



west virginia department of environmental protection

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

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

Monday, October 26, 2020
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for OLD CROW N-21HU
47-051-02335-00-00

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.

A blue ink signature of James A. Martin, Chief, is written over a white background. The signature is cursive and stylized.

James A. Martin
Chief

Operator's Well Number: OLD CROW N-21HU
Farm Name: DONNA VIVIAN YOHO (TOD)
U.S. WELL NUMBER: 47-051-02335-00-00
Horizontal 6A New Drill
Date Issued: 10/26/2020

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

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

API Number: 51-02335

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.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

August 17, 2020

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

RE: Application for Deep Well Permit – API #47-051-02335

COMPANY: Tug Hill Operating, LLC

FARM: Donna Vivian Yoho (TOD) Gary Lance Yoho Old Crow N-21HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

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

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

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes
4. Provided a plat showing that the productive interval of the well meets the requirements of the Rules of the Commission W. Va. C.S.R. § 39-1-4.2.

Sincerely,

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

Susan Rose
Administrator

WW-6B
(04/15)

4705102335
API NO. 47-051
OPERATOR WELL NO. Old Crow N-21HU
Well Pad Name: Old Crow

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

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

2) Operator's Well Number: Old Crow N-21HU Well Pad Name: Old Crow

3) Farm Name/Surface Owner: Donna Vivian Yoho (TOD) Gary Lance Yoho Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1265' Elevation, proposed post-construction: 1265'

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No Yes

JW
3/4/2020

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,343' - 11,463' - thickness of 120' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,613'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 26,673'

11) Proposed Horizontal Leg Length: 13,932.74'

12) Approximate Fresh Water Strata Depths: 70' ; 912'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 814' ; Pittsburgh Coal - 906'

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

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

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

Depth: _____

Seam: _____

Owner: _____

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	990'	990'	1,598FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2800'	2800'	1,974FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,450'	10,450'	3,412FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	26,673'	26,673'	6,288'FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,771'	
Liners							

Handwritten signature and date: 3/4/2020

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,385	11,624		
Liners							

PACKERS

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

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WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Old Crow N-21HU
Well Pad Name: Old Crow

Handwritten signature and date: 6/1/2020

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 34,825,000 lb proppant and 538,420 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.18 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.64 acres

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

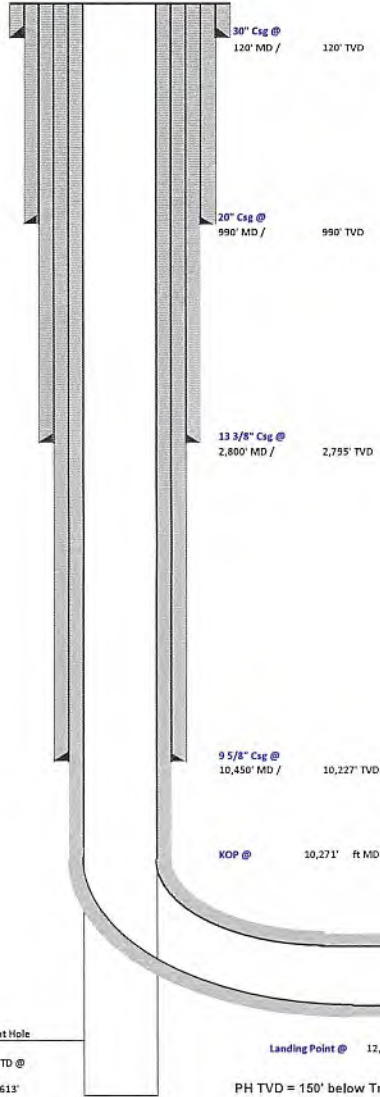
Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

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*Note: Attach additional sheets as needed.



WELL NAME: Old Crow N-21HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Franklin
 DF Elev: 1,291' GL Elev: 1,265'
 TD: 26,673'
 TH Latitude: 39.77855987
 TH Longitude: -80.76314744
 BH Latitude: 39.815942
 BH Longitude: -80.779251



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	912'
Sewickley Coal	814'
Pittsburgh Coal	906'
Big Lime	2,113'
Berea	2,662'
Tully	6,505'
Marcellus	6,586'
Onondaga	6,639'
Salina	7,264'
Lockport	8,400'
Utica	11,086'
Point Pleasant	11,343'
Landing Depth	11,393'
Trenton	11,463'
Pilot Hole TD	11,613'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	990'	990'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,795'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,450'	10,227'	47	HPP110	Surface
Production	8 1/2	5 1/2	26,673'	11,150'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,723	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,865	A	14.5	Air	1 Centralizer every other jt
Production	5,600	A	15	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c

