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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)

Tuesday, September 11, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BOULEVARD, PLAZA II  
SUITE 200  
CANNONSBURG, PA 15317

Re: Permit approval for BRYAN N-12HU  
47-051-02029-00-00

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: BRYAN N-12HU  
Farm Name: CNX LAND RESOURCES INC.  
U.S. WELL NUMBER: 47-051-02029-00-00  
Horizontal 6A New Drill  
Date Issued: 9/11/2018

# 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

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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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west virginia department of environmental protection

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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

July 26, 2018

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

RE: Application for Deep Well Permit – API #47-051-02029

COMPANY: Tug Hill Operating, LLC

FARM: Bryan N-12HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

The deep well review of the application for the above company is **Approved to drill to the Trenton for Point Pleasant completion. Pooling Docket No. 265-254**

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? None
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 265-254 Exception Location Hearing, 47-051-02030 and 47-051-02031; and CORLEY N-9HU 47-051-01983 and CORLEY N-10HU 47-051-01998
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

WW-6B  
(04/15)

4705102029  
API NO. 47-051  
OPERATOR WELL NO. Bryan N-12HU  
Well Pad Name: Bryan

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  
Operator ID      County      District      Quadrangle

2) Operator's Well Number: Bryan N-12HU      Well Pad Name: Bryan

3) Farm Name/Surface Owner: CNX Land Resources, Inc.      Public Road Access: Rines Ridge Rd

4) Elevation, current ground: 1254'      Elevation, proposed post-construction: 1254'

5) Well Type (a) Gas       Oil      Underground Storage

Other

(b) If Gas Shallow      Deep

Horizontal

6) Existing Pad: Yes or No Yes

*JW4/6/18*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11,124' - 11,243' thickness of 119' and anticipated pressure of approx. 9000 psi

8) Proposed Total Vertical Depth: 11,393'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 23,268'

11) Proposed Horizontal Leg Length: 11,672'

12) Approximate Fresh Water Strata Depths: 803'

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: 2040'

15) Approximate Coal Seam Depths: Sewickly Coal - 701' and Pittsburgh Coal - 796'

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

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

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

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WW-6B  
(04/15)

**4705102029**  
 API NO. 47- 051  
 OPERATOR WELL NO. Bryan N-12HU  
 Well Pad Name: Bryan

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	30"	NEW	BW	BW	110'	100'	216FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	963'	953'	1,525ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,810'	2,800'	1,978ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,040'	10,030'	3,280ft^3(CTS)
Production	5 1/2"	NEW	HCP110	23#	23,278'	23,268'	5,501ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,379'	
Liners							

*JW4/6/18*

<b>TYPE</b>	<b>Size (in)</b>	<b>Wellbore Diameter (in)</b>	<b>Wall Thickness (in)</b>	<b>Burst Pressure (psi)</b>	<b>Anticipated Max. Internal Pressure (psi)</b>	<b>Cement Type</b>	<b>Cement Yield (cu. ft./k)</b>
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	13,580	10,864	SEE#24	1.18
Tubing	2 7/8"			14,530	11,624		
Liners							

**PACKERS**

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

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WW-6B  
(10/14)

API NO. 47-051 - 02029  
OPERATOR WELL NO. Bryan N-12HU  
Well Pad Name: Bryan

*JW4/6/18*

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 29,180,000 lb proppant and 451,144 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.14

22) Area to be disturbed for well pad only, less access road (acres): 5.98

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

\*See Attachment

25) Proposed borehole conditioning procedures:

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

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\*Note: Attach additional sheets as needed.

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

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

## Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, [dducoeur@dpslandservices.com](mailto:dducoeur@dpslandservices.com) DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

## Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

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

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

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Permit well - Bryan N-12HU

Wells within 500' Buffer

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

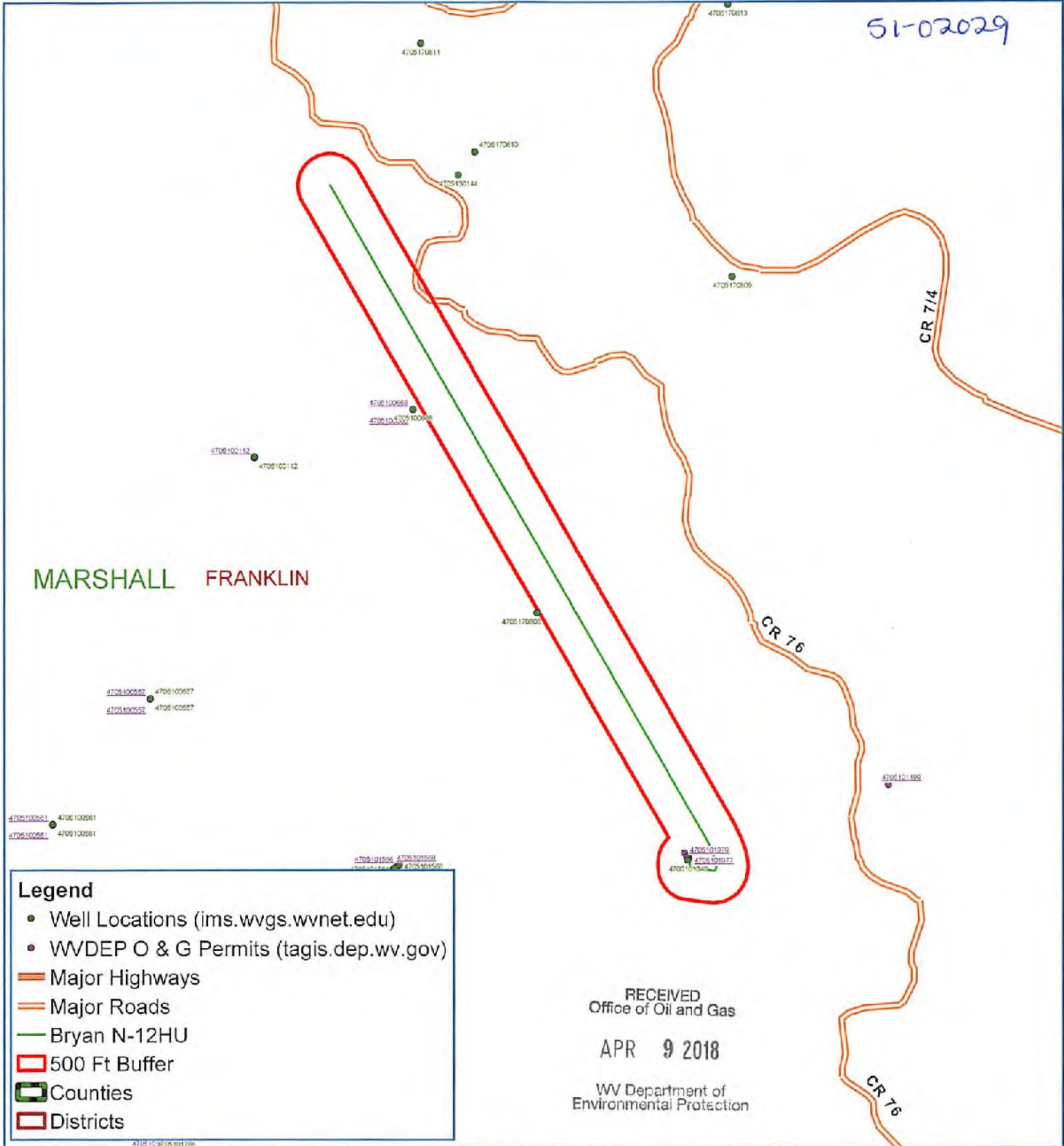
API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101340	Tug Hill Operating (formerly operated by Chevron and AB Resources)	6450' TVD 10601' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101977	Tug Hill Operating	6596' TVD, planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101978	Tug Hill Operating	6596' TVD, planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101979	Tug Hill Operating	6596' TVD, planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101980	Tug Hill Operating	6596' TVD, planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled

**WV Geospatial & Economic Survey** Well: County = 51 Permit = 01340

Location Information: View Map  
API: 4705101340 COUNTY: Wayne DISTRICT: QUAD 29 QUAD 29 LAT\_CO: 39.712632 LONG\_CO: 81.01147 UTM: 18T  
Elev: 6596.0000 UTM: 18T 810 100 100  
Bottom Hole Location Information  
API: 4705101340 UTM: 18T 810 100 100  
Owner Information  
API: 4705101340 UTM: 18T 810 100 100  
Completion Information  
API: 4705101340 UTM: 18T 810 100 100  
Production Gas Information (Volumes in Mcf)  
API: 4705101340 UTM: 18T 810 100 100  
Production Oil Information (Volumes in Bbl) - some operators may have reported NGL under Oil  
API: 4705101340 UTM: 18T 810 100 100  
Production NGL Information (Volumes in Bbl) - some operators may have reported NGL under Oil  
API: 4705101340 UTM: 18T 810 100 100  
Production Water Information (Volumes in Gallons)  
API: 4705101340 UTM: 18T 810 100 100  
Stratigraphy Information  
API: 4705101340 UTM: 18T 810 100 100  
Wellbore Log Information  
API: 4705101340 UTM: 18T 810 100 100

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51-02029



**Legend**

- Well Locations ([ims.wvgs.wvnet.edu](http://ims.wvgs.wvnet.edu))
- WVDEP O & G Permits ([tagis.dep.wv.gov](http://tagis.dep.wv.gov))
- Major Highways
- Major Roads
- Bryan N-12HU
- 500 Ft Buffer
- Counties
- Districts

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Bryan N-12HU  
Franklin District  
Marshall County, WV



Map Created: January 5, 2015  
Map Current As Of: January 5, 2018

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





Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Bryan Pad				
Site Position:		Northing:	14,445,110.80 usft	Latitude:	39.77582900
From:	Lat/Long	Easting:	1,703,181.57 usft	Longitude:	-80.77660992
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	Bryan N-12HU (slot F)					
Well Position	+N-S	0.00 usft	Northing:	14,445,094.20 usft	Latitude:	39.77558321
	+E-W	0.00 usft	Easting:	1,703,210.52 usft	Longitude:	-80.77650704
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level:	1,191.00 usft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/18/2017	-6.64	66.94	52,156.75938487

Design	rev2				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.00	0.00	0.00	331.92	

Plan Survey Tool Program	Date	1/5/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	23,268.48 rev2 (Original Hole)	MWD MWD - Standard		

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SI-02029



Planning Report - Geographic

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<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1191 @ 1191.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1191 @ 1191.00usft
<b>Site:</b>	Bryan Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Bryan N-12HU (slot F)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev2		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	5.00	180.00	1,699.37	-21.80	0.00	1.00	1.00	0.00	180.00	
2,300.00	5.00	180.00	2,297.08	-74.10	0.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	180.00	2,796.45	-95.90	0.00	1.00	-1.00	0.00	180.00	
9,003.55	0.00	180.00	9,000.00	-95.90	0.00	0.00	0.00	0.00	180.00	
9,544.00	16.21	87.45	9,533.26	-105.75	75.32	3.00	3.00	-15.27	97.45	
10,579.45	16.21	87.45	10,527.53	-143.24	361.99	0.00	0.00	0.00	0.00	
11,596.65	92.00	330.01	11,179.00	440.65	205.21	10.00	7.45	-12.53	-125.67	LP Bryan N-12HU
23,268.48	92.00	330.01	10,772.00	10,543.60	-5,625.45	0.00	0.00	0.00	0.00	BHL Bryan N-12HU r

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Planning Report - Geographic

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Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
100.00	0.00	0.00	100.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
200.00	0.00	0.00	200.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
300.00	0.00	0.00	300.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
400.00	0.00	0.00	400.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
500.00	0.00	0.00	500.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
600.00	0.00	0.00	600.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
700.00	0.00	0.00	700.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
800.00	0.00	0.00	800.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
900.00	0.00	0.00	900.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,445,094.20	1,703,210.52	39.77558321	-80.77650704
<b>KOP Begin 1°/100' build</b>									
1,300.00	1.00	180.00	1,299.99	-0.87	0.00	14,445,093.32	1,703,210.52	39.77558082	-80.77650705
1,400.00	2.00	180.00	1,399.96	-3.49	0.00	14,445,090.71	1,703,210.52	39.77557363	-80.77650707
1,500.00	3.00	180.00	1,499.86	-7.85	0.00	14,445,086.34	1,703,210.52	39.77556165	-80.77650711
1,600.00	4.00	180.00	1,599.68	-13.88	0.00	14,445,080.24	1,703,210.52	39.77554488	-80.77650716
1,700.00	5.00	180.00	1,699.37	-21.80	0.00	14,445,072.39	1,703,210.52	39.77552334	-80.77650723
<b>Begin 5.00° tangent</b>									
1,800.00	5.00	180.00	1,798.99	-30.52	0.00	14,445,063.68	1,703,210.52	39.77549940	-80.77650731
1,900.00	5.00	180.00	1,898.60	-39.23	0.00	14,445,054.96	1,703,210.52	39.77547546	-80.77650739
2,000.00	5.00	180.00	1,998.22	-47.85	0.00	14,445,046.25	1,703,210.52	39.77545153	-80.77650747
2,100.00	5.00	180.00	2,097.84	-56.67	0.00	14,445,037.53	1,703,210.52	39.77542759	-80.77650754
2,200.00	5.00	180.00	2,197.46	-65.38	0.00	14,445,028.82	1,703,210.52	39.77540366	-80.77650762
2,300.00	5.00	180.00	2,297.08	-74.10	0.00	14,445,020.10	1,703,210.52	39.77537972	-80.77650770
<b>Begin 1°/100' drop</b>									
2,400.00	4.00	180.00	2,396.77	-81.94	0.00	14,445,012.25	1,703,210.52	39.77535818	-80.77650777
2,500.00	3.00	180.00	2,496.59	-88.05	0.00	14,445,006.15	1,703,210.52	39.77534141	-80.77650782
2,600.00	2.00	180.00	2,596.49	-92.41	0.00	14,445,001.79	1,703,210.52	39.77532943	-80.77650785
2,700.00	1.00	180.00	2,696.45	-95.03	0.00	14,444,999.17	1,703,210.52	39.77532224	-80.77650789
2,800.00	0.00	180.00	2,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
<b>Begin vertical hold</b>									
2,900.00	0.00	0.00	2,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,000.00	0.00	180.00	2,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,100.00	0.00	0.00	3,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,200.00	0.00	180.00	3,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,300.00	0.00	0.00	3,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,400.00	0.00	180.00	3,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,500.00	0.00	180.00	3,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,600.00	0.00	0.00	3,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,700.00	0.00	180.00	3,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,800.00	0.00	0.00	3,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
3,900.00	0.00	180.00	3,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,000.00	0.00	180.00	3,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,100.00	0.00	0.00	4,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,200.00	0.00	180.00	4,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,300.00	0.00	180.00	4,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,400.00	0.00	180.00	4,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,500.00	0.00	180.00	4,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,600.00	0.00	180.00	4,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,700.00	0.00	0.00	4,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,800.00	0.00	180.00	4,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789
4,900.00	0.00	180.00	4,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789

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WV Department of  
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Planning Report - Geographic

