.37	39.76057185	-80.82224925
16,000.03	91.00	321.69	11,064.54	2,555.36	-3,960.55	14,439,677.83	1,690,307.39	39.76078765	-80.82246924
16,100.03	91.00	321.69	11,062.80	2,633.82	-4,022.53	14,439,756.29	1,690,245.41	39.76100346	-80.82268923
16,200.03	91.00	321.69	11,061.06	2,712.28	-4,084.50	14,439,834.75	1,690,183.43	39.76121926	-80.82290922
16,300.03	91.00	321.69	11,059.32	2,790.74	-4,146.48	14,439,913.21	1,690,121.46	39.76143507	-80.82312921
16,400.03	91.00	321.69	11,057.58	2,869.20	-4,208.46	14,439,991.67	1,690,059.48	39.76165088	-80.82334920
16,500.03	91.00	321.69	11,055.84	2,947.65	-4,270.44	14,440,070.12	1,689,997.50	39.76186668	-80.82356919
16,600.03	91.00	321.69	11,054.10	3,026.11	-4,332.42	14,440,148.58	1,689,935.52	39.76208249	-80.82378919
16,700.03	91.00	321.69	11,052.36	3,104.57	-4,394.40	14,440,227.04	1,689,873.54	39.76229829	-80.82400919
16,800.03	91.00	321.69	11,050.62	3,183.03	-4,456.37	14,440,305.50	1,689,811.57	39.76251409	-80.82422918
16,900.03	91.00	321.69	11,048.88	3,261.49	-4,518.35	14,440,383.96	1,689,749.59	39.76272990	-80.82444918
17,000.03	91.00	321.69	11,047.14	3,339.95	-4,580.33	14,440,462.42	1,689,687.61	39.76294570	-80.82466918
17,100.03	91.00	321.69	11,045.40	3,418.40	-4,642.31	14,440,540.87	1,689,625.63	39.76316150	-80.82488919
17,200.03	91.00	321.69	11,043.66	3,496.86	-4,704.29	14,440,619.33	1,689,563.65	39.76337730	-80.82510919
17,300.03	91.00	321.69	11,041.92	3,575.32	-4,766.26	14,440,697.79	1,689,501.68	39.76359310	-80.82532920
17,400.04	91.00	321.69	11,040.18	3,653.78	-4,828.24	14,440,776.25	1,689,439.70	39.76380891	-80.82554920
17,500.04	91.00	321.69	11,038.44	3,732.24	-4,890.22	14,440,854.71	1,689,377.72	39.76402471	-80.82576921
17,600.04	91.00	321.69	11,036.70	3,810.70	-4,952.20	14,440,933.16	1,689,315.74	39.76424051	-80.82598922
17,700.04	91.00	321.69	11,034.96	3,889.16	-5,014.18	14,441,011.62	1,689,253.76	39.76445631	-80.82620923
17,800.04	91.00	321.69	11,033.22	3,967.61	-5,076.15	14,441,090.08	1,689,191.79	39.76467211	-80.82642924
17,900.04	91.00	321.69	11,031.48	4,046.07	-5,138.13	14,441,168.54	1,689,129.81	39.76488790	-80.82664925
18,000.04	91.00	321.69	11,029.74	4,124.53	-5,200.11	14,441,247.00	1,689,067.83	39.76510370	-80.82686927
18,100.04	91.00	321.69	11,028.00	4,202.99	-5,262.09	14,441,325.46	1,689,005.85	39.76531950	-80.82708928
18,200.04	91.00	321.69	11,026.26	4,281.45	-5,324.07	14,441,403.91	1,688,943.87	39.76553530	-80.82730930
18,300.04	91.00	321.69	11,024.52	4,359.91	-5,386.05	14,441,482.37	1,688,881.90	39.76575110	-80.82752932
18,400.04	91.00	321.69	11,022.78	4,438.36	-5,448.02	14,441,560.83	1,688,819.92	39.76596689	-80.82774934
18,500.04	91.00	321.69	11,021.04	4,516.82	-5,510.00	14,441,639.29	1,688,757.94	39.76618269	-80.82796936
18,600.04	91.00	321.69	11,019.30	4,595.28	-5,571.98	14,441,717.75	1,688,695.96	39.76639849	-80.82818938
18,700.04	91.00	321.69	11,017.56	4,673.74	-5,633.96	14,441,796.21	1,688,633.98	39.76661428	-80.82840941
18,800.04	91.00	321.69	11,015.82	4,752.20	-5,695.94	14,441,874.66	1,688,572.01	39.76683008	-80.82862943
18,900.04	91.00	321.69	11,014.08	4,830.66	-5,757.91	14,441,953.12	1,688,510.03	39.76704587	-80.82884946
19,000.04	91.00	321.69	11,012.34	4,909.11	-5,819.89	14,442,031.58	1,688,448.05	39.76726167	-80.82906949
19,100.04	91.00	321.69	11,010.60	4,987.57	-5,881.87	14,442,110.04	1,688,386.07	39.76747746	-80.82928952
19,200.04	91.00	321.69	11,008.86	5,066.03	-5,943.85	14,442,188.50	1,688,324.09	39.76769325	-80.82950955
19,300.04	91.00	321.69	11,007.12	5,144.49	-6,005.83	14,442,266.96	1,688,262.12	39.76790905	-80.82972958
19,400.04	91.00	321.69	11,005.38	5,222.95	-6,067.80	14,442,345.41	1,688,200.14	39.76812484	-80.82994962
19,500.04	91.00	321.69	11,003.64	5,301.41	-6,129.78	14,442,423.87	1,688,138.16	39.76834063	-80.83016965
19,600.04	91.00	321.69	11,001.90	5,379.87	-6,191.76	14,442,502.33	1,688,076.18	39.76855642	-80.83038969
19,700.04	91.00	321.69	11,000.16	5,458.32	-6,253.74	14,442,580.79	1,688,014.20	39.76877221	-80.83060973
19,800.04	91.00	321.69	10,998.42	5,536.78	-6,315.72	14,442,659.25	1,687,952.23	39.76898800	-80.83082976
19,900.04	91.00	321.69	10,996.68	5,615.24	-6,377.70	14,442,737.70	1,687,890.25	39.76920380	-80.83104981
20,000.04	91.00	321.69	10,994.94	5,693.70	-6,439.67	14,442,816.16	1,687,828.27	39.76941959	-80.83126985
20,100.04	91.00	321.69	10,993.20	5,772.16	-6,501.65	14,442,894.62	1,687,766.29	39.76963538	-80.83148989
20,200.04	91.00	321.69	10,991.46	5,850.62	-6,563.63	14,442,973.08	1,687,704.31	39.76985116	-80.83170994
20,300.04	91.00	321.69	10,989.72	5,929.07	-6,625.61	14,443,051.54	1,687,642.34	39.77006695	-80.83192998
20,400.04	91.00	321.69	10,987.98	6,007.53	-6,687.59	14,443,130.00	1,687,580.36	39.77028274	-80.83215003





Planning Report - Geographic

Database: DB\_Jul2216dt\_v14  
 Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Armstrong Pad  
 Well: Armstrong 1N-02 HU (slot J)  
 Wellbore: Original Hole  
 Design: rev0

Local Co-ordinate Reference: Well Armstrong 1N-02 HU (slot J)  
 TVD Reference: GL @ 1279.00ft  
 MD Reference: GL @ 1279.00ft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature

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JUL 26 2019

Planned Survey

WV Department of Environmental Protection

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,500.04	91.00	321.69	10,986.24	6,085.99	-6,749.56	14,443,208.45	1,687,518.38	39.77049853	-80.83237008
20,600.04	91.00	321.69	10,984.50	6,164.45	-6,811.54	14,443,286.91	1,687,456.40	39.77071432	-80.83259013
20,700.04	91.00	321.69	10,982.76	6,242.91	-6,873.52	14,443,365.37	1,687,394.42	39.77093010	-80.83281018
20,800.04	91.00	321.69	10,981.02	6,321.37	-6,935.50	14,443,443.83	1,687,332.45	39.77114589	-80.83303023
20,900.04	91.00	321.69	10,979.28	6,399.83	-6,997.48	14,443,522.29	1,687,270.47	39.77136168	-80.83325029
21,000.04	91.00	321.69	10,977.54	6,478.28	-7,059.45	14,443,600.75	1,687,208.49	39.77157746	-80.83347034
21,100.04	91.00	321.69	10,975.80	6,556.74	-7,121.43	14,443,679.20	1,687,146.51	39.77179325	-80.83369040
21,200.04	91.00	321.69	10,974.06	6,635.20	-7,183.41	14,443,757.66	1,687,084.53	39.77200903	-80.83391046
21,300.04	91.00	321.69	10,972.32	6,713.66	-7,245.39	14,443,836.12	1,687,022.56	39.77222482	-80.83413052
21,400.04	91.00	321.69	10,970.58	6,792.12	-7,307.37	14,443,914.58	1,686,960.58	39.77244060	-80.83435058
21,500.04	91.00	321.69	10,968.84	6,870.58	-7,369.35	14,443,993.04	1,686,898.60	39.77265639	-80.83457064
21,600.04	91.00	321.69	10,967.10	6,949.03	-7,431.32	14,444,071.50	1,686,836.62	39.77287217	-80.83479071
21,700.04	91.00	321.69	10,965.36	7,027.49	-7,493.30	14,444,149.95	1,686,774.64	39.77308795	-80.83501077
21,800.04	91.00	321.69	10,963.62	7,105.95	-7,555.28	14,444,228.41	1,686,712.67	39.77330373	-80.83523084
21,900.04	91.00	321.69	10,961.88	7,184.41	-7,617.26	14,444,306.87	1,686,650.69	39.77351952	-80.83545091
22,000.04	91.00	321.69	10,960.14	7,262.87	-7,679.24	14,444,385.33	1,686,588.71	39.77373530	-80.83567097
22,100.04	91.00	321.69	10,958.40	7,341.33	-7,741.21	14,444,463.79	1,686,526.73	39.77395108	-80.83589105
22,200.04	91.00	321.69	10,956.66	7,419.78	-7,803.19	14,444,542.25	1,686,464.75	39.77416686	-80.83611112
22,300.05	91.00	321.69	10,954.92	7,498.24	-7,865.17	14,444,620.70	1,686,402.78	39.77438264	-80.83633119
22,400.05	91.00	321.69	10,953.18	7,576.70	-7,927.15	14,444,699.16	1,686,340.80	39.77459842	-80.83655127
22,500.05	91.00	321.69	10,951.44	7,655.16	-7,989.13	14,444,777.62	1,686,278.82	39.77481420	-80.83677134
22,600.05	91.00	321.69	10,949.70	7,733.62	-8,051.10	14,444,856.08	1,686,216.84	39.77502998	-80.83699142
22,700.05	91.00	321.69	10,947.96	7,812.08	-8,113.08	14,444,934.54	1,686,154.86	39.77524576	-80.83721150
22,800.05	91.00	321.69	10,946.22	7,890.54	-8,175.06	14,445,012.99	1,686,092.89	39.77546154	-80.83743158
22,900.05	91.00	321.69	10,944.48	7,968.99	-8,237.04	14,445,091.45	1,686,030.91	39.77567731	-80.83765166
23,000.05	91.00	321.69	10,942.74	8,047.45	-8,299.02	14,445,169.91	1,685,968.93	39.77589309	-80.83787174
23,100.05	91.00	321.69	10,941.00	8,125.91	-8,361.00	14,445,248.37	1,685,906.95	39.77610887	-80.83809183
23,200.05	91.00	321.69	10,939.26	8,204.37	-8,422.97	14,445,326.83	1,685,844.97	39.77632465	-80.83831192
23,300.05	91.00	321.69	10,937.52	8,282.83	-8,484.95	14,445,405.29	1,685,783.00	39.77654042	-80.83853200
23,400.05	91.00	321.69	10,935.78	8,361.29	-8,546.93	14,445,483.74	1,685,721.02	39.77675620	-80.83875209
23,500.05	91.00	321.69	10,934.04	8,439.74	-8,608.91	14,445,562.20	1,685,659.04	39.77697197	-80.83897218
23,600.05	91.00	321.69	10,932.30	8,518.20	-8,670.89	14,445,640.66	1,685,597.06	39.77718775	-80.83919227
23,700.05	91.00	321.69	10,930.56	8,596.66	-8,732.86	14,445,719.12	1,685,535.08	39.77740352	-80.83941237
23,800.05	91.00	321.69	10,928.82	8,675.12	-8,794.84	14,445,797.58	1,685,473.11	39.77761930	-80.83963246
23,900.05	91.00	321.69	10,927.08	8,753.58	-8,856.82	14,445,876.04	1,685,411.13	39.77783507	-80.83985256
24,000.05	91.00	321.69	10,925.34	8,832.04	-8,918.80	14,445,954.49	1,685,349.15	39.77805084	-80.84007265
24,077.04	91.00	321.69	10,924.00	8,892.44	-8,966.52	14,446,014.90	1,685,301.43	39.77821697	-80.84024211