Joe
3/4/2020

Pilot Hole
 PH TD @ 11,613'
 Landing Point @ 12,743' MD / 11,393' TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 26,673' ft MD
 11,150' ft TVD

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4705102335



Well: Old Crow N-21 HU (slot V)
Site: Old Crow Pad
Project: Marshall County, West Virginia.
Design: rev0

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

System Datum: Mean Sea Level
 Depth Reference: RKB=1265+26 @ 1291.00usft (Nabors B 28)

Northing 14446187.72 Easting 1706961.25 Latitude 39.7785987 Longitude -80.76314744

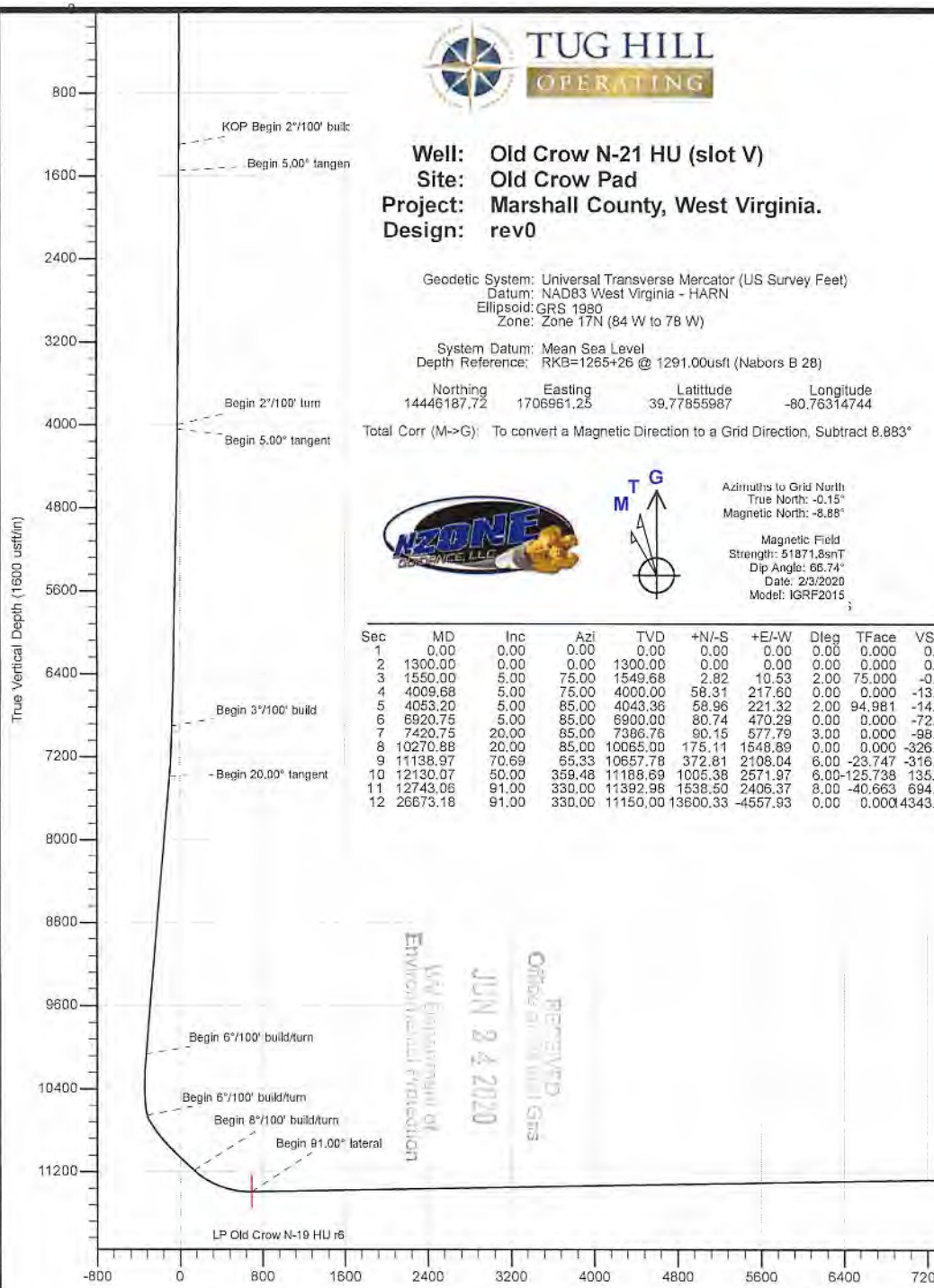
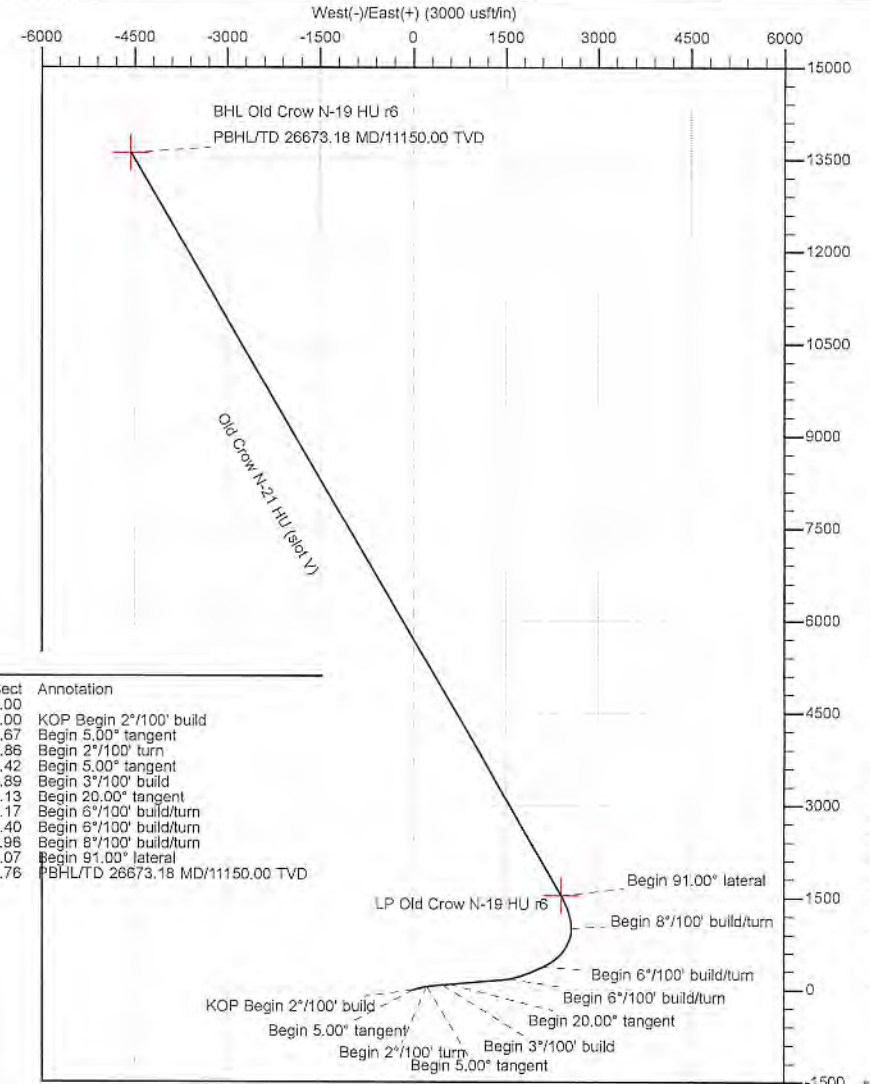
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.883°