Database:	DB_Jul2216d_v14	Local Co-ordinate Reference:	Wall Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Deslgn:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	0.00	180.00	4,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650788	
5,100.00	0.00	180.00	5,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,200.00	0.00	0.00	5,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,300.00	0.00	180.00	5,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,400.00	0.00	0.00	5,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,500.00	0.00	180.00	5,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,600.00	0.00	180.00	5,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,700.00	0.00	0.00	5,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,800.00	0.00	180.00	5,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
5,900.00	0.00	0.00	5,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,000.00	0.00	180.00	5,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,100.00	0.00	180.00	6,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,200.00	0.00	0.00	6,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,300.00	0.00	180.00	6,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,400.00	0.00	0.00	6,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,500.00	0.00	180.00	6,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,600.00	0.00	180.00	6,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,700.00	0.00	0.00	6,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,800.00	0.00	180.00	6,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
6,900.00	0.00	0.00	6,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,000.00	0.00	180.00	6,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,100.00	0.00	180.00	7,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,200.00	0.00	180.00	7,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,300.00	0.00	180.00	7,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,400.00	0.00	0.00	7,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,500.00	0.00	180.00	7,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,600.00	0.00	180.00	7,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,700.00	0.00	180.00	7,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,800.00	0.00	180.00	7,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
7,900.00	0.00	180.00	7,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,000.00	0.00	0.00	7,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,100.00	0.00	180.00	8,096.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,200.00	0.00	180.00	8,196.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,300.00	0.00	0.00	8,296.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,400.00	0.00	180.00	8,396.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,500.00	0.00	0.00	8,496.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,600.00	0.00	180.00	8,596.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,700.00	0.00	180.00	8,696.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,800.00	0.00	0.00	8,796.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
8,900.00	0.00	180.00	8,896.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
9,000.00	0.00	0.00	8,996.45	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
9,003.55	0.00	0.00	9,000.00	-95.90	0.00	14,444,998.30	1,703,210.52	39.77531985	-80.77650789	
<b>Begin 3°/100' build</b>										
9,100.00	2.89	97.45	9,096.41	-96.21	2.41	14,444,997.98	1,703,212.94	39.77531996	-80.77649930	
9,200.00	5.89	97.45	9,196.10	-97.21	10.01	14,444,996.99	1,703,220.53	39.77531618	-80.77647228	
9,300.00	8.89	97.45	9,295.26	-98.89	22.77	14,444,995.32	1,703,233.29	39.77531151	-80.77642689	
9,400.00	11.89	97.45	9,393.61	-101.22	40.85	14,444,992.98	1,703,251.10	39.77530496	-80.77636325	
9,500.00	14.89	97.45	9,490.88	-104.22	63.62	14,444,989.98	1,703,274.14	39.77529656	-80.77628154	
9,544.00	16.21	97.45	9,533.26	-105.75	75.32	14,444,986.45	1,703,285.84	39.77529228	-80.77623992	
9,544.00	16.21	97.45	9,533.26	-105.75	75.32	14,444,986.45	1,703,285.84	39.77529228	-80.77623992	
<b>Begin 16.21° tangent</b>										
9,600.00	16.21	97.45	9,567.04	-107.78	90.82	14,444,986.42	1,703,301.34	39.77528660	-80.77618476	
9,700.00	16.21	97.45	9,683.06	-111.40	118.51	14,444,982.80	1,703,329.03	39.77527647	-80.77608825	
9,800.00	16.21	97.45	9,779.08	-115.02	146.19	14,444,979.18	1,703,356.71	39.77526633	-80.77598775	

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Planning Report - Geographic

WV Department of  
 Environmental Protection

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,900.00	16.21	97.45	9,875.11	-118.64	173.88	14,444,975.56	1,703,364.40	39.77525820	-80.77588924
10,000.00	16.21	97.45	9,971.13	-122.26	201.56	14,444,971.93	1,703,412.09	39.77524606	-80.77579074
10,100.00	16.21	97.45	10,067.15	-125.88	229.25	14,444,988.31	1,703,439.77	39.77523593	-80.77569224
10,200.00	16.21	97.45	10,163.17	-129.50	256.93	14,444,994.69	1,703,467.46	39.77522579	-80.77559373
10,300.00	16.21	97.45	10,259.20	-133.13	284.62	14,444,981.07	1,703,495.14	39.77521566	-80.77549523
10,400.00	16.21	97.45	10,355.22	-136.75	312.31	14,444,957.45	1,703,522.83	39.77520552	-80.77539673
10,500.00	16.21	97.45	10,451.24	-140.37	339.99	14,444,953.83	1,703,550.51	39.77519539	-80.77529822
10,579.45	16.21	97.45	10,527.53	-143.24	361.99	14,444,950.85	1,703,572.51	39.77518733	-80.77521986
<b>Begin 10°/100' build/tum</b>									
10,600.00	15.10	91.05	10,547.32	-143.67	367.51	14,444,950.53	1,703,578.03	39.77518614	-80.77520031
10,700.00	13.29	50.04	10,644.50	-136.50	369.40	14,444,957.69	1,703,599.92	39.77520586	-80.77512235
10,800.00	17.94	16.33	10,740.98	-114.29	402.57	14,444,978.91	1,703,613.09	39.77526659	-80.77507527
10,900.00	25.76	359.29	10,833.82	-77.69	406.63	14,445,016.51	1,703,617.16	39.77536706	-80.77506050
11,000.00	34.66	350.11	10,920.20	-27.82	401.44	14,445,086.37	1,703,611.97	39.77560404	-80.77507850
11,100.00	43.99	344.40	10,997.49	33.79	387.18	14,445,127.99	1,703,597.70	39.77567335	-80.77512971
11,200.00	53.52	340.35	11,063.36	105.29	364.27	14,445,199.48	1,703,574.79	39.77586985	-80.77520961
11,300.00	63.16	337.22	11,115.79	184.49	333.41	14,445,278.69	1,703,543.93	39.77609758	-80.77531874
11,400.00	72.88	334.58	11,163.20	269.89	295.54	14,445,363.19	1,703,508.06	39.77631991	-80.77545278
11,500.00	82.59	332.21	11,174.44	356.23	251.80	14,445,450.43	1,703,462.32	39.77656679	-80.77560788
11,596.64	92.00	330.01	11,179.00	440.65	205.21	14,445,534.84	1,703,415.73	39.77679194	-80.77677275
<b>Begin 92.00° lateral section</b>									
11,598.65	92.00	330.01	11,179.00	440.65	205.21	14,445,534.85	1,703,415.73	39.77679195	-80.77577276
11,600.00	92.00	330.01	11,178.88	443.55	203.53	14,445,537.75	1,703,414.05	39.77679994	-80.77577870
11,700.00	92.00	330.01	11,175.40	530.11	163.58	14,445,624.31	1,703,364.10	39.77703799	-80.77695573
11,800.00	92.00	330.01	11,171.91	616.67	103.62	14,445,710.87	1,703,314.14	39.77727605	-80.77613276
11,900.00	92.00	330.01	11,168.42	703.23	53.67	14,445,797.42	1,703,264.19	39.77751411	-80.77630979
12,000.00	92.00	330.01	11,164.94	789.79	3.71	14,445,883.98	1,703,214.23	39.77775216	-80.77648882
12,100.00	92.00	330.01	11,161.45	876.35	-46.24	14,445,970.54	1,703,164.28	39.77799022	-80.77666385
12,200.00	92.00	330.01	11,157.96	962.90	-96.20	14,446,057.10	1,703,114.32	39.77822827	-80.77684089
12,300.00	92.00	330.01	11,154.47	1,049.46	-146.15	14,446,143.66	1,703,064.37	39.77846633	-80.77701792
12,400.00	92.00	330.01	11,150.99	1,136.02	-196.11	14,446,230.22	1,703,014.41	39.77870438	-80.77719486
12,500.00	92.00	330.01	11,147.50	1,222.58	-246.06	14,446,316.77	1,702,964.46	39.77894244	-80.77737200
12,600.00	92.00	330.01	11,144.01	1,309.14	-296.02	14,446,403.33	1,702,914.50	39.77918049	-80.77754904
12,700.00	92.00	330.01	11,140.53	1,395.70	-345.97	14,446,489.89	1,702,864.55	39.77941854	-80.77772608
12,800.00	92.00	330.01	11,137.04	1,482.25	-395.93	14,446,576.45	1,702,814.59	39.77965650	-80.77790312
12,900.00	92.00	330.01	11,133.55	1,568.81	-445.88	14,446,663.01	1,702,764.64	39.77989465	-80.77808016
13,000.00	92.00	330.01	11,130.06	1,655.37	-495.84	14,446,749.57	1,702,714.68	39.78013270	-80.77825720
13,100.00	92.00	330.01	11,126.58	1,741.93	-545.79	14,446,836.13	1,702,664.73	39.78037076	-80.77843425
13,200.00	92.00	330.01	11,123.09	1,828.49	-595.75	14,446,922.69	1,702,614.77	39.78060881	-80.77861130
13,300.00	92.00	330.01	11,119.60	1,915.05	-645.70	14,447,009.24	1,702,564.82	39.78084686	-80.77878834
13,400.00	92.00	330.01	11,116.12	2,001.60	-695.66	14,447,095.80	1,702,514.86	39.78108491	-80.77896539
13,500.00	92.00	330.01	11,112.63	2,088.16	-745.61	14,447,182.36	1,702,464.91	39.78132297	-80.77914244
13,600.00	92.00	330.01	11,109.14	2,174.72	-795.57	14,447,268.92	1,702,414.95	39.78156102	-80.77931949
13,700.00	92.00	330.01	11,105.66	2,261.28	-845.52	14,447,355.48	1,702,365.00	39.78179907	-80.77949655
13,800.00	92.00	330.01	11,102.17	2,347.84	-895.46	14,447,442.03	1,702,315.04	39.78203712	-80.77967360
13,900.00	92.00	330.01	11,098.68	2,434.40	-945.43	14,447,528.59	1,702,265.09	39.78227517	-80.77985065
14,000.00	92.00	330.01	11,095.19	2,520.95	-995.39	14,447,615.15	1,702,215.13	39.78251322	-80.78002771
14,100.00	92.00	330.01	11,091.71	2,607.51	-1,045.34	14,447,701.71	1,702,165.18	39.78275127	-80.78020477
14,200.00	92.00	330.01	11,088.22	2,694.07	-1,095.30	14,447,788.27	1,702,115.23	39.78298932	-80.78038183
14,300.00	92.00	330.01	11,084.73	2,780.63	-1,145.25	14,447,874.83	1,702,065.27	39.78322737	-80.78055889
14,400.00	92.00	330.01	11,081.25	2,867.19	-1,195.21	14,447,961.39	1,702,015.32	39.78346542	-80.78073595
14,500.00	92.00	330.01	11,077.76	2,953.75	-1,245.16	14,448,047.94	1,701,965.36	39.78370347	-80.78091301
14,600.00	92.00	330.01	11,074.27	3,040.30	-1,295.12	14,448,134.50	1,701,915.41	39.78394152	-80.78109007
14,700.00	92.00	330.01	11,070.79	3,126.86	-1,345.07	14,448,221.06	1,701,865.45	39.78417957	-80.78126714

APR 9 2018



Planning Report - Geographic

WV Department of  
 Environmental Protection

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,800.00	92.00	330.01	11,087.30	3,213.42	-1,395.03	14,448,307.62	1,701,815.50	39.78441761	-80.78144420	
14,900.00	92.00	330.01	11,063.81	3,299.98	-1,444.98	14,448,394.18	1,701,765.54	39.78465566	-80.78162127	
15,000.00	92.00	330.01	11,060.32	3,366.54	-1,494.94	14,448,460.73	1,701,715.59	39.78489371	-80.78179834	
15,100.00	92.00	330.01	11,056.84	3,473.10	-1,544.89	14,448,567.29	1,701,665.63	39.78513176	-80.78197541	
15,200.00	92.00	330.01	11,053.35	3,559.65	-1,594.85	14,448,653.85	1,701,615.68	39.78536980	-80.78215248	
15,300.00	92.00	330.01	11,049.86	3,646.21	-1,644.80	14,448,740.41	1,701,565.72	39.78560785	-80.78232955	
15,400.00	92.00	330.01	11,046.38	3,732.77	-1,694.76	14,448,826.97	1,701,515.77	39.78584590	-80.78250663	
15,500.00	92.00	330.01	11,042.89	3,819.33	-1,744.71	14,448,913.53	1,701,465.81	39.78608394	-80.78268370	
15,600.00	92.00	330.01	11,039.40	3,905.89	-1,794.67	14,449,000.08	1,701,415.86	39.78632199	-80.78286078	
15,700.00	92.00	330.01	11,035.92	3,992.45	-1,844.62	14,449,086.64	1,701,365.90	39.78656003	-80.78303785	
15,800.00	92.00	330.01	11,032.43	4,079.00	-1,894.58	14,449,173.20	1,701,315.95	39.78679808	-80.78321493	
15,900.00	92.00	330.01	11,028.94	4,165.56	-1,944.53	14,449,259.76	1,701,265.99	39.78703612	-80.78339201	
16,000.00	92.00	330.01	11,025.45	4,252.12	-1,994.48	14,449,346.32	1,701,216.04	39.78727417	-80.78356909	
16,100.00	92.00	330.01	11,021.97	4,338.68	-2,044.44	14,449,432.88	1,701,166.08	39.78751221	-80.78374617	
16,200.00	92.00	330.01	11,018.48	4,425.24	-2,094.39	14,449,519.43	1,701,116.13	39.78775026	-80.78392326	
16,300.00	92.00	330.01	11,014.99	4,511.80	-2,144.35	14,449,605.99	1,701,066.17	39.78798830	-80.78410034	
16,400.00	92.00	330.01	11,011.51	4,598.35	-2,194.30	14,449,692.55	1,701,016.22	39.78822635	-80.78427743	
16,500.00	92.00	330.01	11,008.02	4,684.91	-2,244.26	14,449,779.11	1,700,966.26	39.78846439	-80.78445451	
16,600.00	92.00	330.01	11,004.53	4,771.47	-2,294.21	14,449,865.67	1,700,916.31	39.78870243	-80.78463160	
16,700.00	92.00	330.01	11,001.04	4,858.03	-2,344.17	14,449,952.23	1,700,866.35	39.78894048	-80.78480869	
16,800.00	92.00	330.01	10,997.56	4,944.59	-2,394.12	14,450,038.78	1,700,816.40	39.78917852	-80.78498578	
16,900.00	92.00	330.01	10,994.07	5,031.15	-2,444.08	14,450,125.34	1,700,766.44	39.78941656	-80.78516287	
17,000.00	92.00	330.01	10,990.58	5,117.71	-2,494.03	14,450,211.90	1,700,716.49	39.78965460	-80.78533996	
17,100.00	92.00	330.01	10,987.10	5,204.26	-2,543.99	14,450,298.46	1,700,666.53	39.78989264	-80.78551706	
17,200.00	92.00	330.01	10,983.61	5,290.82	-2,593.94	14,450,385.02	1,700,616.58	39.79013069	-80.78569415	
17,300.00	92.00	330.01	10,980.12	5,377.38	-2,643.89	14,450,471.58	1,700,566.62	39.79036873	-80.78587125	
17,400.00	92.00	330.01	10,976.64	5,463.94	-2,693.85	14,450,558.13	1,700,516.67	39.79060677	-80.78604835	
17,500.00	92.00	330.01	10,973.15	5,550.50	-2,743.81	14,450,644.69	1,700,466.71	39.79084481	-80.78622545	
17,600.00	92.00	330.01	10,969.66	5,637.06	-2,793.76	14,450,731.25	1,700,416.76	39.79108285	-80.78640255	
17,700.00	92.00	330.01	10,966.17	5,723.61	-2,843.72	14,450,817.81	1,700,366.80	39.79132089	-80.78657965	
17,800.00	92.00	330.01	10,962.69	5,810.17	-2,893.67	14,450,904.37	1,700,316.85	39.79155893	-80.78675675	
17,900.00	92.00	330.01	10,959.20	5,896.73	-2,943.63	14,450,990.93	1,700,266.89	39.79179697	-80.78693385	
18,000.00	92.00	330.01	10,955.71	5,983.29	-2,993.58	14,451,077.48	1,700,216.94	39.79203501	-80.78711096	
18,100.00	92.00	330.01	10,952.23	6,069.85	-3,043.54	14,451,164.04	1,700,166.98	39.79227305	-80.78728806	
18,200.00	92.00	330.01	10,948.74	6,156.41	-3,093.49	14,451,250.60	1,700,117.03	39.79251109	-80.78746517	
18,300.00	92.00	330.01	10,945.25	6,242.96	-3,143.45	14,451,337.16	1,700,067.07	39.79274912	-80.78764228	
18,400.00	92.00	330.01	10,941.77	6,329.52	-3,193.40	14,451,423.72	1,700,017.12	39.79298716	-80.78781939	
18,500.00	92.00	330.01	10,938.28	6,416.08	-3,243.36	14,451,510.28	1,699,967.16	39.79322520	-80.78799650	
18,600.00	92.00	330.01	10,934.79	6,502.64	-3,293.31	14,451,596.84	1,699,917.21	39.79346324	-80.78817361	
18,700.00	92.00	330.01	10,931.30	6,589.20	-3,343.27	14,451,683.39	1,699,867.26	39.79370128	-80.78835073	
18,800.00	92.00	330.01	10,927.82	6,675.76	-3,393.22	14,451,769.95	1,699,817.30	39.79393931	-80.78852784	
18,900.00	92.00	330.01	10,924.33	6,762.31	-3,443.18	14,451,856.51	1,699,767.35	39.79417735	-80.78870496	
19,000.00	92.00	330.01	10,920.84	6,848.87	-3,493.13	14,451,943.07	1,699,717.39	39.79441539	-80.78888207	
19,100.00	92.00	330.01	10,917.36	6,935.43	-3,543.09	14,452,029.63	1,699,667.44	39.79465342	-80.78905919	
19,200.00	92.00	330.01	10,913.87	7,021.99	-3,593.04	14,452,116.19	1,699,617.48	39.79489146	-80.78923631	
19,300.00	92.00	330.01	10,910.38	7,108.55	-3,643.00	14,452,202.74	1,699,567.53	39.79512949	-80.78941343	
19,400.00	92.00	330.01	10,906.90	7,195.11	-3,692.95	14,452,289.30	1,699,517.57	39.79536753	-80.78959055	
19,500.00	92.00	330.01	10,903.41	7,281.66	-3,742.91	14,452,375.86	1,699,467.62	39.79560556	-80.78976768	
19,600.00	92.00	330.01	10,899.92	7,368.22	-3,792.86	14,452,462.42	1,699,417.66	39.79584360	-80.78994480	
19,700.00	92.00	330.01	10,896.43	7,454.78	-3,842.82	14,452,548.98	1,699,367.71	39.79608163	-80.79012193	
19,800.00	92.00	330.01	10,892.95	7,541.34	-3,892.77	14,452,635.54	1,699,317.75	39.79631967	-80.79029905	
19,900.00	92.00	330.01	10,889.46	7,627.90	-3,942.73	14,452,722.09	1,699,267.80	39.79655770	-80.79047618	
20,000.00	92.00	330.01	10,885.97	7,714.46	-3,992.68	14,452,808.65	1,699,217.84	39.79679574	-80.79065331	
20,100.00	92.00	330.01	10,882.49	7,801.01	-4,042.64	14,452,895.21	1,699,167.89	39.79703377	-80.79083044	
20,200.00	92.00	330.01	10,879.00	7,887.57	-4,092.59	14,452,981.77	1,699,117.93	39.79727180	-80.79100757	