PBHL/TD 24077.04 MD/10924.00 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Armstrong 1N-02 HU PE - hit/miss target - Shape - Point	0.00	0.00	10,924.00	8,892.44	-8,966.52	14,446,014.90	1,685,301.43	39.77821697	-80.84024211
Armstrong 1N-02 HU LP - plan misses target center by 34.06ft at 11776.22ft MD (11138.04 TVD, -758.57 N, -1342.71 E) - Point	0.00	0.00	11,138.00	-737.46	-1,315.99	14,436,385.02	1,692,951.95	39.75172984	-80.81308336

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Armstrong 1N-02 HU (slot J)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1279.00ft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL @ 1279.00ft
<b>Site:</b>	Armstrong Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Armstrong 1N-02 HU (slot J)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev0		

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.00	300.00	0.00	0.00	KOP Begin 1°/100' build
500.00	499.96	-3.49	0.00	Begin 2.00° tangent
4,802.66	4,800.00	-153.65	0.00	Begin 2°/100' build/turn
5,413.54	5,404.05	-227.53	-37.78	Begin 13.89° tangent
10,347.63	10,193.83	-1,244.20	-645.81	Begin 6°/100' build/turn
11,231.10	10,962.18	-1,118.54	-992.57	Begin 8°/100' build/turn
11,767.43	11,138.19	-765.46	-1,337.27	Begin 91.00° lateral
24,077.04	10,924.00	8,892.44	-8,966.52	PBHL/TD 24077.04 MD/10924.00 TVD



# Well Site Safety Plan

## Tug Hill Operating, LLC

*ju*  
*7/18/19*

Well Name: Armstrong N-13HU

Pad Location: Armstrong Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,400,443.73

Easting: 516,413.90

July 2019

RECEIVED  
Office of Oil and Gas  
JUL 26 2019  
WV Department of  
Environmental Protection

WW-9  
(4/16)

47 05 02259

API Number 47 - 051 - \_\_\_\_\_  
Operator's Well No. Armstrong N-13HU

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

RECEIVED  
Office of Oil and Gas

Watershed (HUC 10) Fish Creek - Ohio River (Undefined) Quadrangle Powhatan Point 7.5'

JUL 26 2019

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

West Virginia Department of Environmental Protection

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 containment

Proposed Disposal Method For Treated Pit Wastes:

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

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 / WVD109185) 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

Subscribed and sworn before me this 18 day of JULY, 20 19

Maureen A Stead

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

My commission expires 1/28/23

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 12.64 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

**Temporary**

**Permanent**

Seed Type	lbs/acre
Annual Ryegrass	40
Spring Oats	96

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Nielsen*

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Oil and Gas Inspector

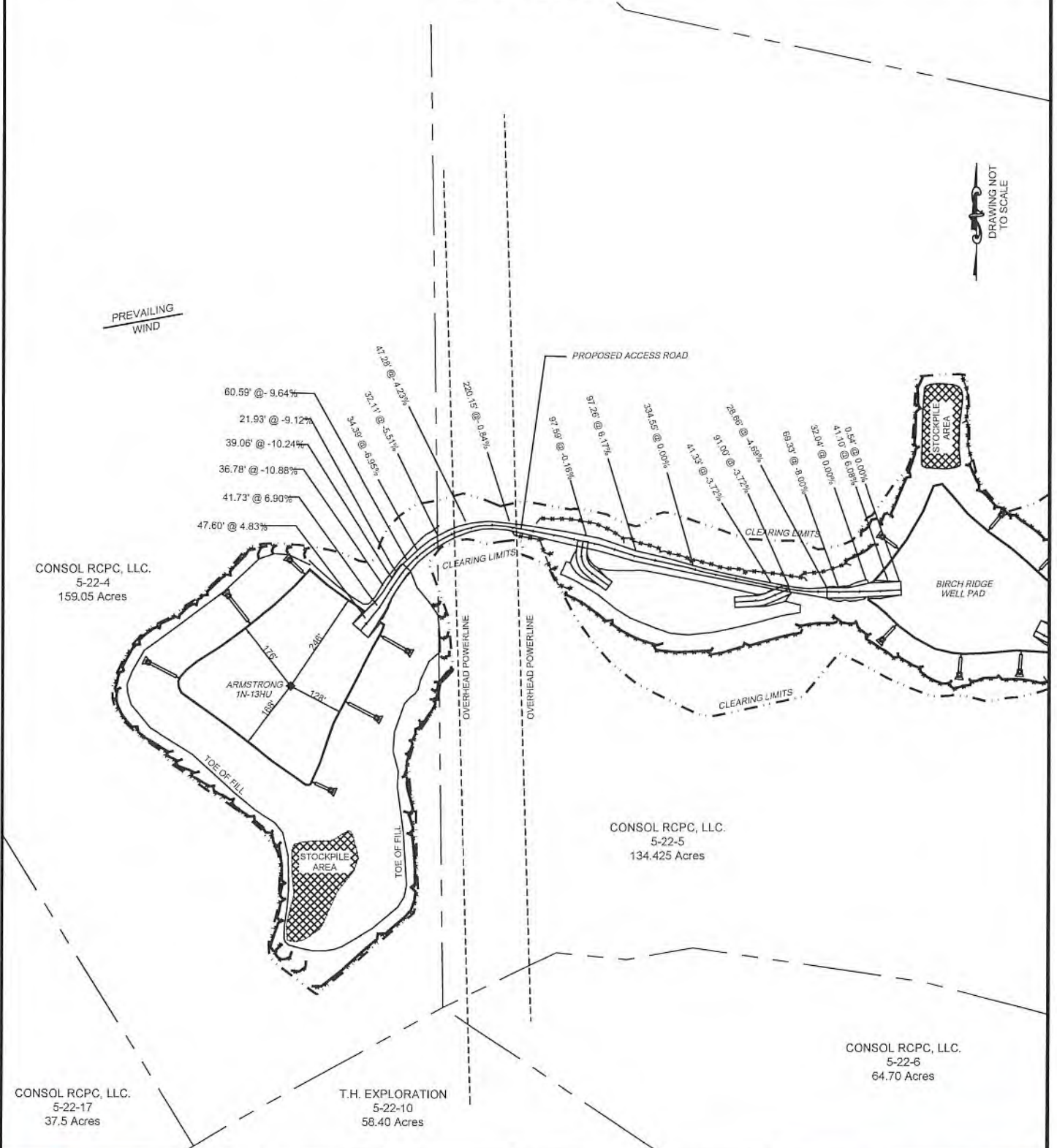
Date: 2/18/18

Field Reviewed? (  ) Yes (  ) No

WW-9

**PROPOSED ARMSTRONG  
N-13HU**

SUPPLEMENT PG 1



**Jackson Surveying Inc.**  
5415 E. Pike St.  
Clarksburg, WV 26301  
Phone: 804-623-6361

TOPO SECTION:	
POWHATAN POINT 7.5'	
COUNTY	DISTRICT
MARSHALL	FRANKLIN
DRAWN BY	JOB NO.
J.A.H	49451851

OPERATOR:	
PREPARED FOR:	
TUG HILL OPERATING, LLC 390 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
DATE	SCALE
07-15-2019	NONE

**TUG HILL  
OPERATING**

WW-9

**PROPOSED ARMSTRONG  
N-13HU**

SUPPLEMENT PG 2

DRAWING NOT  
TO SCALE

MARK E. YOHO, ET UX  
5-19-18.1  
55,948 Acres

PAUL V. & CAROL NEELY.  
5-19-18.2  
32,672 Acres

MARK E. YOHO, ET UX  
5-19-18  
55,948 Acres

CONSOL RCPC, LLC.  
5-22-5  
134,425 Acres

WILLIAMS OHIO VALLEY  
MIDSTREAM, LLC  
5-22-5.1  
12,875 Acres

CONSOL RCPC, LLC.  
5-22-6  
64,70 Acres

PREVAILING  
WIND

29

OVERHEAD POWERLINE

RECEIVED  
Office of Oil and Gas  
JUL 26 2019  
WV Department of  
Environmental Protection



**Jackson Surveying Inc.**  
2412 E. Pine St.  
Clarksburg, WV 26301  
Phone: 304-825-6881

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

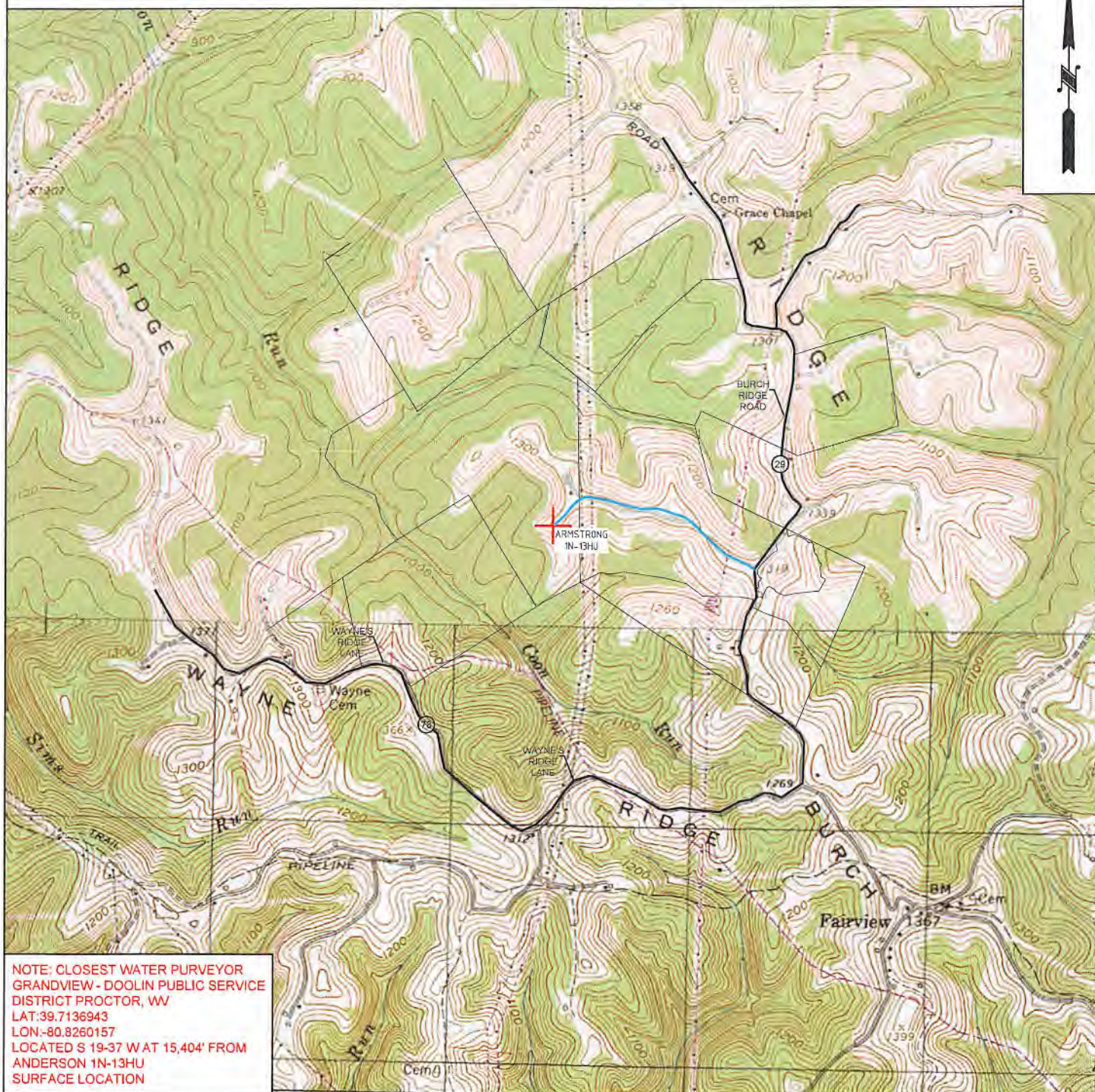
OPERATOR:	
PREPARED FOR:	
TUG HILL OPERATING, LLC 388 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
DATE	SCALE
07-16-2019	NONE