Azimuths to Grid North
 True North: -0.15°
 Magnetic North: -8.88°

Magnetic Field
 Strength: 51871.8snT
 Dip Angle: 66.74°
 Date: 2/3/2020
 Model: IGRF2015

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	1550.00	5.00	75.00	1549.68	2.82	10.53	2.00	75.000	-0.67	Begin 5.00° tangent
4	4009.68	5.00	75.00	4000.00	58.31	217.60	0.00	0.000	-13.86	Begin 2°/100' turn
5	4053.20	5.00	85.00	4043.36	58.96	221.32	2.00	94.981	-14.42	Begin 5.00° tangent
6	6920.75	5.00	85.00	6900.00	80.74	470.29	0.00	0.000	-72.89	Begin 3°/100' build
7	7420.75	20.00	85.00	7386.76	90.15	577.79	3.00	0.000	-98.13	Begin 20.00° tangent
8	10270.88	20.00	85.00	10065.00	175.11	1648.89	0.00	0.000	-326.17	Begin 6°/100' build/turn
9	11138.97	70.69	65.33	10657.78	372.81	2108.04	6.00	-23.747	-316.40	Begin 6°/100' build/turn
10	12130.07	50.00	359.48	11188.69	1005.38	2571.97	6.00	-125.738	135.96	Begin 8°/100' build/turn
11	12743.06	91.00	350.00	11392.98	1538.50	2406.37	8.00	-40.663	694.07	Begin 91.00° lateral
12	26673.18	91.00	350.00	11150.00	13600.33	-4557.93	0.00	0.000	4343.76	PBHL/TD 26673.18 MD/11150.00 TVD



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Vertical Section at 341.47° (1600 usft/in)

4705102335
 South(-)/North(+)(3000 usft/in)

Area of Review

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (02/11/2020) 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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4705102835