APR 9 2018

WV Department of  
 Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216dLv14	Local Co-ordinate Reference:	Well Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,300.00	92.00	330.01	10,875.51	7,974.13	-4,142.55	14,453,058.33	1,698,067.98	39.79750984	-80.79118471	
20,400.00	92.00	330.01	10,872.02	8,060.69	-4,192.50	14,453,154.69	1,699,018.02	39.79774787	-80.79136184	
20,500.00	92.00	330.01	10,868.54	8,147.25	-4,242.45	14,453,241.44	1,698,968.07	39.79798590	-80.79153888	
20,600.00	92.00	330.01	10,865.05	8,233.81	-4,292.41	14,453,328.00	1,698,918.11	39.79822393	-80.79171611	
20,700.00	92.00	330.01	10,861.56	8,320.36	-4,342.36	14,453,414.56	1,698,868.16	39.79846196	-80.79189325	
20,800.00	92.00	330.01	10,858.08	8,406.92	-4,392.32	14,453,501.12	1,698,818.20	39.79870000	-80.79207039	
20,900.00	92.00	330.01	10,854.59	8,493.48	-4,442.27	14,453,587.68	1,698,768.25	39.79893603	-80.79224753	
21,000.00	92.00	330.01	10,851.10	8,580.04	-4,492.23	14,453,674.24	1,698,718.29	39.79917606	-80.79242467	
21,100.00	92.00	330.01	10,847.62	8,666.60	-4,542.18	14,453,760.79	1,698,668.34	39.79941409	-80.79260181	
21,200.00	92.00	330.01	10,844.13	8,753.16	-4,592.14	14,453,847.35	1,698,618.38	39.79965212	-80.79277896	
21,300.00	92.00	330.01	10,840.64	8,839.71	-4,642.09	14,453,933.91	1,698,568.43	39.79989015	-80.79295610	
21,400.00	92.00	330.01	10,837.15	8,926.27	-4,692.05	14,454,020.47	1,698,518.47	39.80012818	-80.79313325	
21,500.00	92.00	330.01	10,833.67	9,012.83	-4,742.00	14,454,107.03	1,698,468.52	39.80036621	-80.79331040	
21,600.00	92.00	330.01	10,830.18	9,099.39	-4,791.96	14,454,193.59	1,698,418.56	39.80060424	-80.79348755	
21,700.00	92.00	330.01	10,826.69	9,185.95	-4,841.91	14,454,280.14	1,698,368.61	39.80084227	-80.79366470	
21,800.00	92.00	330.01	10,823.21	9,272.51	-4,891.87	14,454,366.70	1,698,318.65	39.80108030	-80.79384185	
21,900.00	92.00	330.01	10,819.72	9,359.06	-4,941.82	14,454,453.26	1,698,268.70	39.80131832	-80.79401900	
22,000.00	92.00	330.01	10,816.23	9,445.62	-4,991.78	14,454,539.82	1,698,218.74	39.80155635	-80.79419615	
22,100.00	92.00	330.01	10,812.75	9,532.18	-5,041.73	14,454,626.38	1,698,168.79	39.80179438	-80.79437331	
22,200.00	92.00	330.01	10,809.26	9,618.74	-5,091.69	14,454,712.94	1,698,118.83	39.80203241	-80.79455046	
22,300.00	92.00	330.01	10,805.77	9,705.30	-5,141.64	14,454,799.49	1,698,068.88	39.80227044	-80.79472762	
22,400.00	92.00	330.01	10,802.28	9,791.86	-5,191.60	14,454,886.05	1,698,018.92	39.80250846	-80.79490478	
22,500.00	92.00	330.01	10,798.80	9,878.41	-5,241.55	14,454,972.61	1,697,968.97	39.80274649	-80.79508194	
22,600.00	92.00	330.01	10,795.31	9,964.97	-5,291.51	14,455,059.17	1,697,919.01	39.80298452	-80.79525910	
22,700.00	92.00	330.01	10,791.82	10,051.53	-5,341.46	14,455,145.73	1,697,869.06	39.80322254	-80.79543626	
22,800.00	92.00	330.01	10,788.34	10,138.09	-5,391.42	14,455,232.29	1,697,819.10	39.80346057	-80.79561343	
22,900.00	92.00	330.01	10,784.85	10,224.65	-5,441.37	14,455,318.84	1,697,769.15	39.80369859	-80.79579059	
23,000.00	92.00	330.01	10,781.36	10,311.21	-5,491.33	14,455,405.40	1,697,719.19	39.80393662	-80.79596776	
23,100.00	92.00	330.01	10,777.88	10,397.77	-5,541.28	14,455,491.96	1,697,669.24	39.80417464	-80.79614492	
23,128.28	92.00	330.01	10,776.96	10,420.51	-5,554.41	14,455,514.71	1,697,656.11	39.80423720	-80.79619148	
PBHL/TD 23126.28 MD/10777.00 TVD										
23,200.00	92.00	330.01	10,774.39	10,484.32	-5,591.24	14,455,578.52	1,697,619.29	39.80441267	-80.79632209	
23,268.48	92.00	330.01	10,772.00	10,543.60	-5,625.45	14,455,637.80	1,697,585.08	39.80457567	-80.79644342	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
BHL Bryan N-12HU r2 - plan hits target center - Point	0.00	0.00	10,772.00	10,543.60	-5,625.45	14,455,637.80	1,697,585.08	39.80457567	-80.79644342	
LP Bryan N-12HU - plan hits target center - Point	0.00	0.00	11,179.00	440.65	205.21	14,445,534.85	1,703,415.73	39.77679195	-80.77577276	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-12HU (slot F)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-12HU (slot F)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
1,200.00	1,200.00	0.00	0.00	KOP Begin 1°/100' build
1,700.00	1,699.37	-21.80	0.00	Begin 5.00° tangent
2,300.00	2,297.08	-74.10	0.00	Begin 1°/100' drop
2,800.00	2,795.45	-95.90	0.00	Begin vertical hold
9,003.55	9,000.00	-95.90	0.00	Begin 3°/100' build
9,544.00	9,533.26	-105.75	75.32	Begin 16.21° tangent
10,579.45	10,527.53	-143.24	361.99	Begin 10°/100' build/turn
11,596.64	11,179.00	440.65	205.21	Begin 92.00° lateral section
23,126.28	10,776.96	10,420.51	-5,554.41	PBHL/TD 23126.28 MD/10777.00 TVD

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60020-15



**Tug Hill Operating LLC**  
**Well: Bryan N-12HU (slot F)**  
**Site: Bryan Pad**  
**Project: Marshall County, WV**  
**Design: rev2**

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=1191 @ 1191.00usft  
 Surface location  
 Northing Easting Longitude  
 14445294.18 1703210.52 38.77558321-80.77850704  
 Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.78°

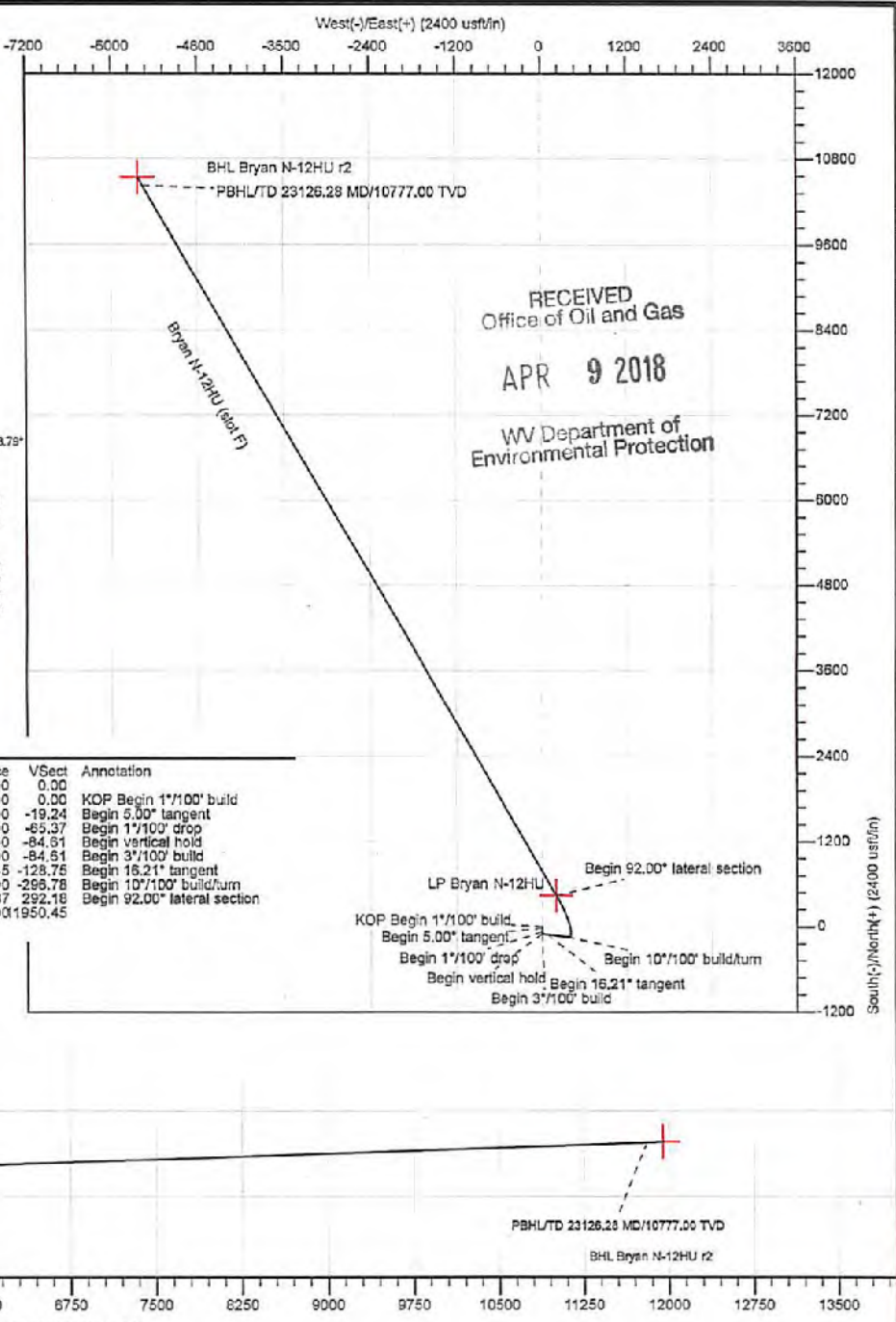
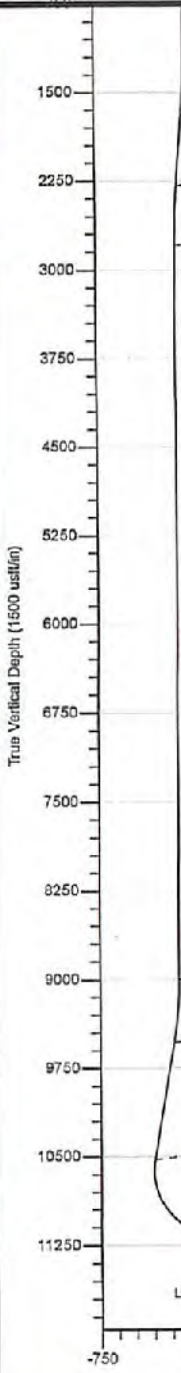


Azimuths to Grid North  
 True North: -0.14°  
 Magnetic North: -8.78°  
 Magnetic Field  
 Strength: 52:56.8nT  
 Dip Angle: 66.94°  
 Date: 8/18/2017  
 Model: IGRF2015