WW-9

# PROPOSED ARMSTRONG N-13HU

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR  
GRANDVIEW - DOOLIN PUBLIC SERVICE  
DISTRICT PROCTOR, WW  
LAT: 39.7136943  
LON: -80.8260157  
LOCATED S 19-37 W AT 15,404' FROM  
ANDERSON 1N-13HU  
SURFACE LOCATION



<b>OPERATOR</b>	494510851	<b>TOPO SECTION</b>	<b>LEASE NAME</b>
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		NEW MARTINSVILLE 7.5'	ARMSTRONG
		<b>SCALE:</b>	<b>DATE:</b>
		1" = 2000'	DATE: 07-15-2019



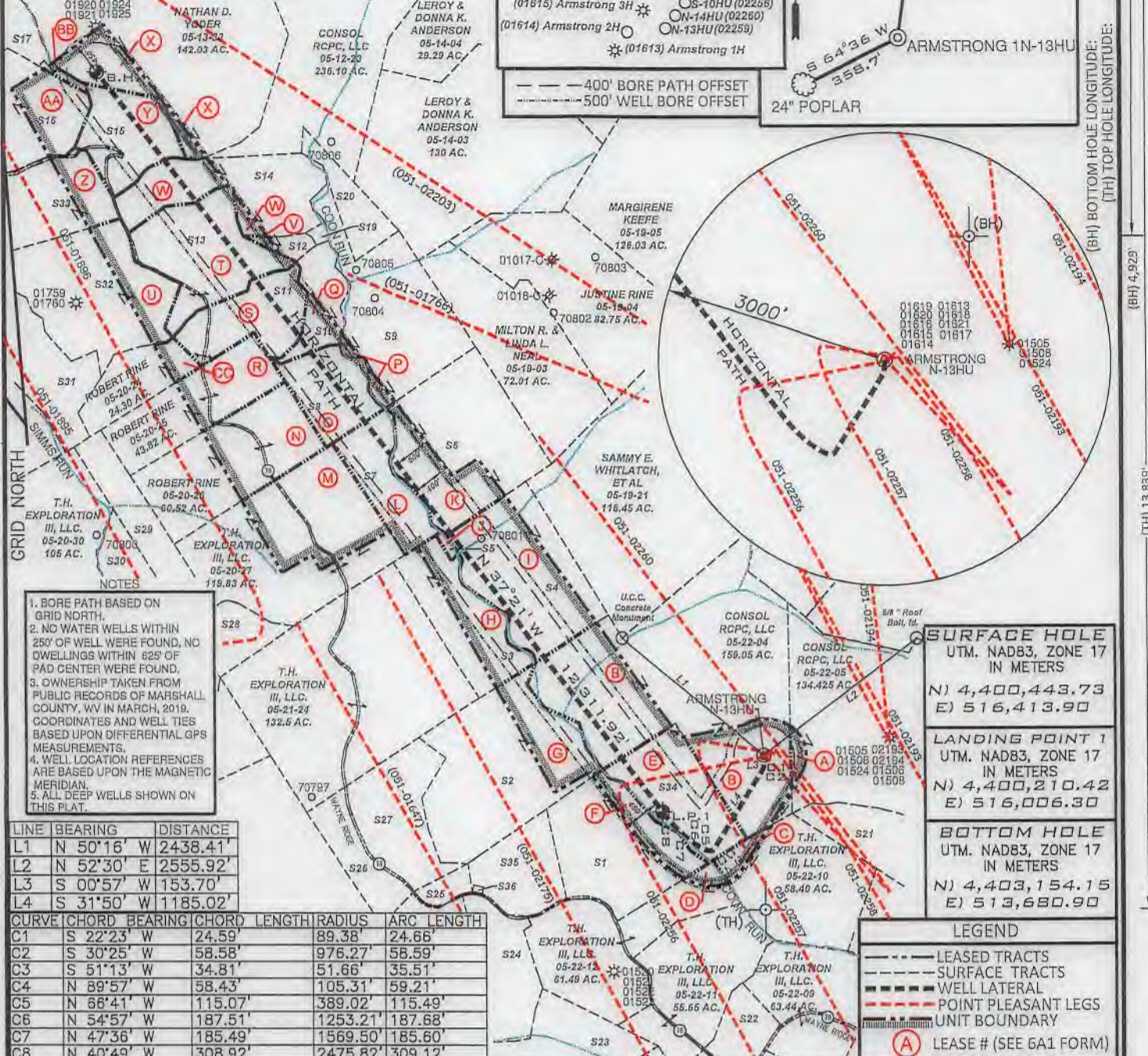
form wwb

# ARMSTRONG LEASE WELL 1N-13HU 599.7330± ACRES

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

**DETAIL** (01620) Armstrong 9H  
**SKETCH "A"** (01619) Armstrong 8H  
 SCALE 1"=200' Armstrong 7H (01618)  
 (01617) Armstrong 6H  
 (01621) Armstrong 5H  
 (01616) Armstrong 4H  
 (01615) Armstrong 3H  
 (01614) Armstrong 2H  
 (01613) Armstrong 1H

**REFERENCES** SCALE 1"=400'  
 TOP HOLE LATITUDE: 39°47'30"  
 BOTTOM HOLE LATITUDE: 39°47'30"  
 12" BLACK LOCUST  
 N 09°40' E  
 373.5'  
 24" POPLAR  
 S 64°36' W  
 358.7'



- NOTES**
- BORE PATH BASED ON GRID NORTH.
  - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
  - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2019. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
  - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
  - ALL DEEP WELLS SHOWN ON THIS PLAT.

LINE	BEARING	DISTANCE
L1	N 50°16' E	2438.41'
L2	N 52°30' E	2555.92'
L3	S 00°57' W	153.70'
L4	S 31°50' W	1185.02'

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 2°23' W	24.59'	89.38'	24.66'
C2	S 30°25' W	58.58'	976.27'	58.59'
C3	S 51°13' W	34.81'	51.66'	35.51'
C4	N 89°57' W	58.43'	105.31'	59.21'
C5	N 66°41' W	115.07'	389.02'	115.49'
C6	N 54°57' W	187.51'	1253.21'	187.68'
C7	N 47°36' W	185.49'	1569.50'	185.60'
C8	N 40°49' W	308.92'	2475.82'	309.12'

**SURFACE HOLE**  
 UTM. NAD83, ZONE 17  
 IN METERS  
 N) 4,400,443.73  
 E) 516,413.90

**LANDING POINT 1**  
 UTM. NAD83, ZONE 17  
 IN METERS  
 N) 4,400,210.42  
 E) 516,006.30

**BOTTOM HOLE**  
 UTM. NAD83, ZONE 17  
 IN METERS  
 N) 4,403,154.15  
 E) 513,680.90

**LEGEND**

- LEASE TRACTS
- - - SURFACE TRACTS
- - - WELL LATERAL
- - - POINT PLEASANT LEGS
- - - UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

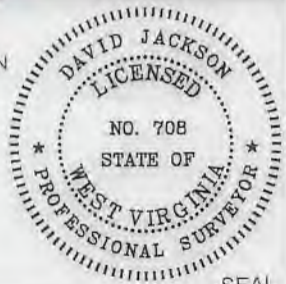
FILE NUMBER \_\_\_\_\_  
 DRAWING NUMBER: ARMSTRONG 1N-13HU\_REV 0  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING  
GRADE GPS

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. *David L Jackson*  
 708



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: JULY 24, 2019  
 REVISED DATE: SEPTEMBER 24, 2019  
 OPERATORS WELL NO. Armstrong 1N-13HU  
 API WELL NO. 47-051-02259  
 STATE WV COUNTY MARSHALL PERMIT 02259

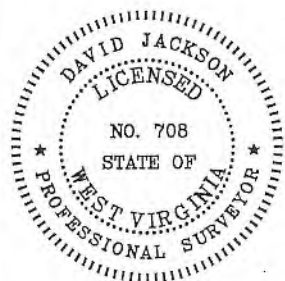
LOCATION ELEVATION 1279.12' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER  
 DISTRICT FRANKLIN COUNTY MARSHALL  
 QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER CONSOL RCPC, LLC. ACREAGE 159.05  
 OIL & GAS ROYALTY OWNER CONSOL RCPC, LLC. LEASE ACREAGE 159.05  
 PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION   
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE (SPECIFY) \_\_\_\_\_  
 PLUG & ABANDON  CLEAN OUT & REPLUG   
 TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,358' TMD: 24,077'  
 WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME  
 PERMIT

**ARMSTRONG LEASE  
WELL 1N-13HU  
599.7330± ACRES**

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S1	F 05-22-16	Edward R. Yoho, Jr.	57.0
S2	G 05-22-18	Edward R. Yoho, Jr.	77.13
S3	H 05-22-2	T.H. Exploration III, LLC.	30.0
S4	I 05-22-3	Consol RCPC, LLC	79.74
S5	J 05-22-1	Mary P. Mason, Est.	2.0
S6	K 05-19-22	George A. Knuth & Kelly A. Knuth	71.0
S7	L 05-19-23	WSD Properties, LLC	28.4
S8	O 05-19-1	Robert Rine	30.8
S9	P 05-19-2	Milton R. Neal & Linda L. Neal	63.1
S10	Q 05-13-41A	Rodney Jackson & Rhonda Jackson	17.05
S11	S 05-13-40	Robert Rine	29.76
S12	V 05-13-41B	Larry Darrah & Judy Darrah	2.5
S13	T 05-13-39	Thomas Bowman & Victoria Bowman	46.0
S14	W 05-13-42	Thomas Bowman & Victoria Bowman	45.0
S15	Y 05-13-34	David J. Mast	40.0
S16	AA 05-13-23	David J. Mast	69.59
S17	BB 05-13-25	Aaron Paul Holdren, Et Ux	30.0
S18	05-13-27	Aaron Paul Holdren, Et Ux	25.0
S19	05-13-41C	Hrs. of Benton Darrah, Lillie May Dugan, Alma Bitzer, Alberta Palmer & Audrey Howard	1.0
S20	05-14-2	John B. Williams, Et Al	20.17
S21	05-22-6	Consol RCPC, LLC	64.70
S22	05-28-4	T.H. Exploration III, LLC.	48.44
S23	05-28-3	T.H. Exploration III, LLC.	53.44
S24	05-22-13	John M. Moore, Teresa R. Moore, & Andrea S. Moore	40.57
S25	05-21-21	Consol RCPC, LLC	4.0
S26	05-21-22	Peggy Lee Bowan Brown, Et Al	18.29
S27	05-21-23	Peggy Lee Bowan Brown, Et Al	42.62
S28	05-20-28	T.H. Exploration III, LLC.	15.34
S29	05-20-29	T.H. Exploration III, LLC.	30.08
S30	05-20-32	T.H. Exploration III, LLC.	28.8
S31	05-13-37	T.H. Exploration III, LLC.	51.21
S32	U 05-13-38	Thomas Bowman & Victoria Bowman	61.0
S33	Z 05-33-35	David J. Mast	24.90
S34	E 05-22-17	CONSOL RCPC, LLC	37.5
S35	05-22-15	Edward R. Yoho, Jr.	25.5
S36	05-22-14	CONSOL RCPC, LLC	0.3



P.S. 708 *David L Jackson*



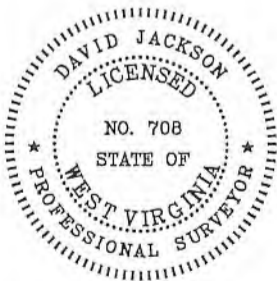
**TUG HILL  
OPERATING**

OPERATOR'S  
WELL #: Armstrong 1N-13HU  
DISTRICT: Franklin  
COUNTY: Marshall  
STATE: WV  
API: 047-051-02259