Tug Hill Operating, LLC Casing and Cement Program

Old Crow N-21HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	990'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,450'	CTS
Production	5 1/2"	HCP110	8 1/2"	26,673'	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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Conductor and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

Coal Casing Cement:

Premium NE-1 + 1.5% CaCL + Flake

- Premium NE-1 – Class A Portland API spec
- CaCl – Calcium Chloride
- CelloFlake

Intermediate Casing Cement:

Lead: *Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170*

Tail: *Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate*

- Premium NE-1 – Class A Portland API spec
- BA-90 – Gas Migration Mitigator
- R-3 – Cement Retarder
- KCl – Potassium Chloride
- FP-13L – Anti-Foaming Agent
- MPA-170 – Gelling Agent
- CD-32 – Dispersant
- FL-52 – Fluid Loss Agent
- ASA-301 – Free Water Control Agent
- Sodium Metasilicate – Extending Agent

Kick Off Plug:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L

- CD-32 – Dispersant
- Sodium Metasilicate – Extending Agent
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent

Production Casing Cement:

Lead: *50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L*

Tail: *25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L*

- R-3 – Cement Retarder
- MPA-250 – Gelling Agent
- FP-13L – Anti-Foaming Agent



Planning Report - Geographic

4705102935

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	Old Crow Pad				
Site Position:		Northing:	14,446,179.89 usft	Latitude:	39.77853828
From:	Lat/Long	Easting:	1,706,970.33 usft	Longitude:	-80.76311519
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.152 °

Well	Old Crow N-21 HU (slot V)					
Well Position	+N/-S	0.00 usft	Northing:	14,446,187.73 usft	Latitude:	39.77855987
	+E/-W	0.00 usft	Easting:	1,706,961.25 usft	Longitude:	-80.76314744
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	1,265.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/3/2020	-8.731	66.737	51,871.81231206

Design	rev0			
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	341.47

Plan Survey Tool Program	Date	2/21/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	26,673.18 rev0 (Original Hole)	MWD	
			MWD - Standard	

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Planning Report - Geographic

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Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	0.000	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,550.00	5.00	75.00	1,549.68	2.82	10.53	2.00	2.00	0.00	75.000	
4,009.68	5.00	75.00	4,000.00	58.31	217.60	0.00	0.00	0.00	0.000	
4,053.20	5.00	85.00	4,043.36	58.96	221.32	2.00	0.00	22.98	94.981	
6,920.75	5.00	85.00	6,900.00	80.74	470.29	0.00	0.00	0.00	0.000	
7,420.75	20.00	85.00	7,386.76	90.15	577.79	3.00	3.00	0.00	0.000	
10,270.88	20.00	85.00	10,065.00	175.11	1,548.89	0.00	0.00	0.00	0.000	
11,138.97	70.69	65.33	10,657.78	372.81	2,108.04	6.00	5.84	-2.27	-23.747	
12,130.07	50.00	359.48	11,188.69	1,005.38	2,571.97	6.00	-2.09	-6.64	-125.738	
12,743.06	91.00	330.00	11,392.98	1,538.50	2,406.37	8.00	6.69	-4.81	-40.663	
26,673.18	91.00	330.00	11,150.00	13,600.33	-4,557.93	0.00	0.00	0.00	0.000	BHL Old Crow N-19 F