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	1700.00	5.00	180.00	1699.37	-21.80	0.00	1.00	180.00	-19.24	Begin 5.00° tangent
4	2300.00	5.00	180.00	2297.08	-74.10	0.00	0.00	0.00	-65.37	Begin 1°/100' drop
5	2800.00	0.00	180.00	2795.45	-85.90	0.00	1.00	180.00	-84.51	Begin vertical hold
6	3000.55	0.00	180.00	3000.00	-85.90	0.00	0.00	180.00	-84.51	Begin 3°/100' build
7	3543.99	16.21	97.45	3533.26	-105.75	75.32	3.00	97.45	-128.76	Begin 16.21° tangent
8	10573.45	16.21	97.45	10527.53	-143.24	351.89	0.00	0.00	-256.78	Begin 10°/100' build/turn
9	11596.65	92.00	330.01	11179.00	440.85	205.21	10.00	-125.87	292.18	Begin 92.00° lateral section
10	23268.48	92.00	330.01	10772.00	10543.60	-5625.45	0.00	0.00	1950.45	Begin 92.00° lateral section



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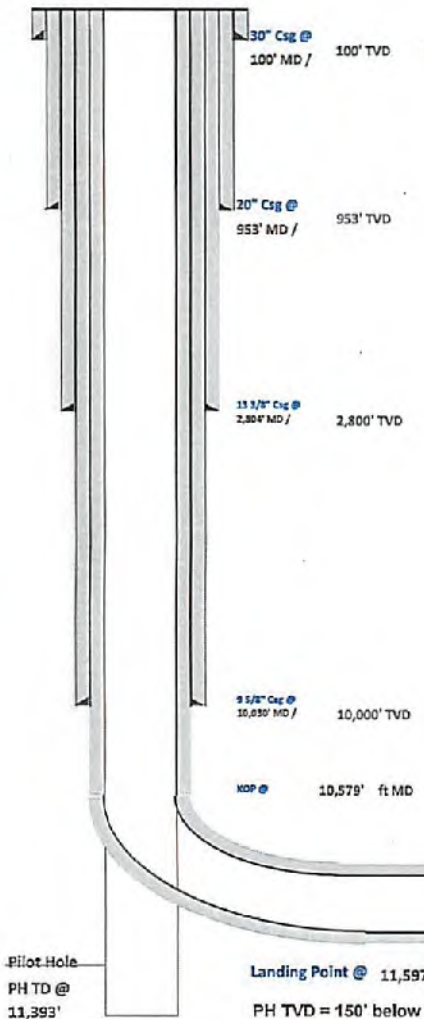


**WELL NAME:** Bryan N-12HU  
**STATE:** West Virginia    **COUNTY:** Marshall  
**DISTRICT:** Franklin  
**DF Elev:** 1,191'    **GL Elev:** 1,191'  
**TD:** 23,268'  
**TH Latitude:** 39.77558321100  
**TH Longitude:** -80.77650704 39.80457567  
**BH Latitude:** -80.79644342  
**BH Longitude:** -80.79644342

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	803'
Sewickley Coal	792'
Pittsburgh Coal	756'
Big Limestone	1,979'
Berea	2,519'
Tully	6,362'
Marcellus	6,443'
Onondaga	6,495'
Silica	7,185'
Lodiport	8,311'
Ulca	10,370'
Point Pleasant	11,124'
Landing Depth	11,179'
Trenton	11,243'
Pilot Hole TD	11,393'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	100'	100'	BW	BW	Surface
Surface	26	20	953'	953'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,804'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,030'	10,000'	47	HP110	Surface
Production	8 1/2	5 1/2	23,268'	10,772'	23	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	291	A	15.6	Air	None
Surface	1,657	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,146	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,702	A	14.5	Air	1 Centralizer every other jt
Production	4,754	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Pilot Hole  
 PH TD @ 11,393'  
 Landing Point @ 11,597' MD / 11,179' TVD  
 PH TVD = 150' below Trenton Top

Lateral TD @ 23,268' ft MD  
 10,772' ft TVD

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*gwh/6/18*

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51-02029



Tug Hill Operating, LLC Casing and Cement Program

Bryan N-12HU

**Casing**

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	100'	CTS
Surface	20"	J55	26"	953'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,806'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	10,030'	CTS
Production	5 1/2"	P110	8 1/2"	23,263'	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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4705102029

WW-9  
(4/16)

API Number 47 - 051 -  
Operator's Well No. Bryan N-12HU

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Undergound 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 Wetzel County Sanitary Landfill

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185)

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.

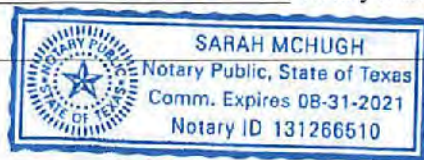
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is 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 \_\_\_\_\_  
Company Official (Typed Name) David Patterson  
Company Official Title Senior Vice President, Operations

Subscribed and sworn before me this 12th day of December, 2017

Sarah Mchugh Notary Public

My commission expires 08-31-2021



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Form WW-9

Operator's Well No. Bryan N-12HU

**Tug Hill Operating, LLC**

Proposed Revegetation Treatment: Acres Disturbed 17.78 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Rye Grain	140	Tall Fescue	40
		Ladino Clover	5

**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: *Jan Tiedler*

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

Title: Oil + Gas Inspector Date: 12/16/17

Field Reviewed?  Yes  No

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WW-9

# PROPOSED BRYAN N-12HU

SUPPLEMENT PG 1

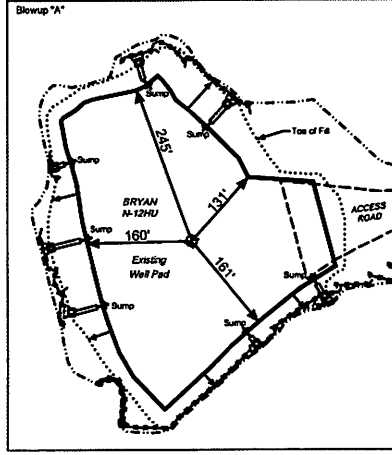
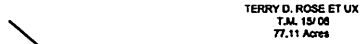
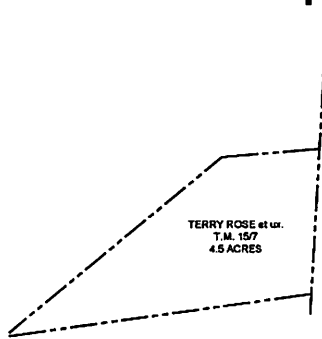
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES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

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

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

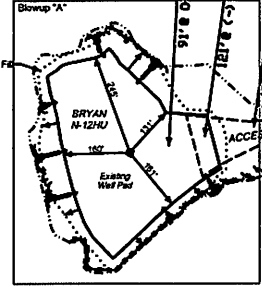
ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

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



TO WV COUNTY RR 27  
RIVES ROSE ROAD  
COUNTY ROUTE 18

TO WV COUNTY RR 27



CNX Land Resources Inc  
Tax Map: 18  
Parcel: 23

RAY MINOR et ux.  
T.M. 1623.1  
2 ACRES

MICHAEL and BRENDA  
BRYAN  
T.M. 1623.4  
3 ACRES

GREG and CHRISTINA  
RIDDLER  
T.M. 1623.3  
1 ACRE

CNX LAND RESOURCES INC.  
T.M. 159  
61.96 ACRES

BORROW & STOCKPILE AREA

CNX LAND RESOURCES INC  
T.M. 1623  
60.138 ACRES

MARK STANLEY  
RUCKMAN  
T.M. 157/10  
153.75 Acres

### LEGEND

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

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DATE: 12/12/17

PROJECT NO: 494510851

DRAWN BY: J.A.H.



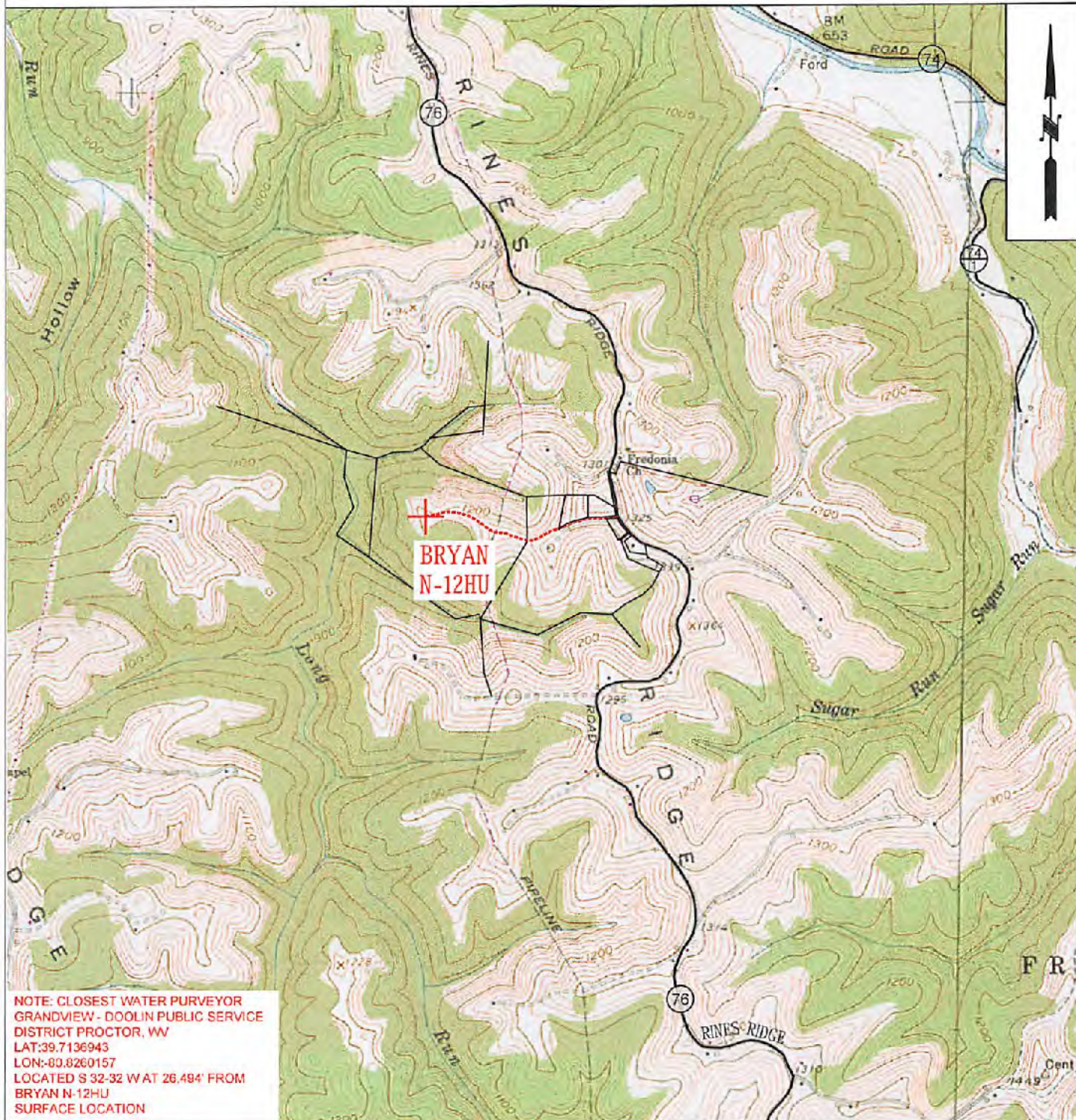
APR 9 2018

WV Department of  
Environmental Protection

WW-9

# PROPOSED BRYAN N-12HU

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR  
GRANDVIEW - DOOLIN PUBLIC SERVICE  
DISTRICT PROCTOR, WV  
LAT:39.7136943  
LON:-80.8260157  
LOCATED S 32-32 W AT 26.494' FROM  
BRYAN N-12HU  
SURFACE LOCATION



**TUG HILL**  
OPERATING

OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	BRYAN
		SCALE:	DATE:
		1" = 2000'	DATE: 12/12/17

4705702029



*[Handwritten signature]*  
3/28/18

# Well Site Safety Plan

## Tug Hill Operating, LLC

Well Name: Bryan N-12HU

Pad Location: Bryan

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,402,873.52

EASTING -519,139.61

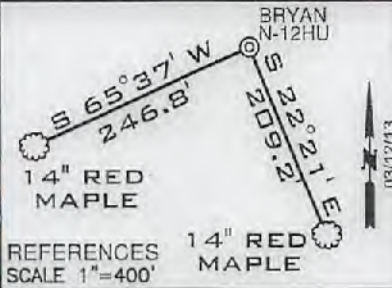
December 2017

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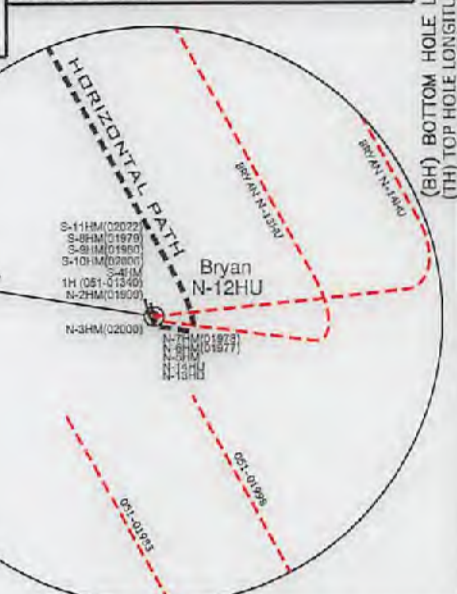
APR 9 2018

WV Department of  
Environmental Protection

BRYAN LEASE  
UTICA UNIT - 387.8213 AC ±  
WELL N-12HU  
TUG HILL OPERATING



TOP HOLE LATITUDE: 39°47'30"  
BOTTOM HOLE LATITUDE: 39°50'00"  
S-11HM(02022) ○  
S-8HM(01979) ○  
S-8HM(01980) ○  
S-10HM(02006) ○  
N-4HM ○  
1H (051-01340) ○  
N-2HM(01999) ○  
N-3HM(02000) ○  
N-7HM(01978) ○  
N-8HM(01977) ○  
N-5HM ○  
N-14HU ○  
N-13HU ○  
N-12HU ○