WELL PLAT  
PAGE 2 OF 4  
DATE: 07/24/2019  
REVISED DATE:  
09/24/2019

**ARMSTRONG LEASE  
WELL 1N-13HU  
599.7330± ACRES**

Lease No.	Tags	Parcel	Lessor	Book	Page
10*19529	A	5-22-5	CNX GAS COMPANY LLC	733	500
10*14033	B	5-22-4	LAMOYNE BAKER	665	554
10*14034	B	5-22-4	LAWRENCE C AND LORRAINE J MCWHORTER	665	391
10*14035	B	5-22-4	PEGGY MAE WHITE	695	446
10*14036	B	5-22-4	WILDA WINTERS	701	579
10*14037	B	5-22-4	JUDITH L CHAMBERS	701	577
10*14039	D	5-22-4	CHESTNUT HOLDINGS LLC	827	554
10*14418	C	5-22-10	PPG INDUSTRIES, INC.	878	610
10*14418	D	5-22-12	PPG INDUSTRIES, INC.	878	610
10*14507	E	5-22-17	MARY THERESA SOLEAU AND THOMAS SOLEAU	749	524
10*14508	E	5-22-17	JEAN W FOSTER	752	200
10*14509	E	5-22-17	JAMES ROBERT WELLS	752	202
10*14510	E	5-22-17	MARY AGNES CARROLL	749	528
10*14511	E	5-22-17	ELIZABETH JANE KELLER	754	242
10*14513	E	5-22-17	CARDLYN LYNN PORTER	767	256
10*14514	E	5-22-17	CHARLES ARTHUR WELLS	768	494
10*14515	E	5-22-17	JERRY TODD WELLS	773	572
10*14516	E	5-22-17	JAMES NESDITT WELLS BY JOANIE WELLS AIF	773	570
10*14517	E	5-22-17	CARL W BACH JR	852	250
10*14518	E	5-22-17	RAE ELLEN FLOYD AND KENNETH FLOYD	854	599
10*14519	E	5-22-17	DOUGLAS M BACH	854	597
10*16471	E	5-22-17	CNX GAS COMPANY LLC	905	155
10*16652	E	5-22-17	MARY JUDITH BRANSON AND MICHAEL L BRANSON	942	35
10*16674	E	5-22-17	CHARLOTTE A KASTELIC	942	37
10*26910	E	5-22-17	BRIDGET S AND DARRELL T GATES	1045	419
10*26940	E	5-22-17	PATRICK N WELLS	1045	413
10*14457	F	5-22-16	HARRY LEE GOUDY	731	140
10*14457	B	5-22-18	HARRY LEE GOUDY	731	140
10*14418	H	5-22-2	PPG INDUSTRIES, INC.	878	610
10*14608	I	5-22-3	CHESTNUT HOLDINGS INC	827	560
10*14520	J	5-22-1	BONNIE GRISSELL	756	81
10*14521	J	5-22-1	ANITAMAE MASON	752	218
10*14581	K	5-19-22	CAROL BORDNER	693	609
10*14582	K	5-19-22	DALE F MCINTIRE	694	104
10*14503	K	5-19-22	BRADLEY DEMENT AKA BRADLEY F DEMENT	694	79
10*14504	K	5-19-22	RAY F MCINTIRE AKA FRANCIS RAY MCINTIRE	693	620
10*14505	K	5-19-22	WILBUR L GILAND	694	543
10*14586	K	5-19-22	CARDLYN MCINTIRE HICKERSON	694	545
10*14587	K	5-19-22	CHERYL FIDLER	694	550
10*14588	K	5-19-22	LLOYD E MCINTYRE II	694	565
10*14589	K	5-19-22	BETTY JEAN HARBOUR	694	569
10*14590	K	5-19-22	CHARLES HARBOUR AND CAROL J HARBOUR	694	540
10*14591	K	5-19-22	JUDY L MCINTIRE	694	553
10*14592	K	5-19-22	NORA JEAN TRUEX	696	639
10*14593	K	5-19-22	KEITH MCINTYRE AND TAMMY MCINTYRE	696	17
10*14594	K	5-19-22	KAREN M ECKELBERRY	696	13
10*14595	K	5-19-22	JUDY A ADAMS	696	643
10*14596	K	5-19-22	MARY LEE LOWE	696	9
10*14597	K	5-19-22	JACKIE MCINTIRE STEPHANIE A CRUSS, POA	702	210
10*14598	K	5-19-22	GEORGE A KNUTH AND KELLY A KNUTH	741	523
10*14599	K	5-19-22	ESTATE OF KATHRYN G NOFFSINGER MICHAEL E MCINTIRE, GUARDIAN	839	522
10*14600	K	5-19-22	PAMELA HARTZLER	839	525
10*14601	K	5-19-22	TERRY MCINTIRE	840	158
10*14459	L	5-19-23	HELEN CROSKY & WILLIAM DENOON CO-TRUSTEES, JANIE L DENOON TRUST	731	145
10*14307	M	5-20-27	SALLY CYNTHIA HOPKINS	777	572
10*14308	M	5-20-27	MARY E BASSETT	779	492
10*14309	M	5-20-27	ROBERT B THOMAS	779	484
10*14310	M	5-20-27	JEAN C THOMAS	781	614
10*14324	M	5-20-27	RUTH E BASSETT MEADOWS	792	100
10*14325	M	5-20-27	ELIZABETH ANN STRAUSSBAUGEI	792	104
10*14326	M	5-20-27	JANET LEA BLANKENSHIP	792	560
10*14418	M	5-20-27	PPG INDUSTRIES, INC.	878	610
10*14616	N	5-20-26	ROBERT E RINE & DONNA M RINE	708	250
10*14614	O	5-19-1	ROBERT RINE	708	252
10*14040	P	5-19-2	MILTON R NEAL AND LINDA L NEAL	665	498
10*14041	P	5-19-2	SHIREN ESTATES INC	718	496
10*14461	Q	5-13-41A	RODNEY & RHONDA JACKSON	739	611
10*14605	R	5-20-25	ROBERT E. RINE AND DONNA M. RINE	708	253
10*17099	R	5-20-25	ROBERT RINE	852	564
10*14502	S	5-13-40	ROBERT E RINE & DONNA M RINE	752	206
10*14529	S	5-13-40	HELEN BOWMAN	790	523
10*14530	S	5-13-40	NANCY L VENSKE	790	521



P.S. 708 *David L Jackson*



**TUG HILL  
OPERATING**

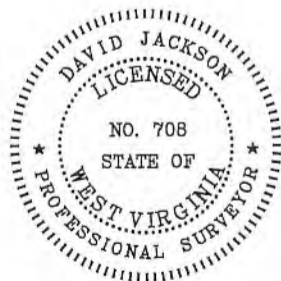
OPERATOR'S  
WELL #: *Armstrong 1N-13HU*  
DISTRICT: *Franklin*  
COUNTY: *Marshall*  
STATE: *WV*  
API: *047-051-02259*

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*09/24/2019*

form. ww6

**ARMSTRONG LEASE  
WELL 1N-13HU  
599.7330± ACRES**

Lease No.	Trce	Parcel	Lessor	Book	Page
10*14531	S	5-13-40	CORA A. WEST	791	641
10*14532	S	5-13-40	JOAN E MENKEMELLER	791	639
10*14533	S	5-13-40	NANCY L FEISZLI	792	644
10*14535	S	5-13-40	RALPH W CONNER	794	513
10*14549	S	5-13-40	REBECCA PALKNER	829	603
10*14550	S	5-13-40	CARRIE C WARREN	840	156
10*14551	S	5-13-40	SHARON S ANTALIS	842	392
10*14552	S	5-13-40	GLORIA J SILVERIO	844	81
10*14678	S	5-13-40	ARTHUR BRUCE COLTER	839	519
10*17099	S	5-13-40	ROBERT RINE	852	564
10*14526	T	5-13-39	THOMAS WILLIAM BOWMAN	761	432
10*14527	T	5-13-39	VICTORIA BOWMAN	761	434
10*14529	T	5-13-39	HELEN BOWMAN	790	523
10*14530	T	5-13-39	NANCY L VENSOSKE	790	521
10*14531	T	5-13-39	CORA A. WEST	791	641
10*14532	T	5-13-39	JOAN E MENKEMELLER	791	639
10*14533	T	5-13-39	NANCY L FEISZLI	792	644
10*14535	T	5-13-39	RALPH W CONNER	794	513
10*14549	T	5-13-39	REBECCA PALKNER	829	603
10*14550	T	5-13-39	CARRIE C WARREN	840	156
10*14551	T	5-13-39	SHARON S ANTALIS	842	392
10*14552	T	5-13-39	GLORIA J SILVERIO	844	81
10*14678	T	5-13-39	ARTHUR BRUCE COLTER	839	519
10*17108	T	5-13-39	THOMAS WILLIAM BOWMAN	850	263
10*17109	T	5-13-39	VICTORIA BOWMAN	850	260
10*14526	U	5-13-38	THOMAS WILLIAM BOWMAN	761	432
10*14527	U	5-13-38	VICTORIA BOWMAN	761	434
10*16854	V	5-13-41B	LARRY DARRAH AND JUDY DARRAH	915	484
10*14526	W	5-13-42	THOMAS WILLIAM BOWMAN	761	432
10*14527	W	5-13-42	VICTORIA BOWMAN	761	434
10*14701	X	5-13-33	ROSEITA M THORNTON	885	600
10*14702	X	5-13-33	NATHAN D YODER	708	71
10*17627	X	5-13-33	NATHAN D YODER	917	62
10*18191	Y	5-13-34	DAVID J AND MIRIAM MAST	952	183
10*14618	Z	5-13-35	DAVID J AND MIRIAM MAST	707	645
10*14701	Z	5-13-35	ROSEITA M THORNTON	885	600
10*14700	AA	5-13-23	DAVID J AND MIRIAM MAST	708	239
10*14701	AA	5-13-23	ROSEITA M THORNTON	885	600
10*14549	BB	5-13-25	REBECCA PALKNER	829	603
10*14748	BB	5-13-25	MARGUERIE NIGHTENGALE	790	541
10*14749	BB	5-13-25	JANICE E FLUTEY	792	116
10*14750	BB	5-13-25	MARY SUE ANTHONY	792	114
10*14751	BB	5-13-25	GRACE E LIJKART	792	642
10*14752	BB	5-13-25	CHARLES DOWEN	792	648
10*14753	BB	5-13-25	JERRY SMOYER	794	474
10*14754	BB	5-13-25	BERNARD KNOLLINGER	794	472
10*14755	BB	5-13-25	JUDITH A MCGRAIL	794	517
10*14756	BB	5-13-25	WOODROW J. KNOLLINGER	794	515
10*14757	BB	5-13-25	DOUGLAS W. KNOLLINGER	794	487
10*14758	BB	5-13-25	GARY R KNOLLINGER	795	154
10*14759	BB	5-13-25	GLORIA J. LIJKART DECEASED BY MARK LIJKART AIF	804	245
10*14760	BB	5-13-25	JEFFREY M BROWN	809	535
10*14761	BB	5-13-25	RONALD E CLARK	809	571
10*14762	BB	5-13-25	WILLIAM CARL KNOLLINGER	815	238
10*14763	BB	5-13-25	BETTY J MCKINLEY	815	240
10*14764	BB	5-13-25	MARY B KNOLLINGER	821	40
10*14765	BB	5-13-25	RUTH A KINNEY	821	42
10*14766	BB	5-13-25	JANICE M SANDERS	827	527
10*14767	BB	5-13-25	WILLIAM J SMOYER	829	332
10*14768	BB	5-13-25	BONNIE DGINTO	844	77
10*14769	BB	5-13-25	JAYNE S KISSEL	844	79
10*14770	BB	5-13-25	MARY M HALL	846	413
10*14771	BB	5-13-25	ERIC W THORNGATE	846	464
10*14772	BB	5-13-25	GREG E THORNGATE	846	436
10*14773	BB	5-13-25	JUSTIN J ANTHONY	846	438
10*14774	BB	5-13-25	THOMAS R KNOLLINGER	846	406
10*14775	BB	5-13-25	TODD HANNIG	849	522
10*14776	BB	5-13-25	KAREN M SMOYER	876	457
10*17590	BB	5-13-25	ROBIN L KNOLLINGER	951	557
10*17591	BB	5-13-25	SHARON M MAIMONE AND ROBERT A MAIMONE	951	554
10*19847	BB	5-13-25	WILLIAM JOHN WAGNER UNKNOWN HEIRS MARY WAGNER MANN UNKNOWN HEIRS	943	450
10*26814	BB	5-13-25	ELIZABETH S STANFORD	1045	422
10*26936	BB	5-13-25	WILLIAM S & BARBARA S HANNIG	1046	468
10*27060	BB	5-13-25	SCOTT A AND STACI C HANNIG	1051	240