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Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
100.00	0.00	0.00	100.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
200.00	0.00	0.00	200.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
300.00	0.00	0.00	300.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
400.00	0.00	0.00	400.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
500.00	0.00	0.00	500.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
600.00	0.00	0.00	600.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
700.00	0.00	0.00	700.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
800.00	0.00	0.00	800.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
900.00	0.00	0.00	900.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,446,187.73	1,706,961.25	39.77855987	-80.76314744
KOP Begin 2°/100' build									
1,400.00	2.00	75.00	1,399.98	0.45	1.69	14,446,188.18	1,706,962.93	39.77856110	-80.76314144
1,500.00	4.00	75.00	1,499.84	1.81	6.74	14,446,189.53	1,706,967.99	39.77856478	-80.76312343
1,550.00	5.00	75.00	1,549.68	2.82	10.53	14,446,190.55	1,706,971.78	39.77856754	-80.76310994
Begin 5.00° tangent									
1,600.00	5.00	75.00	1,599.49	3.95	14.74	14,446,191.68	1,706,975.99	39.77857061	-80.76309494
1,700.00	5.00	75.00	1,699.11	6.21	23.16	14,446,193.93	1,706,984.41	39.77857674	-80.76306496
1,800.00	5.00	75.00	1,798.73	8.46	31.58	14,446,196.19	1,706,992.83	39.77858288	-80.76303497
1,900.00	5.00	75.00	1,898.35	10.72	40.00	14,446,198.44	1,707,001.24	39.77858901	-80.76300499
2,000.00	5.00	75.00	1,997.97	12.97	48.41	14,446,200.70	1,707,009.66	39.77859515	-80.76297500
2,100.00	5.00	75.00	2,097.59	15.23	56.83	14,446,202.95	1,707,018.08	39.77860128	-80.76294502
2,200.00	5.00	75.00	2,197.21	17.48	65.25	14,446,205.21	1,707,026.50	39.77860741	-80.76291503
2,300.00	5.00	75.00	2,296.83	19.74	73.67	14,446,207.47	1,707,034.92	39.77861355	-80.76288504
2,400.00	5.00	75.00	2,396.45	22.00	82.09	14,446,209.72	1,707,043.34	39.77861968	-80.76285506
2,500.00	5.00	75.00	2,496.07	24.25	90.51	14,446,211.98	1,707,051.76	39.77862581	-80.76282507
2,600.00	5.00	75.00	2,595.69	26.51	98.93	14,446,214.23	1,707,060.17	39.77863195	-80.76279509
2,700.00	5.00	75.00	2,695.31	28.76	107.34	14,446,216.49	1,707,068.59	39.77863808	-80.76276510
2,800.00	5.00	75.00	2,794.93	31.02	115.76	14,446,218.74	1,707,077.01	39.77864422	-80.76273512
2,900.00	5.00	75.00	2,894.55	33.27	124.18	14,446,221.00	1,707,085.43	39.77865035	-80.76270513
3,000.00	5.00	75.00	2,994.17	35.53	132.60	14,446,223.26	1,707,093.85	39.77865648	-80.76267515
3,100.00	5.00	75.00	3,093.78	37.79	141.02	14,446,225.51	1,707,102.27	39.77866262	-80.76264516
3,200.00	5.00	75.00	3,193.40	40.04	149.44	14,446,227.77	1,707,110.69	39.77866875	-80.76261518
3,300.00	5.00	75.00	3,293.02	42.30	157.86	14,446,230.02	1,707,119.10	39.77867488	-80.76258519
3,400.00	5.00	75.00	3,392.64	44.55	166.27	14,446,232.28	1,707,127.52	39.77868102	-80.76255521
3,500.00	5.00	75.00	3,492.26	46.81	174.69	14,446,234.53	1,707,135.94	39.77868715	-80.76252522
3,600.00	5.00	75.00	3,591.88	49.06	183.11	14,446,236.79	1,707,144.36	39.77869328	-80.76249523
3,700.00	5.00	75.00	3,691.50	51.32	191.53	14,446,239.05	1,707,152.78	39.77869942	-80.76246525
3,800.00	5.00	75.00	3,791.12	53.58	199.95	14,446,241.30	1,707,161.20	39.77870555	-80.76243526
3,900.00	5.00	75.00	3,890.74	55.83	208.37	14,446,243.56	1,707,169.62	39.77871169	-80.76240528
4,000.00	5.00	75.00	3,990.36	58.09	216.79	14,446,245.81	1,707,178.03	39.77871782	-80.76237529
4,009.68	5.00	75.00	4,000.00	58.31	217.60	14,446,246.03	1,707,178.85	39.77871841	-80.76237239
Begin 2°/100' turn									
4,053.20	5.00	85.00	4,043.36	58.96	221.32	14,446,246.69	1,707,182.57	39.77872019	-80.76235914
Begin 5.00° tangent									
4,100.00	5.00	85.00	4,089.98	59.32	225.39	14,446,247.04	1,707,186.63	39.77872113	-80.76234467
4,200.00	5.00	85.00	4,189.60	60.08	234.07	14,446,247.80	1,707,195.32	39.77872316	-80.76231376
4,300.00	5.00	85.00	4,289.22	60.84	242.75	14,446,248.56	1,707,204.00	39.77872518	-80.76228285
4,400.00	5.00	85.00	4,388.84	61.60	251.43	14,446,249.32	1,707,212.68	39.77872720	-80.76225194
4,500.00	5.00	85.00	4,488.46	62.36	260.11	14,446,250.08	1,707,221.36	39.77872923	-80.76222103
4,600.00	5.00	85.00	4,588.08	63.12	268.80	14,446,250.84	1,707,230.05	39.77873125	-80.76219012