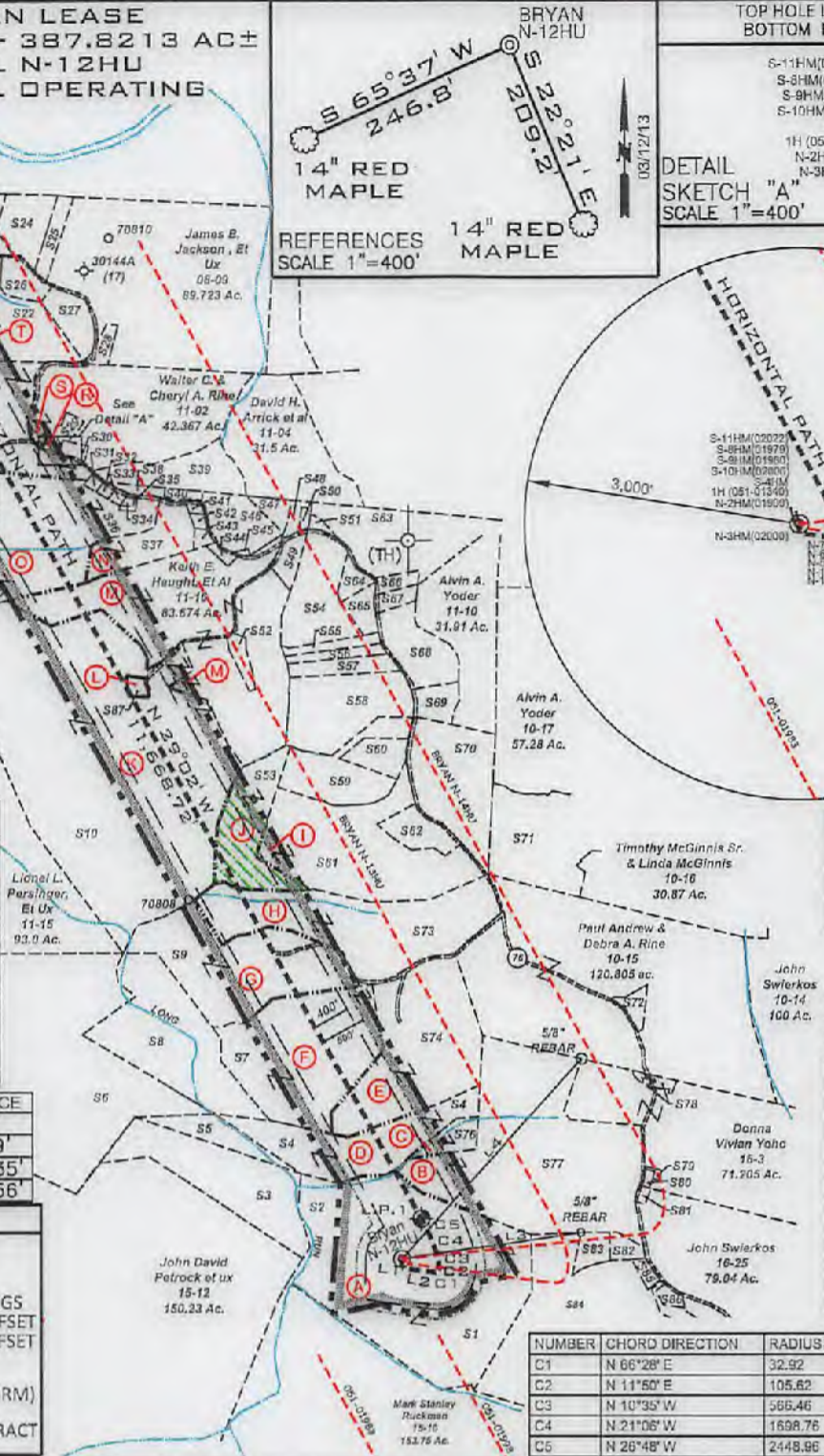
GRID NORTH

- 1. BORE PATH BASED ON GRID NORTH.
- 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 325' OF PAD CENTER WERE FOUND.
- 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
- 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
- 5. TRACT "J" IS FORCED POOLED.
- 6. ALL DEEP WELLS WITHIN 3,000' OF LATERAL ARE SHOWN ON THIS PLAT.

LINE	BEARING	DISTANCE
L1	S 00°57' W	95.94'
L2	S 81°36' E	365.19'
L3	N 81°21' E	1974.35'
L4	N 41°52' E	2939.56'

**LEGEND**

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



**SURFACE HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,402,873.52  
E) 519,139.61

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

**LANDING POINT 1**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,403,007.82  
E) 519,202.15

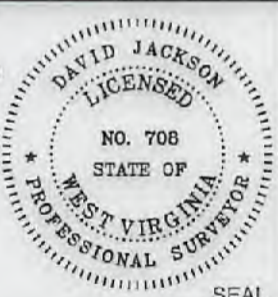
**BOTTOM HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,406,087.21  
E) 517,424.97

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 66°28' E	32.92	41.25	39.60
C2	N 11°50' E	105.62	50.98	50.48
C3	N 10°35' W	566.46	149.62	149.19
C4	N 21°06' W	1698.76	216.61	216.46
C5	N 26°48' W	2448.96	194.08	194.03

FILE NUMBER \_\_\_\_\_  
DRAWING NUMBER BRYAN\_WP\_N-12HU  
SCALE 1" = 2000'  
MINIMUM DEGREE OF ACCURACY 1/200  
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING  
GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708  
*David L Jackson*  
JACKSON SURVEYING INC.  
P.O. Box 1460  
Clarkeburg, WV 26302  
304-623-5861



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

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

LOCATION ELEVATION 1191.0' WATERSHED (HUC 10) Fish Creek  
DISTRICT Franklin COUNTY Marshall  
QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 ROYALTY OWNERS

SURFACE OWNER CNX LAND RESOURCES, INC. ACREAGE 81.98  
OIL & GAS ROYALTY OWNER MICHAEL R. BRYAN - SEE WW-6A1 ROYALTY OWNERS LEASE ACREAGE 81.98  
PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_  
PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE (SPECIFY) \_\_\_\_\_

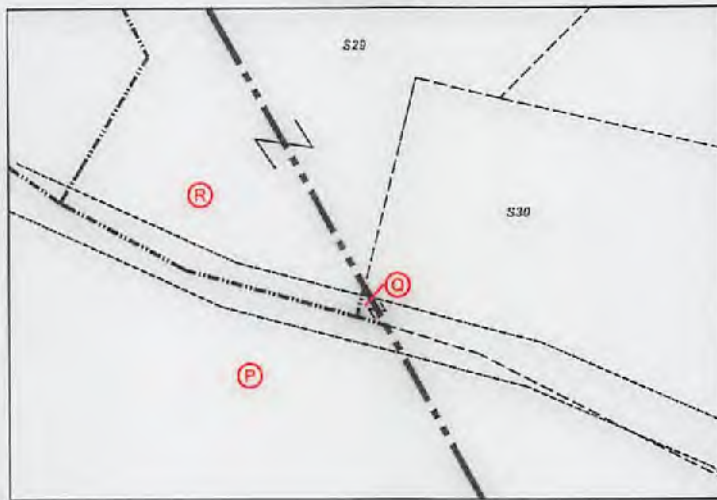
TARGET FORMATION Point Pleasant ESTIMATED DEPTH TVD: 11,393' TMD: 23,269'  
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 ADDRESS CHARLESTON, WV 25313

COUNTY NAME  
PERMIT

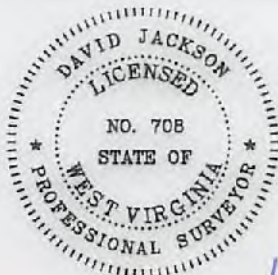
form wv6

PG 2 OF 3  
**BRYAN LEASE**  
**UTICA UNIT - 387.8213 AC±**  
**WELL N-12HU**  
**TUG HILL OPERATING**

Detail "A"



Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES	Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	15-9	CNX Land Resources	81.98	S45	11-5.1	James R. Anderson et ux	0.205
S2	15-13	CNX Land Resources	11.0	S46	11-5	(Part of S30) Kevin R. Corley et ux	10.36
S3	15-14	John David Petrock et ux	25.0	S47	11-5.3	Robert Harris Arrick et ux	3.0
S4	15-6.1	Joseph J. Kramar, et ux	39.40	S48	11-6	Robert & Rebecca Arrick	1.29
S5	15-2	John David Petrock et ux	5.0	S49	11-16.3	Kegan Michael Haught - Life	3.265
S6	15-1	Marcus Sharp & David Schlabach	121.0	S50	11-7	Baptist Cemetary	1.0
S7	15-5	Joseph J. Kramar, et ux	35.0	S51	11-8	Baptist Church	0.8
S8	15-3	Joseph J. Kramar et ux	36.10	S52	11-16.2	Joseph Haught	2.181
S9	15-4	Joseph J. Kramar, et ux	41.106	S53	11-13	Joy D. Gartman & Arlin Gatts	12.29
S10	11-14	Hiram's Est. Family LTD LLP	158.054	S54	11-9.3	Joseph M. Haught & Steven Haught	16.3
S11	12-11	Wesley Bryan & Wesley Bryan II	52.478	S55	11-9.5	Southern Country Farms, Inc	2.559
S12	11-21	Omar Rine, Est.	112.67	S56	11-9.6	Southern Country Farms, Inc	2.488
S13	12-12	Lionel L. Persinger et ux	45.0	S57	11-9.9	Leonard L. Parsons, et ux	5.89
S14	12-10	Murray Energy	13.76	S58	11-9	Edwin C. & Kimberly A. Miller	41.773
S15	12-10.1	Murray Energy	38.48	S59	11-11.4	Brad M. & Amanda J. Blake	15.193
S16	12-9	Lionel & Mary Lee Persinger	10.15	S60	11-11	Brad M. & Amanda J. Blake	5.0
S17	7-39	Lionel L. Persinger et ux	57.0	S61	11-11.3	Herman D. Lantz & Herman J. Lantz	43.96
S18	7-33	William N. Roupe	24.60	S62	11-11.1	Nellie Marie & Robert W. Spencar	5.813
S19	7-31	William N. Roupe	43.147	S63	11-9	(Part of S49) Edwin C. & Kimberly A. Miller	41.773
S20	11-1	William N. & Virginia A. Roupe	4.527	S64	11-9.10	John A. & Janet L. Betocke	2.348
S21	11-1.4	Larry W. Dunlap, et al	32.498	S65	11-9.2	Michael R. Bryan	3.143
S22	11-1.1	Larry W. Dunlap, et al	34.405	S66	11-9.8	Sean F. Moore	2.070
S23	11-1.6	Debra Morris	2.093	S67	11-9.7	Sean F. Moore	2.026
S24	11-1.7	William S. & Mary K. Adams	8.0	S68	11-9.1	Jack Shephard Huggins Jr., et al	10.92
S25	11-1.5	Paul & Sandy Whitt	3.507	S69	11-9.4	Jack S. Huggins et al	4.129
S26	11-1.3	Jay A. Conner, et ux	4.256	S70	11-11.2	Wesley R. Bryan & Wesley R. Bryan II	25.031
S27	11-1.2	Jay A. Conner, et ux	5.824	S71	10-16.4	Elizabeth & Meivin E. Ferguson Jr.	30.87
S28	8-9.1	Scott E. Jackson, Tammy S. South & Marion Jackson	1.957	S72	10-15.1	Donald T. Miller	2.095
S29	11-2.1	Walter C. & Cheryl A. Rine	1.19	S73	11-12	Joseph J. Kramar, et ux	43.2188
S30	11-2.2	Joshua A. Myers	2.193	S74	15-6	Joseph J. Kramar, et ux	42.5
S31	11-20	David E. Gray	0.569	S75	WITHIN 11-1.1	Cemetary	
S32	11-19	David E. Gray	0.532	S76	15-7	Terry D. Rose, et ux	4.5
S33	11-18	David E. Gray	0.569	S77	15-8	Terry D. Rose, et ux	77.11
S34	11-22	David E. Gray	0.353	S78	16-3.2	Jimmy Lee Ostrander Jr., Shaena Lynn Ostrander, & Brody Ray Ostrander	1.435
S35	11-17.1	David Gray	0.297	S79	16-3.1	Dennis E. Jackson, et ux	0.27
S36	11-17	Kevin R. Corley, et ux	36.13	S80	16-2	Christian Church	0.19
S37	11-17.2	Brenda & Michael Bryan	11.504	S81	16-1	Christian Church	0.50
S38	11-5	Kevin R. Corley et ux	10.36	S82	16-23.1	Ray E. Minor, et ux	2.0
S39	11-3	Kevin R. Corley et ux	13.18	S83	16-23.4	Michael R. & Brenda K. Bryan	3.0
S40	11-5.2	Ricky Lynn & Victoria Rose Cross	1.0	S84	16-23	CNX Land Resources, Inc.	60.138
S41	11-24	Charles Edward Furbee et ux	0.603	S85	16-23.3	Greg & Christina Riddle	1.0
S42	11-23	Owen Michael Barr	0.845	S86	16-24	Alan M. Beyser, et ux	1.083
S43	11-25	Owen Michael Barr	0.598	S87	11-14.1	Dennis F. Moore, et ux	1.056
S44	11-16.1	Susan Marie Smith - Life	0.876				



47-051-02029H6A  
 P.S. 708 *David L Jackson*



**TUG HILL**  
**OPERATING**

OPERATOR'S  
 WELL #: Bryan N-12HU  
 DISTRICT: Franklin  
 COUNTY: Marshall  
 STATE: WV

WELL PLAT  
 PAGE 2 OF 3  
 DATE: 12/22/2017  
 REVISED DATE:  
03/27/2018

PG 3 OF 3 BRYAN LEASE  
 UTICA UNIT - 387.8213 AC±  
 WELL N-12HU  
 TUG HILL OPERATING

LEASE NO.	TAGS	PARCEL	OIL & GAS ROYALTY OWNER	DEED BOOK	PAGE
10*19294	A	5-15-9	BRENDA K BRYAN ET AL	666	289
10*19340	B	5-15-8	DONNA V YOHO	665	407
10*19340	C	5-15-7	DONNA VIVIAN YOHO	665	407
10*19293	D	5-15-6.1	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19295	D	5-15-6.1	KEVIN J. KELLY PAMELA MARXEN-KELLY	858	381
10*19296	D	5-15-6.1	MARISSA C MARXEN	837	120
10*19297	D	5-15-6.1	PHILIP LEONARD MARXEN	839	410
10*19298	D	5-15-6.1	BETTY J MARXEN SLEZAK	822	351
10*19299	D	5-15-6.1	ANNETTE CONWAY MARXEN	817	512
10*19300	D	5-15-6.1	DEBORAH F HAGEMAN HUPPERT	815	145
10*19301	D	5-15-6.1	SANDRA HAGEMAN KANGAS	815	150
10*19302	D	5-15-6.1	JEFFREY C MARXEN SAMANTHA L MARXEN	817	506
10*19303	D	5-15-6.1	THOMAS O MARXEN	814	589
10*19304	D	5-15-6.1	DEAN L RINE, JR. PAMELA F. RINE	813	635
10*19305	D	5-15-6.1	KAREN MARXEN SONDRÖL	813	605
10*19306	D	5-15-6.1	RICHARD L. TATE MARCELINE RINE TATE	814	594
10*19307	D	5-15-6.1	MARY SUE RINE-WALTER	815	155
10*19308	D	5-15-6.1	WILLIAM WEBER	817	646
10*19293	E	5-15-6	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19295	E	5-15-6	KEVIN J. KELLY PAMELA MARXEN-KELLY	858	381
10*19296	E	5-15-6	MARISSA C MARXEN	837	120
10*19297	E	5-15-6	PHILIP LEONARD MARXEN	839	410
10*19298	E	5-15-6	BETTY J MARXEN SLEZAK	822	351
10*19299	E	5-15-6	ANNETTE CONWAY MARXEN	817	512
10*19300	E	5-15-6	DEBORAH F HAGEMAN HUPPERT	815	145
10*19301	E	5-15-6	SANDRA HAGEMAN KANGAS	815	150
10*19302	E	5-15-6	JEFFREY C MARXEN SAMANTHA L MARXEN	817	506
10*19303	E	5-15-6	THOMAS O MARXEN	814	589
10*19304	E	5-15-6	DEAN L. RINE, JR. PAMELA F. RINE	813	635
10*19305	E	5-15-6	KAREN MARXEN SONDRÖL	813	605
10*19306	E	5-15-6	RICHARD L. TATE MARCELINE RINE TATE	814	594
10*19307	E	5-15-6	MARY SUE RINE-WALTER	815	155
10*19308	E	5-15-6	WILLIAM WEBER	817	646
10*19293	F	5-15-5	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19293	G	5-15-4	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19293	H	5-11-12	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19336	I	5-11-11.3	BONNIE JEAN DAWSON	665	397
10*19336	I	5-11-11.3	BONNIE JEAN DAWSON	665	397
10*18972	J	5-11-13	MARGARET CLICKNER	941	281
10*19224	J	5-11-13	AMYSUE G BAHL	731	166
10*19225	J	5-11-13	LOIS BURNS	731	174
10*19226	J	5-11-13	THOMAS RAY GATTS	731	162
10*19227	J	5-11-13	CONNIE KRESS KNAPP	734	451
10*19228	J	5-11-13	CAROLE J LAMBERT	737	225
10*19229	J	5-11-13	PATRICIA A LAMBERT	731	158
10*19230	J	5-11-13	MARIANN VIRGINIA MUNN	731	160
10*19231	J	5-11-13	DALE F RADCLIFF	734	462
10*19232	J	5-11-13	SANDRA J STOWE HARMON	731	149
10*19233	J	5-11-13	SHERLEY RAY STOWE	731	170
10*19234	J	5-11-13	STANLEY EUGENE STOWE	732	631
10*19235	J	5-11-13	ROSE EDGE	731	164
10*19244	J	5-11-13	JERRY L BLOOD	736	177
10*19247	J	5-11-13	JUANITA MCVEY	745	580
10*21009	J	5-11-13	JOY DENEAN GARTMAN	951	595
10*21042	J	5-11-13	REBECCA ASPERY	952	426
10*21046	J	5-11-13	KELLY R DUNN	951	591
10*21047	J	5-11-13	RACHEL D DONAHUE	951	589
10*21048	J	5-11-13	MICHAEL P OLSON	951	593
10*21253	J	5-11-13	MARY ANN STURGILL	952	430
***	J	5-11-13	WILLIAM J OLSON		
***	J	5-11-13	EVA PATTERSON		