P.S. *David L Jackson*  
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**TUG HILL  
OPERATING**

OPERATOR'S  
WELL #: Armstrong 1N-13HU  
DISTRICT: Franklin  
COUNTY: Marshall  
STATE: WV  
API: 047-051-02259

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DATE: 07/24/2019  
REVISED DATE:  
09/24/2019

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

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

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

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

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

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

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

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

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

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# Operator's Well No. Armstrong N - 13HU

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	
10*19529	A	5-22-5	CNX GAS COMPANY LLC	TH EXPLORATION, LLC	1/8+	733	500	NA	NA	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14033	B	5-22-4	LAMOYNE BAKER	GASTAR EXPLORATION USA INC	1/8+	665	554	NA	23/353 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*14034	B	5-22-4	LAWRENCE C AND LORRAINE J MCWHORTER	GASTAR EXPLORATION USA INC	1/8+	665	391	NA	23/353 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*14035	B	5-22-4	PEGGY MAE WHITE	GASTAR EXPLORATION USA INC	1/8+	695	446	NA	23/353 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*14036	B	5-22-4	WILDA WINTERS	GASTAR EXPLORATION USA INC	1/8+	701	579	NA	23/353 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*14037	B	5-22-4	JUDITH L CHAMBERS	GASTAR EXPLORATION USA INC	1/8+	701	577	NA	23/353 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*14039	B	5-22-4	CHESTNUT HOLDINGS LLC	GASTAR EXPLORATION INC	1/8+	827	554	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14418	C	5-22-10	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14418	D	5-22-12	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14507	E	5-22-17	MARY THERESA SOLEAU AND THOMAS SOLEAU	GASTAR EXPLORATION USA INC	1/8+	749	524	NA	26/639 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*14508	E	5-22-17	JEAN W FOSTER	GASTAR EXPLORATION USA INC	1/8+	752	200	NA	26/639 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*14509	E	5-22-17	JAMES ROBERT WELLS	GASTAR EXPLORATION USA INC	1/8+	752	202	NA	26/639 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*14510	E	5-22-17	MARY AGNES CARROLL	GASTAR EXPLORATION USA INC	1/8+	749	528	NA	26/639 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	

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10*14511	E	5-22-17	ELIZABETH JANE KELLER	GASTAR EXPLORATION USA INC	1/8+	754	242	NA	26/639 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*14513	E	5-22-17	CAROLYN LYNN PORTER	GASTAR EXPLORATION USA INC	1/8+	767	256	NA	26/639 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*14514	E	5-22-17	CHARLES ARTHUR WELLS	GASTAR EXPLORATION USA INC	1/8+	768	494	NA	26/639 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*14515	E	5-22-17	JERRY TODD WELLS	GASTAR EXPLORATION USA INC	1/8+	773	572	NA	26/639 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*14516	E	5-22-17	JAMES NESSBITT WELLS BY JOANIE WELLS AIF	GASTAR EXPLORATION USA INC	1/8+	773	570	NA	26/639 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*14517	E	5-22-17	CARL W BACH JR	GASTAR EXPLORATION INC	1/8+	852	250	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14518	E	5-22-17	RAE ELLEN FLOYD AND KENNETH FLOYD	GASTAR EXPLORATION INC	1/8+	854	599	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14519	E	5-22-17	DOUGLAS M BACH	GASTAR EXPLORATION INC	1/8+	854	597	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*16471	E	5-22-17	CNX GAS COMPANY LLC	TH EXPLORATION, LLC	1/8+	905	155	NA	NA	NA	NA
10*16652	E	5-22-17	MARY JUDITH BRANSON AND MICHAEL L BRANSON	TH EXPLORATION, LLC	1/8+	942	35	NA	NA	NA	NA
10*16674	E	5-22-17	CHARLOTTE A KASTELIC	TH EXPLORATION, LLC	1/8+	942	37	NA	NA	NA	NA
10*26910	E	5-22-17	BRIDGET S AND DARRELL T GATES	TH EXPLORATION, LLC	1/8+	1045	419	NA	NA	NA	NA
10*26940	E	5-22-17	PATRICK N WELLS	TH EXPLORATION, LLC	1/8+	1045	413	NA	NA	NA	NA
10*14457	F	5-22-16	HARRY LEE GOUDY	GASTAR EXPLORATION USA INC	1/8+	731	140	NA	735/263 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

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10*14457	G	5-22-18	HARRY LEE GOUDY	GASTAR EXPLORATION USA INC	1/8+	731	140	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*14418	H	5-22-2	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14608	I	5-22-3	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827	560	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14520	J	5-22-1	BONNIE GRISELL	GASTAR EXPLORATION USA INC	1/8+	756	81	NA	26/639 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*14521	J	5-22-1	ANITA MAE MASON	GASTAR EXPLORATION USA INC	1/8+	752	218	NA	26/639 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*14581	K	5-19-22	CAROL BORDNER	CHESAPEAKE APPALACHIA LLC	1/8+	693	609	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*14582	K	5-19-22	DALE F MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	694	104	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties 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*14583	K	5-19-22	BRADLEY DEMENT AKA BRADLEY F DEMENT	CHESAPEAKE APPALACHIA LLC	1/8+	694	79	Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14584	K	5-19-22	RAY F MCINTIRE AKA FRANCIS RAY MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	693	620	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



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Operator's Well No. Armstrong N - 13HU

10*14585	K	5-19-22	WILBUR L BLAND	CHESAPEAKE APPALACHIA LLC	1/8+	694	543	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14586	K	5-19-22	CAROLYN MCINTIRE HICKERSON	CHESAPEAKE APPALACHIA LLC	1/8+	694	546	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14587	K	5-19-22	CHERYL FIDLER	CHESAPEAKE APPALACHIA LLC	1/8+	694	550	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14588	K	5-19-22	LLOYD E MCINTYRE II	CHESAPEAKE APPALACHIA LLC	1/8+	694	565	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*14589	K	5-19-22	BETTY JEAN HARBOUR	CHESAPEAKE APPALACHIA LLC	1/8+	694	569	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14590	K	5-19-22	CHARLES HARBOUR AND CAROL J HARBOUR	CHESAPEAKE APPALACHIA LLC	1/8+	694	540	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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

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Operator's Well No. Armstrong N - 13HU

10*14591	K	5-19-22	JUDY L MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	694	553	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*14592	K	5-19-22	NORA JEAN TRUEX	CHESAPEAKE APPALACHIA LLC	1/8+	696	639	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14593	K	5-19-22	KEITH MCINTYRE AND TAMIMY MCINTYRE	CHESAPEAKE APPALACHIA LLC	1/8+	696	17	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14594	K	5-19-22	KAREN M ECKELBERRY	CHESAPEAKE APPALACHIA LLC	1/8+	696	13	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14595	K	5-19-22	JUDY A ADAMS	CHESAPEAKE APPALACHIA LLC	1/8+	696	643	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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*14596	K	5-19-22	MARY LEE LOWE	CHESAPEAKE APPALACHIA LLC	1/8+	696	9	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	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

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10*14597	K	5-19-22	JACKIE MCINTIRE STEPHANIE A GRISS, POA	CHESAPEAKE APPALACHIA LLC	1/8+	702	218	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*14598	K	5-19-22	GEORGE A KNUTH AND KELLY A KNUTH	GASTAR EXPLORATION USA INC	1/8+	741	523	NA	26/639 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*14599	K	5-19-22	ESTATE OF KATHRYN G NOFFSINGER MICHAEL E MCINTIRE, GUARDIAN	GASTAR EXPLORATION INC	1/8+	839	522	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14600	K	5-19-22	PAMELA HARTZLER	GASTAR EXPLORATION INC	1/8+	839	525	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14601	K	5-19-22	TERRY MCINTIRE	GASTAR EXPLORATION INC	1/8+	840	158	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14459	L	5-19-23	HELEN CROSKEY & WILLIAM DENON CO-TRUSTEES, JANIE L DENON TRUST	GASTAR EXPLORATION USA INC	1/8+	731	145	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*14307	M	5-20-27	SALLY CVNTHIA HOPKINS	GASTAR EXPLORATION USA INC	1/8+	777	572	NA	24/332 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*14308	M	5-20-27	MARY E BASSETT	GASTAR EXPLORATION USA INC	1/8+	779	492	NA	24/332 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*14309	M	5-20-27	ROBERT B THOMAS	GASTAR EXPLORATION USA INC	1/8+	779	484	NA	24/332 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*14310	M	5-20-27	JEAN C THOMAS	GASTAR EXPLORATION USA INC	1/8+	781	614	NA	24/332 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*14324	M	5-20-27	RUTH E BASSETT MEADOWS	GASTAR EXPLORATION USA INC	1/8+	792	100	NA	29/157 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*14325	M	5-20-27	ELIZABETH ANN STRAUSBAUGH	GASTAR EXPLORATION USA INC	1/8+	792	104	NA	29/157 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*14326	M	5-20-27	JANET LEA BLANKENSHIP	GASTAR EXPLORATION USA INC	1/8+	792	580	NA	30/136 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*14418	M	5-20-27	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14616	N	5-20-26	ROBERT E RINE & DONNA M RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	250	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*14614	O	5-19-1	ROBERT RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	252	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*14040	P	5-19-2	MILTON R NEAL AND LINDA L NEAL	GASTAR EXPLORATION USA INC	1/8+	665	498	NA	23/353 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	P	5-19-2	SHIBEN ESTATES INC	GASTAR EXPLORATION USA INC	1/8+	718	496	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*14461	Q	5-13-41A	RODNEY & RHONDA JACKSON	GASTAR EXPLORATION USA INC	1/8+	739	411	NA	26/183 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*14685	R	5-20-25	ROBERT E. RINE AND DONNA M. RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	253	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*17099	R	5-20-25	ROBERT RINE	GASTAR EXPLORATION INC	1/8+	852	564	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14502	S	5-13-40	ROBERT E RINE & DONNA M RINE	GASTAR EXPLORATION USA INC	1/8+	752	206	NA	26/639 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

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10*14529	S	5-13-40	HELEN BOWMAN	GASTAR EXPLORATION USA INC	1/8+	790	523	NA	29/157 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*14530	S	5-13-40	NANCY L. VENSKOSKE	GASTAR EXPLORATION USA INC	1/8+	790	521	NA	29/157 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*14531	S	5-13-40	CORA A. WEST	GASTAR EXPLORATION USA INC	1/8+	791	641	NA	29/157 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*14532	S	5-13-40	JOAN E MENKEMELLER	GASTAR EXPLORATION USA INC	1/8+	791	639	NA	29/157 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*14533	S	5-13-40	NANCY L FEISZLI	GASTAR EXPLORATION USA INC	1/8+	792	644	NA	806/1 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*14535	S	5-13-40	RALPH W CONNER	GASTAR EXPLORATION USA INC	1/8+	794	513	NA	806/1 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*14549	S	5-13-40	REBECCA PAUKNER	GASTAR EXPLORATION USA INC	1/8+	829	603	NA	32/428 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*14550	S	5-13-40	CARRIE C WARREN	GASTAR EXPLORATION INC	1/8+	840	156	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14551	S	5-13-40	SHARON S ANTALIS	GASTAR EXPLORATION INC	1/8+	842	392	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14552	S	5-13-40	GLORIA J SILVERIO	GASTAR EXPLORATION INC	1/8+	844	81	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14878	S	5-13-40	ARTHUR BRUCE COULTER	GASTAR EXPLORATION INC	1/8+	839	519	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17099	S	5-13-40	ROBERT RINE	GASTAR EXPLORATION INC	1/8+	852	564	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14526	T	5-13-39	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	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	T	5-13-39	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	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