Planning Report - Geographic

4705102335

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,700.00	5.00	85.00	4,687.70	63.88	277.48	14,446,251.60	1,707,238.73	39.77873327	-80.76215921
4,800.00	5.00	85.00	4,787.32	64.63	286.16	14,446,252.36	1,707,247.41	39.77873529	-80.76212830
4,900.00	5.00	85.00	4,886.94	65.39	294.84	14,446,253.12	1,707,256.09	39.77873732	-80.76209739
5,000.00	5.00	85.00	4,986.56	66.15	303.53	14,446,253.88	1,707,264.78	39.77873934	-80.76206648
5,100.00	5.00	85.00	5,086.17	66.91	312.21	14,446,254.64	1,707,273.46	39.77874136	-80.76203557
5,200.00	5.00	85.00	5,185.79	67.67	320.89	14,446,255.40	1,707,282.14	39.77874338	-80.76200466
5,300.00	5.00	85.00	5,285.41	68.43	329.57	14,446,256.16	1,707,290.82	39.77874541	-80.76197375
5,400.00	5.00	85.00	5,385.03	69.19	338.26	14,446,256.92	1,707,299.51	39.77874743	-80.76194284
5,500.00	5.00	85.00	5,484.65	69.95	346.94	14,446,257.68	1,707,308.19	39.77874945	-80.76191193
5,600.00	5.00	85.00	5,584.27	70.71	355.62	14,446,258.44	1,707,316.87	39.77875148	-80.76188102
5,700.00	5.00	85.00	5,683.89	71.47	364.30	14,446,259.20	1,707,325.55	39.77875350	-80.76185011
5,800.00	5.00	85.00	5,783.51	72.23	372.99	14,446,259.96	1,707,334.23	39.77875552	-80.76181920
5,900.00	5.00	85.00	5,883.13	72.99	381.67	14,446,260.72	1,707,342.92	39.77875754	-80.76178829
6,000.00	5.00	85.00	5,982.75	73.75	390.35	14,446,261.48	1,707,351.60	39.77875957	-80.76175738
6,100.00	5.00	85.00	6,082.37	74.51	399.03	14,446,262.24	1,707,360.28	39.77876159	-80.76172646
6,200.00	5.00	85.00	6,181.99	75.27	407.72	14,446,263.00	1,707,368.96	39.77876361	-80.76169555
6,300.00	5.00	85.00	6,281.61	76.03	416.40	14,446,263.75	1,707,377.65	39.77876563	-80.76166464
6,400.00	5.00	85.00	6,381.23	76.79	425.08	14,446,264.51	1,707,386.33	39.77876766	-80.76163373
6,500.00	5.00	85.00	6,480.85	77.55	433.76	14,446,265.27	1,707,395.01	39.77876968	-80.76160282
6,600.00	5.00	85.00	6,580.47	78.31	442.45	14,446,266.03	1,707,403.69	39.77877170	-80.76157191
6,700.00	5.00	85.00	6,680.09	79.07	451.13	14,446,266.79	1,707,412.38	39.77877372	-80.76154100
6,800.00	5.00	85.00	6,779.71	79.83	459.81	14,446,267.55	1,707,421.06	39.77877575	-80.76151009
6,900.00	5.00	85.00	6,879.33	80.59	468.49	14,446,268.31	1,707,429.74	39.77877777	-80.76147918
6,920.75	5.00	85.00	6,900.00	80.74	470.29	14,446,268.47	1,707,431.54	39.77877819	-80.76147277
Begin 3°/100' build									
7,000.00	7.38	85.00	6,978.78	81.49	478.80	14,446,269.21	1,707,440.05	39.77878017	-80.76144247
7,100.00	10.38	85.00	7,077.57	82.83	494.18	14,446,270.56	1,707,455.42	39.77878375	-80.76138775
7,200.00	13.38	85.00	7,175.42	84.63	514.68	14,446,272.35	1,707,475.93	39.77878853	-80.76131476
7,300.00	16.38	85.00	7,272.05	86.86	540.25	14,446,274.59	1,707,501.50	39.77879449	-80.76122371
7,400.00	19.38	85.00	7,367.22	89.54	570.83	14,446,277.27	1,707,532.08	39.77880161	-80.76111485
7,420.75	20.00	85.00	7,386.76	90.15	577.79	14,446,277.88	1,707,539.04	39.77880323	-80.76109005
Begin 20.00° tangent									
7,500.00	20.00	85.00	7,461.22	92.51	604.80	14,446,280.24	1,707,566.04	39.77880952	-80.76099393
7,600.00	20.00	85.00	7,555.19	95.49	638.87	14,446,283.22	1,707,600.12	39.77881746	-80.76087263
7,700.00	20.00	85.00	7,649.16	98.47	672.94	14,446,286.20	1,707,634.19	39.77882539	-80.76075133
7,800.00	20.00	85.00	7,743.13	101.45	707.01	14,446,289.18	1,707,668.26	39.77883333	-80.76063003
7,900.00	20.00	85.00	7,837.10	104.44	741.08	14,446,292.16	1,707,702.33	39.77884127	-80.76050873
8,000.00	20.00	85.00	7,931.07	107.42	775.15	14,446,295.14	1,707,736.40	39.77884920	-80.76038743
8,100.00	20.00	85.00	8,025.04	110.40	809.23	14,446,298.12	1,707,770.48	39.77885714	-80.76026613
8,200.00	20.00	85.00	8,119.01	113.38	843.30	14,446,301.10	1,707,804.55	39.77886507	-80.76014483
8,300.00	20.00	85.00	8,212.98	116.36	877.37	14,446,304.08	1,707,838.62	39.77887301	-80.76002353
8,400.00	20.00	85.00	8,306.95	119.34	911.44	14,446,307.07	1,707,872.69	39.77888095	-80.75990223
8,500.00	20.00	85.00	8,400.92	122.32	945.51	14,446,310.05	1,707,906.76	39.77888888	-80.75978093
8,600.00	20.00	85.00	8,494.88	125.30	979.59	14,446,313.03	1,707,940.83	39.77889682	-80.75965963
8,700.00	20.00	85.00	8,588.85	128.28	1,013.66	14,446,316.01	1,707,974.91	39.77890475	-80.75953833
8,800.00	20.00	85.00	8,682.82	131.26	1,047.73	14,446,318.99	1,708,008.98	39.77891269	-80.75941702
8,900.00	20.00	85.00	8,776.79	134.24	1,081.80	14,446,321.97	1,708,043.05	39.77892062	-80.75929572
9,000.00	20.00	85.00	8,870.76	137.23	1,115.87	14,446,324.95	1,708,077.12	39.77892856	-80.75917442
9,100.00	20.00	85.00	8,964.73	140.21	1,149.95	14,446,327.93	1,708,111.19	39.77893649	-80.75905312
9,200.00	20.00	85.00	9,058.70	143.19	1,184.02	14,446,330.91	1,708,145.27	39.77894443	-80.75893182
9,300.00	20.00	85.00	9,152.67	146.17	1,218.09	14,446,333.89	1,708,179.34	39.77895236	-80.75881052
9,400.00	20.00	85.00	9,246.64	149.15	1,252.16	14,446,336.87	1,708,213.41	39.77896029	-80.75868922
9,500.00	20.00	85.00	9,340.61	152.13	1,286.23	14,446,339.86	1,708,247.48	39.77896823	-80.75856792
9,600.00	20.00	85.00	9,434.58	155.11	1,320.30	14,446,342.84	1,708,281.55	39.77897616	-80.75844662