LEASE NO.	TAGS	PARCEL	OIL & GAS ROYALTY OWNER	DEED BOOK	PAGE
10*19139	K	5-11-14	HIRAM V MOORE	699	53
10*19243	L	5-11-14.1	DENNIS F AND JOLENE A MOORE	756	1
10*19139	M	5-11-16	HIRAM V MOORE	699	53
10*19178	M	5-11-16	JOSEPH HAUGHT	710	69
10*19179	M	5-11-16	KEITH HAUGHT BEVERLY HAUGHT	710	587
10*19180	M	5-11-16	STEVEN HAUGHT	710	67
10*19176	N	5-11-17.2	MAUNA MAXINE BEYSER	710	602
10*19177	N	5-11-17.2	NINA L KOVACS	710	594
10*19185	N	5-11-17.2	HARRIETT LODUTH FOLEY	710	598
10*19186	N	5-11-17.2	JOEL GLOVER	710	600
10*19188	N	5-11-17.2	SHELLY ANN MCPHERON	710	606
10*19190	N	5-11-17.2	SALLY LEE RIVERA	710	590
10*19191	N	5-11-17.2	SHARLA BETH WEAVER	710	608
10*19192	N	5-11-17.2	JAMES E YOHO	714	129
10*19201	N	5-11-17.2	DANIEL K YOHO	714	125
10*19202	N	5-11-17.2	DEBORAH L WOOLLEY	714	131
10*19203	N	5-11-17.2	CAROL M YOHO	713	205
10*19204	N	5-11-17.2	DAYNA MARLENE YOHO	714	127
10*19205	N	5-11-17.2	JEFFREY C YOHO	713	203
10*19251	N	5-11-17.2	RAE SUZETTE BAKER	748	315
10*19252	N	5-11-17.2	JOHN WILSON	749	522
10*19502	N	5-11-17.2	SUSAN BLANCHE BEYSER	942	623
10*19899	N	5-11-17.2	WINIFRED G AND EDDIE G TURNER	948	277
10*21041	N	5-11-17.2	SHERY AND RANDEN RITCHEA	949	365
10*19126	O	5-11-17	KEVIN R. CORLEY AND ANITA L. CORLEY	859	47
10*19176	O	5-11-17	MAUNA MAXINE BEYSER	710	602
10*19177	O	5-11-17	NINA L KOVACS	710	594
10*19185	O	5-11-17	HARRIETT LODUTH FOLEY	710	598
10*19186	O	5-11-17	JOEL GLOVER	710	600
10*19189	O	5-11-17	SHELLY ANN MCPHERON	710	606
10*19190	O	5-11-17	SALLY LEE RIVERA	710	590
10*19191	O	5-11-17	SHARLA BETH WEAVER	710	608
10*19192	O	5-11-17	JAMES E YOHO	714	129
10*19201	O	5-11-17	DANIEL K YOHO	714	125
10*19202	O	5-11-17	DEBORAH L WOOLLEY	714	131
10*19203	O	5-11-17	CAROL M YOHO	713	205
10*19204	O	5-11-17	DAYNA MARLENE YOHO	714	127
10*19205	O	5-11-17	JEFFREY C YOHO	713	203
10*19251	O	5-11-17	RAE SUZETTE BAKER	748	315
10*19252	O	5-11-17	JOHN WILSON	749	522
10*19502	O	5-11-17	SUSAN BLANCHE BEYSER	942	623
10*19899	O	5-11-17	WINIFRED G AND EDDIE G TURNER	948	277
10*21041	O	5-11-17	SHERY AND RANDEN RITCHEA	949	365
Q088586011	P	5-11-21	KAREN SUE CLYDE REED	864	190
Q088586003	P	5-11-21	GENIE SUE THOMAS AND JOHN L HOLMES	848	204
Q088586010	P	5-11-21	BRANDA FAYE AND THOMAS PETRACK	850	161
Q088586002	P	5-11-21	GAIL ANN YATES AND WESLEY J WOOD	848	208
Q088586005	P	5-11-21	SHIRLEY YATES AND FREDDIE LEE HARTSELL	848	212
Q088586004	P	5-11-21	BOYD DAIL JR AND MARLA YATES	848	210
Q088586001	P	5-11-21	GUY YATES	848	206
Q088586007	P	5-11-21	REBEKAH DRYER AND CHRISTOPHER ELDRIDGE	850	157
Q088586008	P	5-11-21	BOYD BUESKING	850	159
Q088586009	P	5-11-21	CHRISTA DRYER AND JOSHUA STALEY	851	3
10*19127	Q	5-11-2.2	WALTER C. RINE AND CHERYL ANN RINE	859	49
10*19127	R	5-11-2.1	WALTER C. RINE AND CHERYL ANN RINE	859	49
10*19164	R	5-11-2.1	KATHERINE A STALNAKER	839	486
10*19169	R	5-11-2.1	DANIEL L RINE	839	260
10*19127	S	5-11-2	WALTER C. RINE AND CHERYL ANN RINE	859	49
10*47051.089.0	T	CEMETERY IN 5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
10*47051.089.0	U	5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
10*47051.089.0	V	5-11-1.4	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148

\*\*\* Force pool interest



P.S. 708 *David L Jackson*

47-051-02029 H6A



**TUG HILL**  
 OPERATING

OPERATOR'S  
 WELL #: Bryan N-12HU  
 DISTRICT: Franklin  
 COUNTY: Marshall  
 STATE: WV

WELL PLAT  
 PAGE 3 OF 3  
 DATE: 12/22/2017  
 REVISED DATE:  
03/27/2018

WW-6A1  
(5/13)

Operator's Well No. Bryan N-12HU

**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

RECEIVED  
Office of Oil and Gas

APR 9 2018

WV Department of  
Environmental Protection

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

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

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

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

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

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19294	A	5-15-9	BRENDA K BRYAN ET AL	TRIENERGY INC	1/8+	666	289	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/11 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19340	B	5-15-8	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	23/617 Gastar Exploration USA Inc and Atinum Marcellus I LLC to AB Resources LLC	24/319 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc. to TH Exploration LLC
10*19340	C	5-15-7	DONNA VIVIAN YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gastar Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	D	5-15-6.1	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19295	D	5-15-6.1	KEVIN J. KELLY PAMELA MARXEN-KELLY	CHEVRON USA INC	1/8+	858	381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19296	D	5-15-6.1	MARISSA C MARXEN	CHEVRON USA INC	1/8+	837	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19297	D	5-15-6.1	PHILIP LEONARD MARXEN	CHEVRON USA INC	1/8+	839	410	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19298	D	5-15-6.1	BETTY J MARXEN SLEZAK	CHEVRON USA INC	1/8+	822	351	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19299	D	5-15-6.1	ANNETTE CONWAY MARXEN	CHEVRON USA INC	1/8+	817	512	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19300	D	5-15-6.1	DEBORAH F HAGEMAN HUPPERT	CHEVRON USA INC	1/8+	815	145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19301	D	5-15-6.1	SANDRA HAGEMAN KANGAS	CHEVRON USA INC	1/8+	815	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19302	D	5-15-6.1	JEFFREY C MARXEN SAMANTHA L MARXEN	CHEVRON USA INC	1/8+	817	506	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19303	D	5-15-6.1	THOMAS O MARXEN	CHEVRON USA INC	1/8+	814	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19304	D	5-15-6.1	DEAN L. RINE, JR. PAMELA F. RINE	CHEVRON USA INC	1/8+	813	635	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19305	D	5-15-6.1	KAREN MARXEN SONDROL	CHEVRON USA INC	1/8+	813	605	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19306	D	5-15-6.1	RICHARD L. TATE MARCELINE RINE TATE	CHEVRON USA INC	1/8+	814	594	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19307	D	5-15-6.1	MARY SUE RINE-WALTER	CHEVRON USA INC	1/8+	815	155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19308	D	5-15-6.1	WILLIAM WEBER	CHEVRON USA INC	1/8+	817	646	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	E	5-15-6	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19295	E	5-15-6	KEVIN J. KELLY PAMELA MARXEN-KELLY	CHEVRON USA INC	1/8+	858	381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC

51-02029

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*19296	E	5-15-6	MARISSA C MARXEN	CHEVRON USA INC	1/8+	837	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19297	E	5-15-6	PHILIP LEONARD MARXEN	CHEVRON USA INC	1/8+	839	410	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19298	E	5-15-6	BETTY J MARXEN SLEZAK	CHEVRON USA INC	1/8+	822	351	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19299	E	5-15-6	ANNETTE CONWAY MARXEN	CHEVRON USA INC	1/8+	817	512	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19300	E	5-15-6	DEBORAH F HAGEMAN HUPPERT	CHEVRON USA INC	1/8+	815	145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19301	E	5-15-6	SANDRA HAGEMAN KANGAS	CHEVRON USA INC	1/8+	815	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19302	E	5-15-6	JEFFREY C MARXEN SAMANTHA L MARXEN	CHEVRON USA INC	1/8+	817	506	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19303	E	5-15-6	THOMAS O MARXEN	CHEVRON USA INC	1/8+	814	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19304	E	5-15-6	DEAN L RINE, JR. PAMELA F. RINE	CHEVRON USA INC	1/8+	813	635	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19305	E	5-15-6	KAREN MARXEN SONDROL	CHEVRON USA INC	1/8+	813	605	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19306	E	5-15-6	RICHARD L. TATE MARCELINE RINE TATE	CHEVRON USA INC	1/8+	814	594	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19307	E	5-15-6	MARY SUE RINE-WALTER	CHEVRON USA INC	1/8+	815	155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19308	E	5-15-6	WILLIAM WEBER	CHEVRON USA INC	1/8+	817	646	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC	
10*19293	F	5-15-5	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	G	5-15-4	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	H	5-11-12	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19336	I	5-11-11.3	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gastar Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19336	I	5-11-11.3	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gastar Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*18972	J	5-11-13	MARGARET CLICKNER	TH EXPLORATION LLC	1/8+	941	281	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*19224	J	5-11-13	AMYSUE G BAHL	GASTAR EXPLORATION USA INC	1/8+	731	166	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19225	J	5-11-13	LOIS BURNS	GASTAR EXPLORATION USA INC	1/8+	731	174	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19226	J	5-11-13	THOMAS RAY GATTS	GASTAR EXPLORATION USA, INC	1/8+	731	162	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*19227	J	5-11-13	CONNIE KRESS KNAPP	GASTAR EXPLORATION USA INC	1/8-	734	451	N/A	N/A	N/A	N/A	N/A	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19228	J	5-11-13	CAROLE J LAMBERT	GASTAR EXPLORATION USA INC	1/8-	737	225	N/A	N/A	N/A	N/A	N/A	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19229	J	5-11-13	PATRICIA A LAMBERT	GASTAR EXPLORATION USA INC	1/8-	731	158	N/A	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19230	J	5-11-13	MARIANN VIRGINIA MUNN	GASTAR EXPLORATION USA INC	1/8-	731	160	N/A	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19231	J	5-11-13	DALE F RADCLIFF	GASTAR EXPLORATION USA INC	1/8-	734	462	N/A	N/A	N/A	N/A	N/A	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19232	J	5-11-13	SANDRA J STOWE HARMON	GASTAR EXPLORATION USA INC	1/8-	731	149	N/A	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19233	J	5-11-13	SHERLEY RAY STOWE	GASTAR EXPLORATION USA INC	1/8-	731	170	N/A	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19234	J	5-11-13	STANLEY EUGENE STOWE	GASTAR EXPLORATION USA INC	1/8-	732	531	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19235	J	5-11-13	ROSE EDGE	GASTAR EXPLORATION USA INC	1/8-	731	164	N/A	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19244	J	5-11-13	JERRY L BLOOD	GASTAR EXPLORATION USA INC	1/8-	735	177	N/A	N/A	N/A	N/A	N/A	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19247	J	5-11-13	JUANITA MCVEY	GASTAR EXPLORATION USA INC	1/8-	745	580	N/A	N/A	N/A	N/A	N/A	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*21009	J	5-11-13	JOY DENEAN GARTMAN	TH EXPLORATION, LLC	1/8-	951	595	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21042	J	5-11-13	REBECCA ASPERY	TH EXPLORATION, LLC	1/8-	952	428	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21046	J	5-11-13	KELLY B DUNN	TH EXPLORATION, LLC	1/8-	951	591	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21047	J	5-11-13	RACHEL D DONAHUE	TH EXPLORATION, LLC	1/8-	951	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21048	J	5-11-13	MICHAEL P OLSON	TH EXPLORATION, LLC	1/8-	951	593	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21253	J	5-11-13	MARY ANN STURGILL	TH EXPLORATION, LLC	1/8-	952	480	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
***	J	5-11-13	WILLIAM J OLSON	*** UNLEASED <i>pooled</i>				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
***	J	5-11-13	EVA PATTERSON	*** UNLEASED <i>pooled</i>				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19139	K	5-11-14	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19243	L	5-11-14.1	DENNIS F AND JOLENE A MOORE	GASTAR EXPLORATION USA INC	1/8+	736	1	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	25/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19139	M	5-11-16	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19178	M	5-11-16	JOSEPH HAUGHT	GASTAR EXPLORATION USA INC	1/8+	710	69	N/A	N/A	N/A	N/A	N/A	24/335 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19179	M	5-11-16	KEITH HAUGHT BEVERLY HAUGHT	GASTAR EXPLORATION USA INC	1/8+	710	587	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19180	M	5-11-16	STEVEN HAUGHT	GASTAR EXPLORATION USA, INC	1/8+	710	67	N/A	N/A	N/A	N/A	N/A	24/335 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19176	N	5-11-17.2	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	N	5-11-17.2	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	N	5-11-17.2	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	N	5-11-17.2	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	N	5-11-17.2	SHELLY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	N	5-11-17.2	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	N	5-11-17.2	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	N	5-11-17.2	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	N	5-11-17.2	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	N	5-11-17.2	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	N	5-11-17.2	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	N	5-11-17.2	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	N	5-11-17.2	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	N	5-11-17.2	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	N	5-11-17.2	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	N	5-11-17.2	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	N	5-11-17.2	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	N	5-11-17.2	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19126	O	5-11-17	KEVIN R. CORLEY AND ANITA L CORLEY	CHEVRON USA INC	1/8+	859	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC