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10*14529	T	5-13-39	HELEN BOWMAN	GASTAR EXPLORATION USA INC	1/8+	790	523	NA	29/157 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*14530	T	5-13-39	NANCY L. VENSOSKOSKE	GASTAR EXPLORATION USA INC	1/8+	790	521	NA	29/157 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*14531	T	5-13-39	CORA A. WEST	GASTAR EXPLORATION USA INC	1/8+	791	641	NA	29/157 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*14532	T	5-13-39	JOAN E MENKEMELLER	GASTAR EXPLORATION USA INC	1/8+	791	639	NA	29/157 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*14533	T	5-13-39	NANCY L FEISZLI	GASTAR EXPLORATION USA INC	1/8+	792	644	NA	806/1 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*14535	T	5-13-39	RALPH W CONNER	GASTAR EXPLORATION USA INC	1/8+	794	513	NA	806/1 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*14549	T	5-13-39	REBECCA PAUKNER	GASTAR EXPLORATION USA INC	1/8+	829	603	NA	32/428 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*14550	T	5-13-39	CARRIE C WARREN	GASTAR EXPLORATION INC	1/8+	840	156	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14551	T	5-13-39	SHARON S ANTALIS	GASTAR EXPLORATION INC	1/8+	842	392	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14552	T	5-13-39	GLORIA J SILVERIO	GASTAR EXPLORATION INC	1/8+	844	81	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14878	T	5-13-39	ARTHUR BRUCE COULTER	GASTAR EXPLORATION INC	1/8+	839	519	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17108	T	5-13-39	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION INC	1/8+	850	263	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17109	T	5-13-39	VICTORIA BOWMAN	GASTAR EXPLORATION INC	1/8+	850	260	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14526	U	5-13-38	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	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	U	5-13-38	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	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*16854	V	5-13-41B	LARRY DARRAH AND JUDY DARRAH	TH EXPLORATION, LLC	1/8+	915	484	NA	NA	NA	NA
10*14526	W	5-13-42	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	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	W	5-13-42	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	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*14701	X	5-13-33	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885	600	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14702	X	5-13-33	NATHAN D YODER	CHESAPEAKE APPALACHIA LLC	1/8+	708	71	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	35/575 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*17627	X	5-13-33	NATHAN D YODER	TH EXPLORATION, LLC	1/8+	917	62	NA	NA	NA	NA
10*18191	Y	5-13-34	DAVID J AND MIRIAM MAST	TH EXPLORATION, LLC	1/8+	952	183	NA	NA	NA	NA
10*14618	Z	5-13-35	DAVID J AND MIRIAM MAST	CHESAPEAKE APPALACHIA LLC	1/8+	707	645	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*14701	Z	5-13-35	ROSEITA M THORNTON	GASTAR EXPLORATION USA INC	1/8+	885	600	NA	35/575 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*14700	AA	5-13-23	DAVID J AND MIRIAM MAST	CHESAPEAKE APPALACHIA LLC	1/8+	708	239	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*14701	AA	5-13-23	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885	600	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14549	BB	5-13-25	REBECCA PAUKNER	GASTAR EXPLORATION USA INC	1/8+	829	603	NA	32/428 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*14748	BB	5-13-25	MARJORIE NIGHTENGALE	GASTAR EXPLORATION USA INC	1/8+	790	541	NA	29/157 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*14749	BB	5-13-25	JANICE E FUTEY	GASTAR EXPLORATION USA INC	1/8+	792	116	NA	29/157 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*14750	BB	5-13-25	MARY SUE ANTHONY	GASTAR EXPLORATION USA INC	1/8+	792	114	NA	29/157 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*14751	BB	5-13-25	GRACE E LUIKART	GASTAR EXPLORATION USA INC	1/8+	792	642	NA	806/1 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*14752	BB	5-13-25	CHARLES BOWEN	GASTAR EXPLORATION USA INC	1/8+	792	648	NA	30/136 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*14753	BB	5-13-25	JERRY SMOYER	GASTAR EXPLORATION USA INC	1/8+	794	474	NA	806/1 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*14754	BB	5-13-25	BERNARD KNOOLLINGER	GASTAR EXPLORATION USA INC	1/8+	794	472	NA	30/136 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*14755	BB	5-13-25	JUDITH A MCGRAIL	GASTAR EXPLORATION USA INC	1/8+	794	517	NA	30/136 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*14756	BB	5-13-25	WOODROW J. KNOOLLINGER	GASTAR EXPLORATION USA INC	1/8+	794	515	NA	30/136 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*14757	BB	5-13-25	DOUGLAS W. KNOLLINGER	GASTAR EXPLORATION USA INC	1/8+	794	487	NA	30/136 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*14758	BB	5-13-25	GARY R KNOLLINGER	GASTAR EXPLORATION USA INC	1/8+	795	154	NA	30/136 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*14759	BB	5-13-25	GLORIA J. LUIKART DECEASED BY MARK LUIKART AIF	GASTAR EXPLORATION USA INC	1/8+	804	245	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*14760	BB	5-13-25	JEFFREY M BROWN	GASTAR EXPLORATION USA INC	1/8+	809	535	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*14761	BB	5-13-25	RONALD E CLARK	GASTAR EXPLORATION USA INC	1/8+	809	571	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*14762	BB	5-13-25	WILLIAM CARL KNOLLINGER	GASTAR EXPLORATION USA INC	1/8+	815	238	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*14763	BB	5-13-25	BETTY J MCKINLEY	GASTAR EXPLORATION USA INC	1/8+	815	240	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*14764	BB	5-13-25	MARY B KNOLLINGER	GASTAR EXPLORATION USA INC	1/8+	821	40	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*14765	BB	5-13-25	RUTH A KINNEY	GASTAR EXPLORATION USA INC	1/8+	821	42	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*14766	BB	5-13-25	JANICE M SANDERS	GASTAR EXPLORATION USA INC	1/8+	827	527	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*14767	BB	5-13-25	WILLIAM J SMOYER	GASTAR EXPLORATION USA INC	1/8+	829	332	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*14768	BB	5-13-25	BONNIE DGINTO	GASTAR EXPLORATION USA INC	1/8+	844	77	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*14769	BB	5-13-25	JAYNE S KISSEL	GASTAR EXPLORATION USA INC	1/8+	844	79	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*14770	BB	5-13-25	MARY M HALL	GASTAR EXPLORATION USA INC	1/8+	846	413	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*14771	BB	5-13-25	ERIC W THORNGATE	GASTAR EXPLORATION USA INC	1/8+	846	464	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

# WW-6A1 Supplement

## Operator's Well No. Armstrong N - 13HU

10*14772	BB	5-13-25	GREG E THORNGATE	GASTAR EXPLORATION INC	1/8+	846	436	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14773	BB	5-13-25	JUSTIN J ANTHONY	GASTAR EXPLORATION INC	1/8+	846	438	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14774	BB	5-13-25	THOMAS R KNOLLINGER	GASTAR EXPLORATION INC	1/8+	846	406	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14775	BB	5-13-25	TODD HANNIG	GASTAR EXPLORATION INC	1/8+	849	522	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14776	BB	5-13-25	KAREN M SMOYER	GASTAR EXPLORATION INC	1/8+	876	457	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17590	BB	5-13-25	ROBIN L KNOLLINGER	TH EXPLORATION, LLC	1/8+	951	557	NA	NA	NA	NA
10*17591	BB	5-13-25	SHARON M MAIMONE AND ROBERT A MAIMONE	TH EXPLORATION, LLC	1/8+	951	554	NA	NA	NA	NA
10*19847	BB	5-13-25	WILLIAM JOHN WAGNER UNKNOWN HEIRS MARY WAGNER MANN UNKNOWN HEIRS	TH EXPLORATION, LLC	1/8+	943	450	NA	NA	NA	NA
10*26814	BB	5-13-25	ELIZABETH S STANFORD	TH EXPLORATION, LLC	1/8+	1045	422	NA	NA	NA	NA
10*26936	BB	5-13-25	WILLIAM S & BARBARA S HANNIG	TH EXPLORATION, LLC	1/8+	1046	468	NA	NA	NA	NA
10*27060	BB	5-13-25	SCOTT A AND STACI C HANNIG	TH EXPLORATION, LLC	1/8+	1051	240	NA	NA	NA	NA





July 22, 2019

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

RE: Armstrong N-13HU

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 Armstrong N-13HU 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](mailto:amiller@tug-hillop.com).

Sincerely,

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

Amy L. Miller  
Permitting Specialist – Appalachia Region

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

Date of Notice Certification: 07/22/2019

API No. 47- 051 - \_\_\_\_\_  
Operator's Well No. Armstrong N-13HU  
Well Pad Name: Armstrong

**Notice has been given:**

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

State: <u>WV</u>	UTM NAD 83 Easting: <u>516,413.90</u>
County: <u>Marshall</u>	Northing: <u>4,400,443.73</u>
District: <u>Franklin</u>	Public Road Access: <u>Burch Ridge Road - CR 29</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>CONSOL RCPC, LLC</u>
Watershed: <u>French Creek - Ohio River</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p style="text-align: right;"><b>RECEIVED</b> Office of Oil and Gas <b>JUL 26 2019</b></p>
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**Required Attachments:**

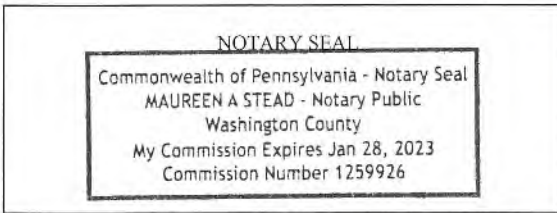
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

WV Department of  
Environmental Protection

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



Subscribed and sworn before me this 22 day of JULY, 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 [deprivacyofficer@wv.gov](mailto:deprivacyofficer@wv.gov).

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**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:** 7/19/2019 **Date Permit Application Filed:** 7/22/2019

**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: CONSOL RCPC, LLC Attn: Casey Saunders (Well Pad and Access Road)  
Address: 1000 CONSOL Energy Drive  
Canonsburg, PA 15317

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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: Appalachian Power Company  
Address: 1068 US-60  
Milton, WV 25541

COAL OPERATOR  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

Name: none within 2000'  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\_\_\_\_\_

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\*Please attach additional forms if necessary

**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and 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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

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**Well Location Restrictions**

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

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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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

**Time Limits and Methods for Filing Comments.**

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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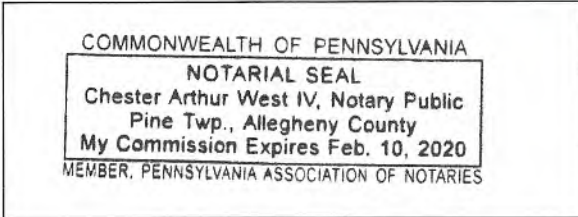
**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 18<sup>th</sup> day of July, 2019.