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Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19176	O	5-11-17	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19177	O	5-11-17	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19185	O	5-11-17	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19186	O	5-11-17	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19189	O	5-11-17	SHELLY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19190	O	5-11-17	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19191	O	5-11-17	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19192	O	5-11-17	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19201	O	5-11-17	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19202	O	5-11-17	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19203	O	5-11-17	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19204	O	5-11-17	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19205	O	5-11-17	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19251	O	5-11-17	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19252	O	5-11-17	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*19502	O	5-11-17	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc
10*19893	O	5-11-17	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC
10*21041	O	5-11-17	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q088586011	P	5-11-21	KAREN SUE CLYDE REED	NOBLE ENERGY, INC	1/8+	864	190	N/A	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC
Q088586003	P	5-11-21	GENIE SUE THOMAS AND JOHN L HOLMES	NOBLE ENERGY, INC	1/8+	848	204	N/A	N/A	N/A	N/A	N/A	N/A	37/169 CNX Gas Company LLC to Noble Energy Inc
Q088586010	P	5-11-21	BRENDA FAYE AMD THOMAS PETRACK	NOBLE ENERGY, INC	1/8+	850	161	N/A	N/A	N/A	N/A	N/A	N/A	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586002	P	5-11-21	GAIL ANN YATES AND WESLEY J WOOD	NOBLE ENERGY, INC	1/8+	848	208	N/A	N/A	N/A	N/A	N/A	N/A	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC

51-02029

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment			
Q088586005	P	5-11-21	SHIRLEY YATES AND FREDDIE LEE HARTSELL	NOBLE ENERGY, INC	1/8+	848	212	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
Q088586004	P	5-11-21	BOYD DAIL JR AND MARLA YATES	NOBLE ENERGY, INC	1/8+	848	210	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
Q088586001	P	5-11-21	GUY YATES	NOBLE ENERGY, INC	1/8+	848	206	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
Q088586007	P	5-11-21	REBEKAH DRAYER AND CHRISTOPHER ELDRIDGE	NOBLE ENERGY, INC	1/8+	850	157	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
Q088586008	P	5-11-21	BOYD BUESKING	NOBLE ENERGY, INC	1/8+	850	159	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
Q088586009	P	5-11-21	CHRISTA DRAYER AND JOSHUA STALEY	NOBLE ENERGY, INC	1/8+	851	3	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC	
10*19127	Q	5-11-2.2	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19127	R	5-11-2.1	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19164	R	5-11-2.1	KATHERINE A STALNAKER	CHEVRON USA INC	1/8+	839	486	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19169	R	5-11-2.1	DANIEL L RINE	CHEVRON USA INC	1/8+	839	260	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19127	S	5-11-2	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*47051.089.0	T	CEMTERY IN 5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.089.0	U	5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.089.0	V	5-11-1.4	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\* Force pool Interest

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DPS LAND SERVICES CORP  
6000 TITAN CENTER BOULEVARD, SUITE 145  
CARONSBURG PA 15317-5841

BOOK 001-0 PAGE 0057

STATE OF WEST VIRGINIA           §  
  §  
COUNTY OF MARSHALL           §

**ASSIGNMENT AND BILL OF SALE**

This ASSIGNMENT AND BILL OF SALE (this "Assignment") dated as of August 1, 2017 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on August 2, 2017 being the day immediately following the Signing Date (the "Effective Date"), is made by Chevron U.S.A. Inc., a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") to TH Exploration II, LLC and TH Exploration, LLC, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively "Assignee") and is accepted by Assignee upon the following terms and conditions.

**RECITALS**

- A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor's Bryah 1H well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.
- B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor's oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignee's oil and gas leasehold interests located in Marshall County, West Virginia and Greene County, West Virginia.
- C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

**1. DEFINITIONS**

1.1 **Definitions.** As used in this Assignment, these words and expressions have the following meanings:

"Acreage Trade Agreement" means that certain Acreage Trade Agreement by and between Chevron U.S.A. Inc. and TH Exploration, LLC with an Effective Date of August 1, 2017 to be contemporaneously executed with this Assignment.

"Act" has the meaning given to such term in Section 9.1(C).

"Affiliate" means any legal entity which controls, is controlled by, or is under common control with, another legal entity. An entity is deemed to "control" another if it owns directly or indirectly at least fifty percent of either of the following: (A) the shares entitled to vote at a general election of directors of such other entity or (B) the voting interest in such other entity if such entity does not have either shares or directors.

"Applicable Law(s)" means all laws, principles of common law, regulations, statutes, codes, rules, orders, ordinances, permits, enforceable policies, licenses, certifications, decrees, constitutions, standards or other requirements with similar effect of any Government Entity and any binding interpretations of the foregoing.

"Assets" has the meaning given to such term in Section 2.1 of this Assignment.

"Assigned Hydrocarbons" means all Hydrocarbons produced and severed from, or allocable, after severance, to the Leases, Units, and Wells on and after the Effective Date.

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MICHAEL MORAN  
BRIGHTON RESOURCES  
2821 ELLSWORTH AVENUE, #1  
PITTSBURGH PA 15232-1707

BOOK 0140 PAGE 0127

STATE OF WEST VIRGINIA §  
§  
COUNTY OF MARSHALL §

Marshall County  
Jan Pest, Clerk  
Instrument 1428356  
08/16/2017 @ 12:08:49 PM  
ASSIGNMENTS  
Book 40 @ Page 127  
Pages Recorded 25  
Recording Cost \$ 33.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this day of AUGUST, 2017 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated the 1st day of August, 2017 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", attached hereto and made a part hereof (hereinafter the "Leases"), less and except certain overriding royalty interests and exclusions; and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below, subject to certain overriding royalty interests and less and except certain exclusions.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor excepts and reserves from this Assignment the following:

A. The Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia, and

B. As to each of the Leases and all oil, gas, and associated hydrocarbons produced, saved and sold thereunder, an overriding royalty interest equal to the difference between 82% and the

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HG ENERGY LLC  
JEANNE  
5250 DUPONT RD  
PARKERSBURG WV 26101

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Environmental Protection

STATE OF WEST VIRGINIA §  
  §  
COUNTY OF MARSHALL         §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 29<sup>th</sup> day of March, 2018 (the "Effective Date"), by and between HG ENERGY II APPALACHIA, LLC, (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Exchange Agreement between the Assignor and the Assignee dated November 1<sup>st</sup>, 2017 (the "Exchange Agreement"). Capitalized terms used but not defined herein and defined in the Exchange Agreement shall have the meanings given to such terms in the Exchange Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Leases since the time that Assignor obtained its interests in the Leases. Assignor does

covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

5. Counterparts; Recordation. This Assignment may be executed in any number of counterparts, each of which will be deemed an original instrument, but all of which shall collectively constitute one and the same instrument; provided that none of the parties will be bound to this Assignment unless and until all parties have executed a counterpart. For recording purposes, the signature and/or acknowledgment pages from multiple counterparts may be combined with one or more other counterparts without affecting the effect or validity of this Assignment. Assignee will be responsible for recording this Assignment in the appropriate public record, and will bear any costs associated with such recording.

6. Drafting. Preparation of this Assignment has been a joint effort of the parties and the resulting Assignment must not be construed more severely against any of the parties than against any other.

7. Incorporation. This Assignment is subject to and expressly incorporates the terms of the Exchange Agreement by and between Assignor and Assignee. The Exchange Agreement will govern to the extent of any conflict between the terms of this Assignment and the Exchange Agreement.



IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

ASSIGNOR:

HG ENERGY II APPALACHIA, LLC

By: Jared Hall  
Name: Jared Hall  
Title: President

ASSIGNEE:

TH EXPLORATION, LLC

By: \_\_\_\_\_  
Name: David Buchanan  
Title: Vice President - Land

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WV Department of  
Environmental Protection

IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

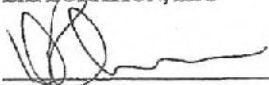
ASSIGNOR:

HG ENERGY II APPALACHIA, LLC

By: \_\_\_\_\_  
Name: Jared Hall  
Title: President

ASSIGNEE:

TH EXPLORATION, LLC

By:  \_\_\_\_\_  
Name: David Buchanan  
Title: Vice President - Land

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Marshall County  
Jan Pest, Clerk  
Instrument 1438737  
04/09/2018 @ 01:22:10 PM  
ASSIGNMENTS  
Book 41 @ Page 398  
Pages Recorded 6  
Recording Cost \$ 12.00

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LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

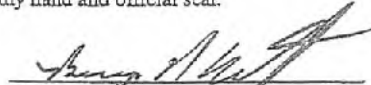
STATE OF WEST VIRGINIA )  
 ) SS:  
COUNTY OF WOOD )

On this the 29<sup>th</sup> day of March, 2018, before me, a notary public, the undersigned authority, personally appeared Jared Hall, who acknowledged himself to be the President of HG ENERGY II APPALACHIA, LLC, a Delaware limited liability company, and that he as such President, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as President.

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

My Commission Expires: 3/29/2020

Commissioner for West Virginia  
Barry J. DeWitt  
126 Wendy Dr.  
Uniontown PA 15401

  
Notary Public

LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

COMMONWEALTH OF PENNSYLVANIA )  
 ) SS:  
COUNTY OF WASHINGTON )

On this the 29<sup>th</sup> day March, 2018, before me, a notary public, the undersigned authority, personally appeared David Buchanan, who acknowledged himself to be the Vice President - Land of TH Exploration, LLC, a Texas limited liability company, and that he as such Vice President - Land being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as Vice President - Land.

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

My Commission Expires:

  
Notary Public

Prepared by:

TH EXPLORATION, LLC  
(Attn: Land Department)  
1320 S. University Drive, Suite 500  
Fort Worth, TX 7610

COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
Chester Arthur West IV, Notary Public  
Pine Twp., Allegheny County  
My Commission Expires Feb. 10, 2020  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

EXHIBIT A - LEASES TO BE ASSIGNED TO THE EXPLORATION, LLC  
MARSHALL COUNTY, WEST VIRGINIA

Assigned to and made a part of that certain Exchange Agreement of effective November 1, 2017 between HC Energy II Appalachia, LLC and TH Exploration, LLC

ID	AGMT NAME	LESSOR	EFF DT	BK - PG	COUNTY	DISTRICT	GROSS ACRES	APN
Q073705000	DEBRA MORRIS	NOBLE ENERGY, INC.	5/23/2013	797-617	MARSHALL	FRANKLIN	2.0930	5-11-16
Q076871001	JAMES BRUCE MIDCAP AND DIANA K. MIDCAP	NOBLE ENERGY, INC.	7/17/2013	803-615	MARSHALL	FRANKLIN	31.5000	5-11-4
Q079725000	JAMES R. ANDERSON AND MELODY A. ANDERSON	NOBLE ENERGY, INC.	10/14/2013	812-51	MARSHALL	FRANKLIN	0.2050	5-11-5.1
Q083441001	HARRY LEROY PARROTT AND NANCY E. PARROTT	NOBLE ENERGY, INC.	4/11/2014	829-153	MARSHALL	FRANKLIN	129.1600	5-16-19
Q083441002	DEBORAH D. MERRER AND CALVIN F. MERRER	NOBLE ENERGY, INC.	4/11/2014	828-659	MARSHALL	FRANKLIN	129.1600	5-16-19
Q083441003	TRUDY B. SAMPSON AND DANNY SAMPSON	NOBLE ENERGY, INC.	4/11/2014	828-637	MARSHALL	FRANKLIN	129.1600	5-16-19
Q083441004	TIMOTHY SCOTT LEMASTERS AND AMY C. LEMASTERS	NOBLE ENERGY, INC.	4/11/2014	829-670	MARSHALL	FRANKLIN	129.1600	5-16-19
Q083441005	BRIAN EDWIN LEMASTERS AND JEWELLY T. LEMASTERS	NOBLE ENERGY, INC.	4/22/2014	831-44	MARSHALL	FRANKLIN	129.1600	5-16-19
Q083441006	MARY L. PARROTT	NOBLE ENERGY, INC.	4/11/2014	836-455	MARSHALL	FRANKLIN	129.1600	5-16-19
C083556001	GUY YATES	NOBLE ENERGY, INC.	11/4/2014	848-206	MARSHALL	FRANKLIN	23.0000	5-11-21
Q083556002	GAIL ANN YATES WOOD AND WILEY L. WOOD	NOBLE ENERGY, INC.	11/4/2014	848-203	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556003	GENESIE THOMAS HOLMES AND JOHN L. HOLMES	NOBLE ENERGY, INC.	10/21/2014	848-204	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556004	BOYD DALL YATES JR. AND MARLA YATES	NOBLE ENERGY, INC.	11/4/2014	848-210	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556005	SHERLEY YATES HARTSHILL AND FREDDIE LEE HARTSHILL	NOBLE ENERGY, INC.	11/4/2014	848-212	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556007	BEHKAH DRAVER ELDRIDGE	NOBLE ENERGY, INC.	11/4/2014	850-157	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556008	FLOYD BUESKING	NOBLE ENERGY, INC.	11/4/2014	850-159	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556009	CHELITA DRAVER STALEY AND JOSEPH STALEY	NOBLE ENERGY, INC.	11/20/2014	851-03	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556010	BRENDA ZATE THOMAS PETRACK	NOBLE ENERGY, INC.	11/4/2014	850-161	MARSHALL	FRANKLIN	22.0000	5-11-21
Q083556011	KAREN REED AND CLYDE REED	NOBLE ENERGY, INC.	10/17/2015	861-190	MARSHALL	FRANKLIN	118.2900	5-11-21

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BOOK 04 | PAGE 0403

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 29th day of March 2018, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 9th day of April, 2018 at 1:22 o'clock P.M.

TESTE: Jan Pest Clerk.

51-02029



April 6, 2018

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

RE: Bryan N-12HU

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 Bryan N-12HU 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-hilop.com](mailto:amiller@tug-hilop.com).