*[Signature]* Notary Public

My Commission Expires 2-10-2020

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JUL 26 2019

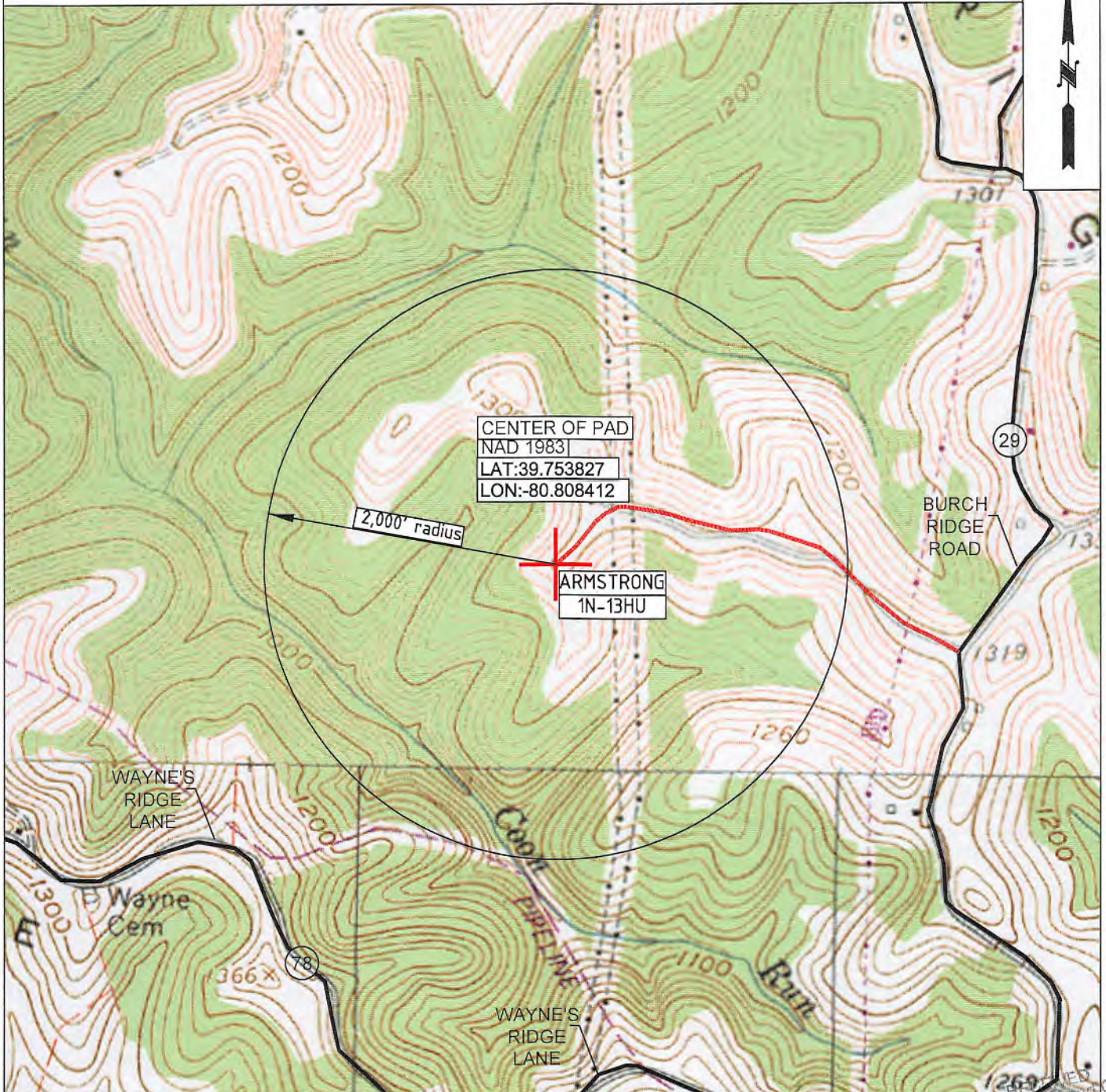
WV Department of  
Environmental Protection


WW-6A

# PROPOSED ARMSTRONG 1N-13HM

SUPPLEMENT PG 1

*There appear to be no (0) possible water source within 2,000'.*



 <b>TUG HILL OPERATING</b>	<b>OPERATOR</b> 494510851 TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	<b>TOPO SECTION</b> POWHATAN POINT 7.5'	<b>LEASE NAME</b> ARMSTRONG
	<b>SCALE:</b> 1" = 1000'	<b>DATE:</b> DATE: 07-15-2019	JUL 26 2019 WV Department of Environmental Protection

**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:** 1/31/2019      **Date of Planned Entry:** 2/7/2019

**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: CONSOL RCPC, LLC Attn: Casoy Saunders (Well Pad and Access Road)  
Address: 1000 CONSOL Energy Drive  
Canonsburg, PA 15317

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: Appalachian Power Company  
Address: 1068 US-60  
Milton, WV 25541

MINERAL OWNER(s)

Name: Chestnut Holdings \*See attachment  
Address: 1441 Windchime Lane  
Orlando, FL 32837

\*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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.75388, -80.80841</u>
County: <u>Marshall</u>	Public Road Access: <u>Burch Ridge Road</u>
District: <u>Franklin</u>	Watershed: <u>French Creek - Ohio River</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>CONSOL RCPC, LLC</u>

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 57<sup>th</sup> 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](http://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

RECEIVED  
Office of Oil and Gas  
**JUL 26 2019**  
WV Department of  
Environmental Protection

**Oil and Gas Privacy Notice:**

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

WW-6A5  
(1/12)

**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:** 07/22/2019      **Date Permit Application Filed:** 07/23/2019

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

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

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

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

(at the address listed in the records of the sheriff at the time of notice):

Name: CONSOL RCPC, LLC Attn: Casey Saunders                                      Name: \_\_\_\_\_  
Address: 1000 CONSOL Energy Drive                                      Address: \_\_\_\_\_  
Canonsburg, PA 15317                                      \_\_\_\_\_

**Notice is hereby given:**

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>516,413.90</u>
County: <u>Marshall</u>		Northing: <u>4,400,443.73</u>
District: <u>Franklin</u>	Public Road Access: <u>Burch Ridge Road - CR 29</u>	
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>CONSOL RCPC, LLC</u>	
Watershed: <u>French Creek - Ohio River</u>		

**This Notice Shall Include:**

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

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

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Office of Oil and Gas

JUL 26 2019

**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](mailto:depprivacyofficer@wv.gov).

Office of Environmental Protection



## WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

**Byrd E. White, III**  
 Secretary of Transportation

**July 8, 2019**

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

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

Subject: DOH Permit for the Burch River & Armstrong Pads, Marshall County

Armstrong N-13HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2019-0438 transferred to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 29 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

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

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

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 Office of Oil and Gas

JUL 26 2019

WV Department of  
 Environmental Protection



**PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION**

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





**WVDEP OOG**  
**ACCEPTED AS-BUILT**

*WV* 10 / 17 / 2019

**Armstrong Well Site**  
Site Design, Construction Plan, &  
Erosion and Sediment Control Plans  
Tug Hill Operating  
Marshall County  
Franklin District  
Latitude 39.75382673°  
Longitude -80.80841198°  
Stillhouse Run - Ohio River Watershed

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

Property Owner Information - Armstrong Well Site

Owner	Acres	WV Fee	State Fee	County Fee	Assessment	AM Counting	Total Payments
WV State	21.5	2.00	0.00	0.00	0.00	0.00	2.00
Marshall County	21.5	1.00	0.00	0.00	0.00	0.00	1.00
<b>Total</b>	<b>43.0</b>	<b>3.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>3.00</b>

**Exhibit A: Final Design: Issue for Permitting**



WV State Plane Coordinate System  
North Zone, NAD 83  
Elevations Listed as NAVD83  
Established by Survey Grade (SP)  
NAD 83 UTM Zone 18N

Access Road

Surface Width	SP	Width	Width	Width
CONCRETE ASPHALT	12.0	12.0	12.0	12.0
CONCRETE ASPHALT	12.0	12.0	12.0	12.0

Disturbed Area

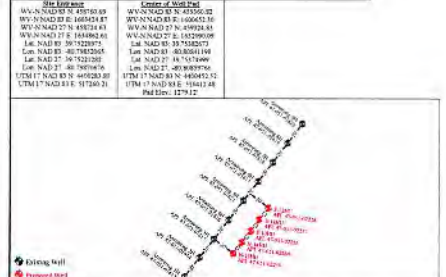
Disturbance Type	Area (sq. ft.)
Clearing	1,234.56
Excavation	567.89
Grading	987.65
Other	123.45

Armstrong Well Site Quantities

Item	Quantity	Unit
Clearing	1,234.56	sq. ft.
Excavation	567.89	cu. yd.
Grading	987.65	sq. ft.
Other	123.45	sq. ft.

Wellhead Impact (Square Feet)

Wellhead	Impact Area	Total Impact
Wellhead 1	123.45	123.45
Wellhead 2	567.89	567.89
<b>Total</b>	<b>691.34</b>	<b>691.34</b>



Well Locations (NAD 83)

Well ID	Well Name	Well Type	Well Depth	Well Diameter
WV-NAD-01	Well 1	Artesian	100.00	12.00
WV-NAD-02	Well 2	Artesian	150.00	12.00
WV-NAD-03	Well 3	Artesian	200.00	12.00
WV-NAD-04	Well 4	Artesian	250.00	12.00
WV-NAD-05	Well 5	Artesian	300.00	12.00
WV-NAD-06	Well 6	Artesian	350.00	12.00
WV-NAD-07	Well 7	Artesian	400.00	12.00
WV-NAD-08	Well 8	Artesian	450.00	12.00
WV-NAD-09	Well 9	Artesian	500.00	12.00
WV-NAD-10	Well 10	Artesian	550.00	12.00
WV-NAD-11	Well 11	Artesian	600.00	12.00
WV-NAD-12	Well 12	Artesian	650.00	12.00
WV-NAD-13	Well 13	Artesian	700.00	12.00
WV-NAD-14	Well 14	Artesian	750.00	12.00
WV-NAD-15	Well 15	Artesian	800.00	12.00
WV-NAD-16	Well 16	Artesian	850.00	12.00
WV-NAD-17	Well 17	Artesian	900.00	12.00
WV-NAD-18	Well 18	Artesian	950.00	12.00
WV-NAD-19	Well 19	Artesian	1000.00	12.00
WV-NAD-20	Well 20	Artesian	1050.00	12.00
WV-NAD-21	Well 21	Artesian	1100.00	12.00
WV-NAD-22	Well 22	Artesian	1150.00	12.00
WV-NAD-23	Well 23	Artesian	1200.00	12.00
WV-NAD-24	Well 24	Artesian	1250.00	12.00
WV-NAD-25	Well 25	Artesian	1300.00	12.00
WV-NAD-26	Well 26	Artesian	1350.00	12.00
WV-NAD-27	Well 27	Artesian	1400.00	12.00
WV-NAD-28	Well 28	Artesian	1450.00	12.00
WV-NAD-29	Well 29	Artesian	1500.00	12.00
WV-NAD-30	Well 30	Artesian	1550.00	12.00
WV-NAD-31	Well 31	Artesian	1600.00	12.00
WV-NAD-32	Well 32	Artesian	1650.00	12.00
WV-NAD-33	Well 33	Artesian	1700.00	12.00
WV-NAD-34	Well 34	Artesian	1750.00	12.00
WV-NAD-35	Well 35	Artesian	1800.00	12.00
WV-NAD-36	Well 36	Artesian	1850.00	12.00
WV-NAD-37	Well 37	Artesian	1900.00	12.00
WV-NAD-38	Well 38	Artesian	1950.00	12.00
WV-NAD-39	Well 39	Artesian	2000.00	12.00
WV-NAD-40	Well 40	Artesian	2050.00	12.00
WV-NAD-41	Well 41	Artesian	2100.00	12.00
WV-NAD-42	Well 42	Artesian	2150.00	12.00
WV-NAD-43	Well 43	Artesian	2200.00	12.00
WV-NAD-44	Well 44	Artesian	2250.00	12.00
WV-NAD-45	Well 45	Artesian	2300.00	12.00
WV-NAD-46	Well 46	Artesian	2350.00	12.00
WV-NAD-47	Well 47	Artesian	2400.00	12.00
WV-NAD-48	Well 48	Artesian	2450.00	12.00
WV-NAD-49	Well 49	Artesian	2500.00	12.00
WV-NAD-50	Well 50	Artesian	2550.00	12.00
WV-NAD-51	Well 51	Artesian	2600.00	12.00
WV-NAD-52	Well 52	Artesian	2650.00	12.00
WV-NAD-53	Well 53	Artesian	2700.00	12.00
WV-NAD-54	Well 54	Artesian	2750.00	12.00
WV-NAD-55	Well 55	Artesian	2800.00	12.00
WV-NAD-56	Well 56	Artesian	2850.00	12.00
WV-NAD-57	Well 57	Artesian	2900.00	12.00
WV-NAD-58	Well 58	Artesian	2950.00	12.00
WV-NAD-59	Well 59	Artesian	3000.00	12.00
WV-NAD-60	Well 60	Artesian	3050.00	12.00
WV-NAD-61	Well 61	Artesian	3100.00	12.00
WV-NAD-62	Well 62	Artesian	3150.00	12.00
WV-NAD-63	Well 63	Artesian	3200.00	12.00
WV-NAD-64	Well 64	Artesian	3250.00	12.00
WV-NAD-65	Well 65	Artesian	3300.00	12.00
WV-NAD-66	Well 66	Artesian	3350.00	12.00
WV-NAD-67	Well 67	Artesian	3400.00	12.00
WV-NAD-68	Well 68	Artesian	3450.00	12.00
WV-NAD-69	Well 69	Artesian	3500.00	12.00
WV-NAD-70	Well 70	Artesian	3550.00	12.00
WV-NAD-71	Well 71	Artesian	3600.00	12.00
WV-NAD-72	Well 72	Artesian	3650.00	12.00
WV-NAD-73	Well 73	Artesian	3700.00	12.00
WV-NAD-74	Well 74	Artesian	3750.00	12.00
WV-NAD-75	Well 75	Artesian	3800.00	12.00
WV-NAD-76	Well 76	Artesian	3850.00	12.00
WV-NAD-77	Well 77	Artesian	3900.00	12.00
WV-NAD-78	Well 78	Artesian	3950.00	12.00
WV-NAD-79	Well 79	Artesian	4000.00	12.00
WV-NAD-80	Well 80	Artesian	4050.00	12.00
WV-NAD-81	Well 81	Artesian	4100.00	12.00
WV-NAD-82	Well 82	Artesian	4150.00	12.00
WV-NAD-83	Well 83	Artesian	4200.00	12.00
WV-NAD-84	Well 84	Artesian	4250.00	12.00
WV-NAD-85	Well 85	Artesian	4300.00	12.00
WV-NAD-86	Well 86	Artesian	4350.00	12.00
WV-NAD-87	Well 87	Artesian	4400.00	12.00
WV-NAD-88	Well 88	Artesian	4450.00	12.00
WV-NAD-89	Well 89	Artesian	4500.00	12.00
WV-NAD-90	Well 90	Artesian	4550.00	12.00
WV-NAD-91	Well 91	Artesian	4600.00	12.00
WV-NAD-92	Well 92	Artesian	4650.00	12.00
WV-NAD-93	Well 93	Artesian	4700.00	12.00
WV-NAD-94	Well 94	Artesian	4750.00	12.00
WV-NAD-95	Well 95	Artesian	4800.00	12.00
WV-NAD-96	Well 96	Artesian	4850.00	12.00
WV-NAD-97	Well 97	Artesian	4900.00	12.00
WV-NAD-98	Well 98	Artesian	4950.00	12.00
WV-NAD-99	Well 99	Artesian	5000.00	12.00
WV-NAD-100	Well 100	Artesian	5050.00	12.00

**Project Contacts**

**Design/Construction**  
Franklin District  
11445 20th St  
Martinsville, WV 26151

**Client**  
Tug Hill Operating, LLC  
180 Southpointe Blvd  
Columbus, GA 31911

**Professional**  
WV State Professional Engineer  
Date: January 14, 2019

**Geographic Information**  
This geographic information shows a true and correct representation of the project location.

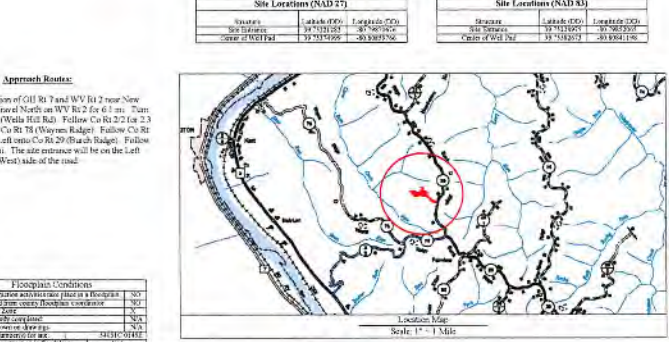
**MISSILITY OF WEST VIRGINIA**  
1-800-245-4444  
www.wv.gov  
IT'S THE LAW  
When you're below, Call before you dig.

**Approach Route:**  
From the intersection of Gill Rd and WV Rt 2 near New Martinsville, WV, Travel North on WV Rt 2 for 0.1 mi. Turn Right onto Co Rt 22 (Wata Hill Rd). Follow Co Rt 22 for 2.3 mi. Turn Right onto Co Rt 78 (Waynes Ridge). Follow Co Rt 78 for 0.8 mi. Turn Left onto Co Rt 29 (Branch Ridge). Follow Co Rt 29 for 0.6 mi. The site entrance will be on the left (West) side of the road.

**HOOPER'S CONDITIONS**

Condition	Accepted
Clearance over existing structures	NO
Clearance over existing utilities	NO
Clearance over existing roads	NO
Clearance over existing easements	NO
Clearance over existing wetlands	NO
Clearance over existing floodplains	NO
Clearance over existing riparian areas	NO
Clearance over existing wetlands	NO
Clearance over existing floodplains	NO
Clearance over existing riparian areas	NO

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



**Well Location Restrictions**

- 250' from existing well or developed spring well (on farm or otherwise) within the same wellhead.
- 425' from an existing dwelling or barn greater than 2,000 sq. feet in area.
- 750' from the edge of a water body (including a stream).
- 1,000' from a surface or ground water table to public water supply.

**Wellhead Information**

The following information is provided for the wellhead information:

- Wellhead 1: 12.00' diameter, 100.00' depth, 12.00' diameter.
- Wellhead 2: 12.00' diameter, 150.00' depth, 12.00' diameter.
- Wellhead 3: 12.00' diameter, 200.00' depth, 12.00' diameter.
- Wellhead 4: 12.00' diameter, 250.00' depth, 12.00' diameter.
- Wellhead 5: 12.00' diameter, 300.00' depth, 12.00' diameter.
- Wellhead 6: 12.00' diameter, 350.00' depth, 12.00' diameter.
- Wellhead 7: 12.00' diameter, 400.00' depth, 12.00' diameter.
- Wellhead 8: 12.00' diameter, 450.00' depth, 12.00' diameter.
- Wellhead 9: 12.00' diameter, 500.00' depth, 12.00' diameter.
- Wellhead 10: 12.00' diameter, 550.00' depth, 12.00' diameter.
- Wellhead 11: 12.00' diameter, 600.00' depth, 12.00' diameter.
- Wellhead 12: 12.00' diameter, 650.00' depth, 12.00' diameter.
- Wellhead 13: 12.00' diameter, 700.00' depth, 12.00' diameter.
- Wellhead 14: 12.00' diameter, 750.00' depth, 12.00' diameter.
- Wellhead 15: 12.00' diameter, 800.00' depth, 12.00' diameter.
- Wellhead 16: 12.00' diameter, 850.00' depth, 12.00' diameter.
- Wellhead 17: 12.00' diameter, 900.00' depth, 12.00' diameter.
- Wellhead 18: 12.00' diameter, 950.00' depth, 12.00' diameter.
- Wellhead 19: 12.00' diameter, 1000.00' depth, 12.00' diameter.
- Wellhead 20: 12.00' diameter, 1050.00' depth, 12.00' diameter.
- Wellhead 21: 12.00' diameter, 1100.00' depth, 12.00' diameter.
- Wellhead 22: 12.00' diameter, 1150.00' depth, 12.00' diameter.
- Wellhead 23: 12.00' diameter, 1200.00' depth, 12.00' diameter.
- Wellhead 24: 12.00' diameter, 1250.00' depth, 12.00' diameter.
- Wellhead 25: 12.00' diameter, 1300.00' depth, 12.00' diameter.
- Wellhead 26: 12.00' diameter, 1350.00' depth, 12.00' diameter.
- Wellhead 27: 12.00' diameter, 1400.00' depth, 12.00' diameter.
- Wellhead 28: 12.00' diameter, 1450.00' depth, 12.00' diameter.
- Wellhead 29: 12.00' diameter, 1500.00' depth, 12.00' diameter.
- Wellhead 30: 12.00' diameter, 1550.00' depth, 12.00' diameter.
- Wellhead 31: 12.00' diameter, 1600.00' depth, 12.00' diameter.
- Wellhead 32: 12.00' diameter, 1650.00' depth, 12.00' diameter.
- Wellhead 33: 12.00' diameter, 1700.00' depth, 12.00' diameter.
- Wellhead 34: 12.00' diameter, 1750.00' depth, 12.00' diameter.
- Wellhead 35: 12.00' diameter, 1800.00' depth, 12.00' diameter.
- Wellhead 36: 12.00' diameter, 1850.00' depth, 12.00' diameter.
- Wellhead 37: 12.00' diameter, 1900.00' depth, 12.00' diameter.
- Wellhead 38: 12.00' diameter, 1950.00' depth, 12.00' diameter.
- Wellhead 39: 12.00' diameter, 2000.00' depth, 12.00' diameter.
- Wellhead 40: 12.00' diameter, 2050.00' depth, 12.00' diameter.
- Wellhead 41: 12.00' diameter, 2100.00' depth, 12.00' diameter.
- Wellhead 42: 12.00' diameter, 2150.00' depth, 12.00' diameter.
- Wellhead 43: 12.00' diameter, 2200.00' depth, 12.00' diameter.
- Wellhead 44: 12.00' diameter, 2250.00' depth, 12.00' diameter.
- Wellhead 45: 12.00' diameter, 2300.00' depth, 12.00' diameter.
- Wellhead 46: 12.00' diameter, 2350.00' depth, 12.00' diameter.
- Wellhead 47: 12.00' diameter, 2400.00' depth, 12.00' diameter.
- Wellhead 48: 12.00' diameter, 2450.00' depth, 12.00' diameter.
- Wellhead 49: 12.00' diameter, 2500.00' depth, 12.00' diameter.
- Wellhead 50: 12.00' diameter, 2550.00' depth, 12.00' diameter.
- Wellhead 51: 12.00' diameter, 2600.00' depth, 12.00' diameter.
- Wellhead 52: 12.00' diameter, 2650.00' depth, 12.00' diameter.
- Wellhead 53: 12.00' diameter, 2700.00' depth, 12.00' diameter.
- Wellhead 54: 12.00' diameter, 2750.00' depth, 12.00' diameter.
- Wellhead 55: 12.00' diameter, 2800.00' depth, 12.00' diameter.
- Wellhead 56: 12.00' diameter, 2850.00' depth, 12.00' diameter.
- Wellhead 57: 12.00' diameter, 2900.00' depth, 12.00' diameter.
- Wellhead 58: 12.00' diameter, 2950.00' depth, 12.00' diameter.
- Wellhead 59: 12.00' diameter, 3000.00' depth, 12.00' diameter.
- Wellhead 60: 12.00' diameter, 3050.00' depth, 12.00' diameter.
- Wellhead 61: 12.00' diameter, 3100.00' depth, 12.00' diameter.
- Wellhead 62: 12.00' diameter, 3150.00' depth, 12.00' diameter.
- Wellhead 63: 12.00' diameter, 3200.00' depth, 12.00' diameter.
- Wellhead 64: 12.00' diameter, 3250.00' depth, 12.00' diameter.
- Wellhead 65: 12.00' diameter, 3300.00' depth, 12.00' diameter.
- Wellhead 66: 12.00' diameter, 3350.00' depth, 12.00' diameter.
- Wellhead 67: 12.00' diameter, 3400.00' depth, 12.00' diameter.
- Wellhead 68: 12.00' diameter, 3450.00' depth, 12.00' diameter.
- Wellhead 69: 12.00' diameter, 3500.00' depth, 12.00' diameter.
- Wellhead 70: 12.00' diameter, 3550.00' depth, 12.00' diameter.
- Wellhead 71: 12.00' diameter, 3600.00' depth, 12.00' diameter.
- Wellhead 72: 12.00' diameter, 3650.00' depth, 12.00' diameter.
- Wellhead 73: 12.00' diameter, 3700.00' depth, 12.00' diameter.
- Wellhead 74: 12.00' diameter, 3750.00' depth, 12.00' diameter.
- Wellhead 75: 12.00' diameter, 3800.00' depth, 12.00' diameter.
- Wellhead 76: 12.00' diameter, 3850.00' depth, 12.00' diameter.</