Sincerely,

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

Amy L. Miller  
Permitting Specialist – Appalachia Region

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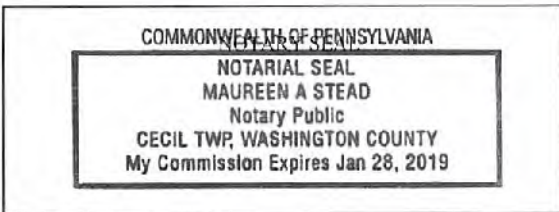


WW-6AC  
(1/12)

**Certification of Notice is hereby given:**

THEREFORE, I Amy L. Miller *Amy 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</u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permit Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hilltop.com</u>



Subscribed and sworn before me this 6 day of APRIL 2018.  
Maureen A Stead Notary Public  
 My Commission Expires 1/28/19

**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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WW-6A  
(9-13)

API NO. 47-051-02029  
OPERATOR WELL NO. Bryan N-12HU  
Well Pad Name: Bryan

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

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

Date of Notice: 4/6/2018 Date Permit Application Filed: 4/8/2018

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: CNX Land Resources, Inc. (Pad)  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

Name: Greg and Christina Riddle (Road)  
Address: 4205 Rines Ridge Road  
Proctor, WV 26055

SURFACE OWNER(s) (Road and/or Other Disturbance)  
Name: Ray E. and Katherine L. Minor  
Address: 4193 Rines Ridge Road  
Proctor, WV 26055

Name: Michael R. Bryan \*see attached list  
Address: 195 Isaiah Drive  
Proctor, WV 26055

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

COAL OWNER OR LESSEE  
Name: Leatherwood, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317-6506

COAL OPERATOR  
Name:  
Address:

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
Name: \*See attached sheet  
Address:

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name:  
Address:

\*Please attach additional forms if necessary

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WW-6A  
(8-13)

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API NO. 47- 051-02029  
OPERATOR WELL NO. Bryan N-12HU  
Well Pad Name: Bryan

**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).

**Well Location Restrictions**

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

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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 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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WW-6A  
(8-13)

API NO. 47-051-02029  
OPERATOR WELL NO. Bryan N-12HU  
Well Pad Name: Bryan

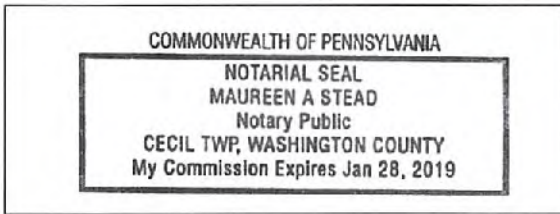
**Notice is hereby given by:**

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

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

**Oil and Gas Privacy Notice:**

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



Subscribed and sworn before me this 10 day of APRIL 2018.  
Maureen A Stead Notary Public  
My Commission Expires 1/28/19

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51-02029

Operator Well No. Bryan N-12HU

**WW-6A Notice of Application**

**Attachment 1 of 1**

**Surface Owner(s) Road and Other Disturbances:**

**Name:** Brenda K. Bryan  
**Address:** 1971 Rines Ridge Road  
Proctor, WV 26055

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WW-6A

Supplement Pg. 1A

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

## WATER WELL REPORT

Well: BRYAN No. N-12HU  
 District: Franklin  
 County: Marshall  
 State: WV

There appears to be Five ( 5 ) possible water sources within 2,000 feet of the above referenced well location.

Topo spot #1 (Possible Spring) TM 15 Par.6 Joseph & Joann Kramer 304-845-0896 3303 Rines Ridge Rd. Proctor, WV 26055	Topo Spot # 2 (Spring) TM 15 Par. 9 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	Topo Spot # 3 (Water Well) TM 16 Par. 23 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317
Topo Spot # 4 (Water Trough) TM 16 Par. 23 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	Topo Spot # 5 (Water Trough) TM 15 Par. 9 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	

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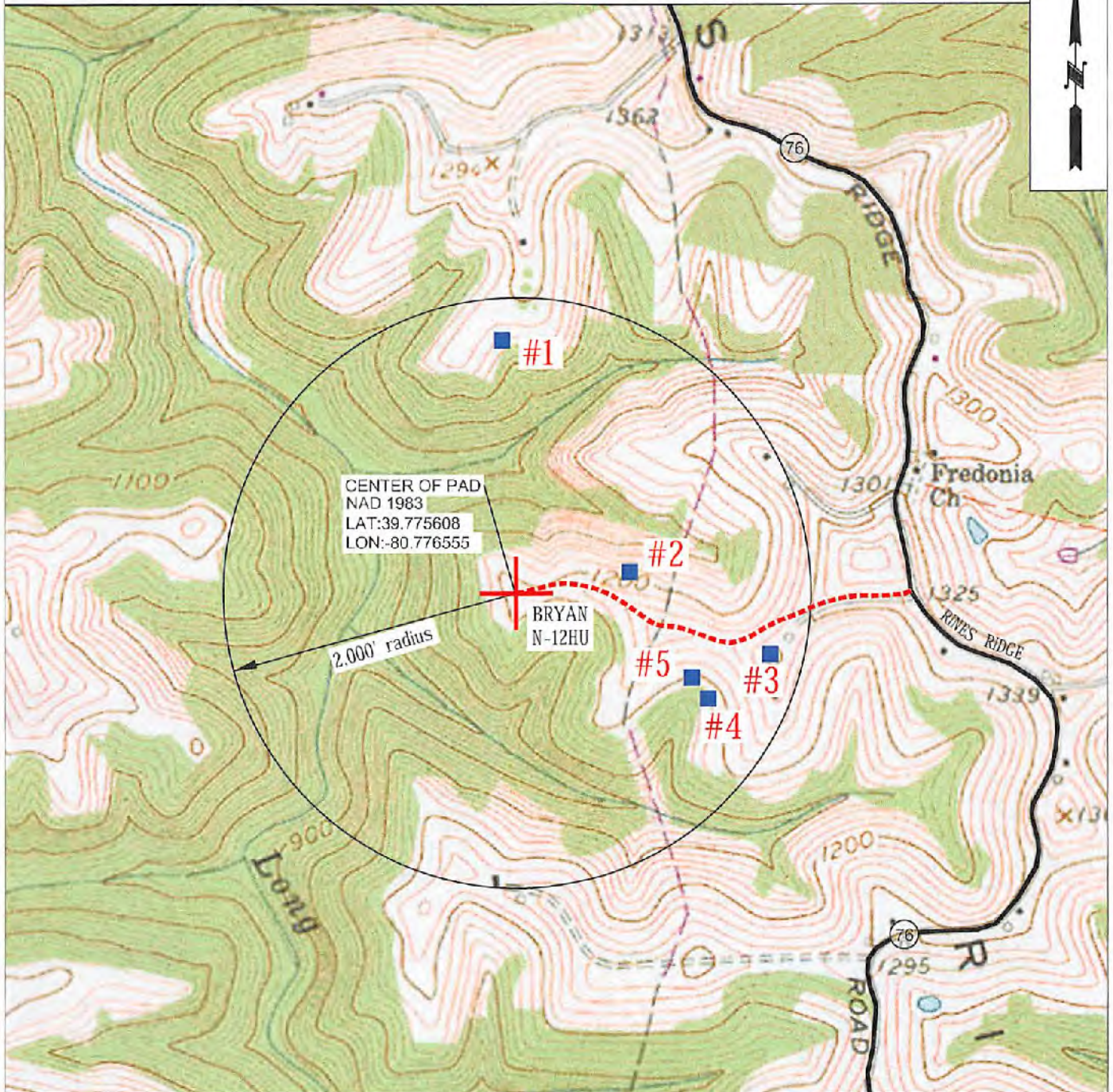
WW-6A


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# PROPOSED BRYAN N-12HU

SUPPLEMENT PG 1

*There appears to be Five ( 5 ) possible water sources within 2,000'.*



 <b>TUG HILL OPERATING</b>	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	BRYAN
			SCALE:	DATE:
			1" = 1000'	DATE: 12/12/17

51-02029

WW-6A3  
(1/12)

Operator Well No. Bryan N-12HU

**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:** 8/22/2017      **Date of Planned Entry:** 8/29/2017

**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: CNX Land Resources, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

Name: Ray E. and Katherine L. Minor  
Address: 4193 Rines Ridge Road  
Proctor, WV 26055

Name: Michael R. and Brenda K. Bryan  
Address: 195 Isaiah Drive  
Proctor, WV 26055 \*See Attachment

COAL OWNER OR LESSEE

Name: Leatherwood, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317-6505

MINERAL OWNER(s)

Name: Greg and Christina Riddle  
Address: 4205 Rines Ridge Road  
Proctor, WV 26055

\*please attach additional forms if necessary

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WV Department of  
Environmental Protection

**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>39.7756312; -80.7756011</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
District: <u>Franklin</u>	Watershed: <u>(HUC-10) Fish Creek</u>
Quadrangle: <u>Powhatan Point</u>	Generally used farm name: <u>Michael and Brenda Bryan</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

**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).



Operator Well No. Bryan N-12HU**WW-6A3 Notice of Entry for Plat Survey****Attachment 1 of 1****Surface Owner(s):**

**Name:** Greg and Christina Riddle  
**Address:** 4205 Rines Ridge Road  
Proctor, WV 26055

**Mineral Owner(s):**

**Name:** Ray E. and Katherine L. Minor  
**Address:** 4193 Rines Ridge Road  
Proctor, WV 26055

**Name:** Michael R. Bryan  
**Address:** 195 Isaiah Drive  
Proctor, WV 26055

**Name:** Brenda K. Bryan  
**Address:** 1971 Rines Ridge Road  
Proctor, WV 26055

**Name:** Wesley Russell Bryan II  
**Address:** P.O. Box 1107  
Sunbury, OH 43074

**Name:** Appalachian Energy Holdings I, LP  
**Address:** 14 Dunmoyle Place  
Pittsburgh, PA 15217

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WW-6A5  
(1/12)

Operator Well No. Bryan N-12HU

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

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

**Date of Notice:** 04/06/2018      **Date Permit Application Filed:** 04/08/2018

**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: CNX Land Resources, Inc.  
Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317

Name: Ray E. and Katherine L. Minor  
Address: 4193 Rines Ridge Road  
Proctor, WV 26055      \*See attached sheet

**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>519,139.61</u>
County: <u>Marshall</u>		Northing: <u>4,402,873.52</u>
District: <u>Franklin</u>	Public Road Access: <u>Rines Ridge Road</u>	
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>CNX Land Resources, Inc.</u>	
Watershed: <u>Fish Creek (HUC-10)</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: Tug Hill Operating, LLC  
Telephone: 724-749-8388  
Email: amiller@tug-hilltop.com

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

**Oil and Gas Privacy Notice:**

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

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Operator Well No. Bryan N-12HU

**WW-6A5 NOTICE OF PLANNED OPERATION**

**ATTACHMENT 1 OF 1**

**Surface Owner(s):**

Greg and Christina Riddle  
4205 Rines Ridge Road  
Proctor, WV 26055

Michael R. and Brenda K. Bryan  
195 Isaiah Drive  
Proctor, WV 26055

Brenda K. Bryan  
1971 Rines Ridge Road  
Proctor, WV 26055

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

Jim Justice  
Governor

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

September 7, 2017 ✓

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 Bryan Pad, Marshall County  
Bryan N-12HU Well site ✓

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2017-0528 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 76 SLS.

The 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 January 3, 2012.

Very Truly Yours,

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

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

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

Well No. Bryan N-12HU

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

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51-02029



At this time, there are no other wells planned on the Bryan Pad. If more wells are proposed in the future, then this letter will be updated and submitted to the DEP to reflect those additions. If you have any questions, please let me know.

Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Jonathan White".

Jonathan White  
Regulatory Analyst

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WEST VIRGINIA COUNTY MAP



**WVDEP OOG  
ACCEPTED AS-BUILT**

10/31/2017

### Bryan Well Pad Site

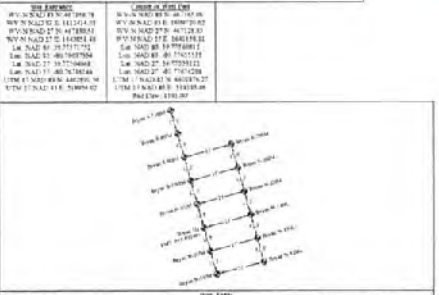
Site Design, Construction Plan, &  
Erosion and Sediment Control Plans  
Tug Hill Operating  
Marshall County  
Franklin District  
Latitude 39.77560812°  
Longitude -80.77655533°  
Lower Fish Creek Watershed

**Pertinent Site Information**  
Bryan Well Pad Site  
Emergency Number: 304-845-1920  
Franklin District, Marshall County, WV  
Watershed: Lower Fish Creek Watershed  
Tug Hill Contact Number: 1-817-612-1400

Property Owner Information - Bryan Well Pad Site

Owner	Parcel ID	Acres	County	County	County	County	County	County
Mr. [Name]	12345	1.23	Marshall	Franklin	Marshall	Franklin	Marshall	Franklin

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



WV State Plane Coordinate System  
NAD 83 Zone 18N  
Datum: North American 1983  
Established By: Bureau of Geomatics  
and GPS, Inc. Project

Access Road

Structure Name	Stationing	Notes	Type
Access Road	1+00.00	18' x 18'	Gravel

Disturbed Area

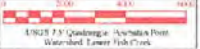
Well Pad Construction	Area (sq ft)
Well Pad Construction	1,234

Bryan Well Pad Site Quantities

Item	Quantity	Unit	Notes
Gravel	1,234	cuyd	
Silt Fences	100	lin ft	

Corner Coordinates (NAD 83)

Corner	N	E	Z
1	3977560812	-8077655533	4000
2	3977560812	-8077655533	4000



Site Location (NAD 83)

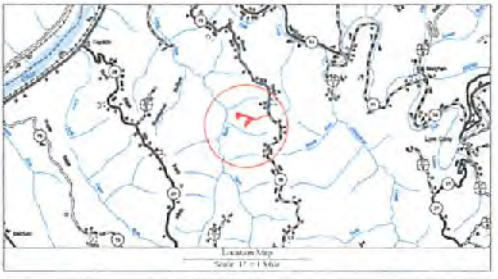
Point	N	E	Z
Well Pad	3977560812	-8077655533	4000

Site Location (NAD 83)

Point	N	E	Z
Access Road	3977560812	-8077655533	4000

#### Approach Routes

From the intersection of WV Rt. 2 and CR 27 near New Martinsville, WV, follow WV Rt. 2 North for 1.5 miles. Turn Right onto CR 27 (CR 27 is a gravel road and crosses the RR. Follow CR 27 for 1.0 mile. Turn Right onto CR 27 to the Well Pad. The Well Pad is on the Right (West) side of the road.



**Project Contacts**  
Tug Hill Operating  
Angela White - Regulatory Analyst  
7040 20th St. 2nd Floor  
Martinsburg, WV 26151  
304-845-1920

**Survey and Easement**  
Carrick Kelly  
304-845-1920

**Geotechnical Engineer**  
Carrick Kelly  
304-845-1920

**Environmental**  
WVDEP  
304-845-1920

**Miss Utility of West Virginia**  
1-800-245-4488

**811**  
Know what's below.  
Call before you dig.

**Notes**  
1. All construction shall be in accordance with the approved plans.  
2. All work shall be done in accordance with the approved plans.  
3. All work shall be done in accordance with the approved plans.



Gregory C. Schmitt  
Professional Engineer  
12345  
304-845-1920

Sheet Description

Sheet	Description
1	Cover Sheet
2	Schedule of Quantities
3	Site Notes
4	Pre-Construction Site Conditions
5	Site Soil Map
6	Clearing Exhibit
7	Overall Plan View
8-9	E.R.S. Plan View
10	Top View Exhibit
11-14	Plan View
15	Cross Section - Well Pad
16	Cross Section - Tank Pad
17	Cross Section - Access Road
18	Access Road Exhibit
19	Site Easement
20	Final Construction
21-22	Erosion and Sediment Control Details
23	Access Road Details
24	Well Details

TUG HILL OPERATING



THIS DOCUMENT IS THE PROPERTY OF TUG HILL OPERATING

Key Signature

Bryan Well Pad Site  
Franklin District  
Marshall County, WV

Scale: 1" = 50'  
Designed by: JCS  
Drawn by: JCS  
Sheet 1 of 24