Web view of
Engineering Projection



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,700.00	20.00	85.00	9,528.55	158.09	1,354.38	14,446,345.82	1,708,315.63	39.77898410	-80.75832532	
9,800.00	20.00	85.00	9,622.52	161.07	1,388.45	14,446,348.80	1,708,349.70	39.77899203	-80.75820402	
9,900.00	20.00	85.00	9,716.48	164.05	1,422.52	14,446,351.78	1,708,383.77	39.77899996	-80.75808272	
10,000.00	20.00	85.00	9,810.45	167.03	1,456.59	14,446,354.76	1,708,417.84	39.77900790	-80.75796142	
10,100.00	20.00	85.00	9,904.42	170.02	1,490.66	14,446,357.74	1,708,451.91	39.77901583	-80.75784012	
10,200.00	20.00	85.00	9,998.39	173.00	1,524.74	14,446,360.72	1,708,485.98	39.77902376	-80.75771882	
10,270.88	20.00	85.00	10,065.00	175.11	1,548.89	14,446,362.83	1,708,510.14	39.77902939	-80.75763284	
Begin 6°/100' build/turn										
10,300.00	21.61	83.09	10,092.22	176.19	1,559.17	14,446,363.91	1,708,520.42	39.77903227	-80.75759622	
10,400.00	27.26	78.20	10,183.23	183.09	1,599.91	14,446,370.82	1,708,561.15	39.77905094	-80.75745117	
10,500.00	33.03	74.89	10,269.68	194.89	1,648.68	14,446,382.62	1,708,609.93	39.77908298	-80.75727746	
10,600.00	38.86	72.48	10,350.61	211.46	1,704.95	14,446,399.18	1,708,666.20	39.77912805	-80.75707701	
10,700.00	44.72	70.61	10,425.14	232.60	1,768.11	14,446,420.33	1,708,729.36	39.77918564	-80.75685200	
10,800.00	50.62	69.09	10,492.45	258.10	1,837.47	14,446,445.82	1,708,798.71	39.77925514	-80.75660489	
10,900.00	56.53	67.81	10,551.81	287.66	1,912.26	14,446,475.39	1,708,873.50	39.77933578	-80.75633841	
11,000.00	62.45	66.70	10,602.56	320.98	1,991.66	14,446,508.70	1,708,952.91	39.77942668	-80.75605545	
11,100.00	68.38	65.70	10,644.15	357.67	2,074.82	14,446,545.40	1,709,036.06	39.77952683	-80.75575913	
11,138.97	70.69	65.33	10,657.78	372.81	2,108.04	14,446,560.53	1,709,069.29	39.77956814	-80.75564072	
Begin 6°/100' build/turn										
11,200.00	68.58	62.14	10,679.02	398.11	2,159.34	14,446,585.83	1,709,120.59	39.77963724	-80.75545788	
11,300.00	65.26	56.71	10,718.24	444.83	2,238.52	14,446,632.55	1,709,199.77	39.77976495	-80.75517559	
11,400.00	62.15	50.99	10,762.56	497.63	2,310.90	14,446,685.36	1,709,272.15	39.77990942	-80.75491747	
11,500.00	59.29	44.94	10,811.51	555.94	2,375.67	14,446,743.66	1,709,336.92	39.78006907	-80.75468635	
11,600.00	56.72	38.55	10,864.53	619.11	2,432.14	14,446,806.84	1,709,393.38	39.78024214	-80.75448476	
11,700.00	54.50	31.79	10,921.06	686.46	2,479.67	14,446,874.19	1,709,440.92	39.78042674	-80.75431490	
11,800.00	52.67	24.69	10,980.47	757.25	2,517.76	14,446,944.98	1,709,479.01	39.78062086	-80.75417864	
11,900.00	51.29	17.28	11,042.11	830.70	2,545.98	14,447,018.43	1,709,507.23	39.78082236	-80.75407747	
12,000.00	50.40	9.63	11,105.30	906.01	2,564.03	14,447,093.73	1,709,525.28	39.78102904	-80.75401249	
12,100.00	50.01	1.83	11,169.36	982.35	2,571.71	14,447,170.08	1,709,532.95	39.78123863	-80.75398442	
12,130.07	50.00	359.48	11,188.69	1,005.38	2,571.97	14,447,193.11	1,709,533.22	39.78130188	-80.75398326	
Begin 8°/100' build/turn										
12,200.00	54.33	355.00	11,231.59	1,060.51	2,569.25	14,447,248.23	1,709,530.50	39.78145329	-80.75399241	
12,300.00	60.78	349.37	11,285.24	1,144.00	2,557.64	14,447,331.72	1,709,518.89	39.78168267	-80.75403292	
12,400.00	67.43	344.43	11,328.91	1,231.50	2,537.16	14,447,419.23	1,709,498.41	39.78192314	-80.75410495	
12,500.00	74.22	339.94	11,361.75	1,321.32	2,508.22	14,447,509.05	1,709,469.47	39.78217002	-80.75420709	
12,600.00	81.09	335.75	11,383.12	1,411.71	2,471.37	14,447,599.43	1,709,432.62	39.78241852	-80.75433736	
12,700.00	88.01	331.72	11,392.61	1,500.90	2,427.34	14,447,688.62	1,709,388.59	39.78266379	-80.75449323	
12,743.06	91.00	330.00	11,392.98	1,538.50	2,406.37	14,447,726.23	1,709,367.62	39.78276721	-80.75456749	
Begin 91.00° lateral										
12,800.00	91.00	330.00	11,391.99	1,587.80	2,377.91	14,447,775.53	1,709,339.15	39.78290283	-80.75466833	
12,900.00	91.00	330.00	11,390.24	1,674.39	2,327.91	14,447,862.12	1,709,289.16	39.78314100	-80.75484545	
13,000.00	91.00	330.00	11,388.50	1,760.98	2,277.92	14,447,948.71	1,709,239.17	39.78337917	-80.75502256	
13,100.00	91.00	330.00	11,386.76	1,847.57	2,227.92	14,448,035.29	1,709,189.17	39.78361734	-80.75519967	
13,200.00	91.00	330.00	11,385.01	1,934.16	2,177.93	14,448,121.88	1,709,139.18	39.78385551	-80.75537679	
13,300.00	91.00	330.00	11,383.27	2,020.74	2,127.93	14,448,208.47	1,709,089.18	39.78409368	-80.75555391	
13,400.00	91.00	330.00	11,381.52	2,107.33	2,077.94	14,448,295.06	1,709,039.19	39.78433185	-80.75573102	
13,500.00	91.00	330.00	11,379.78	2,193.92	2,027.94	14,448,381.65	1,708,989.19	39.78457002	-80.75590814	
13,600.00	91.00	330.00	11,378.03	2,280.51	1,977.95	14,448,468.23	1,708,939.20	39.78480819	-80.75608526	
13,700.00	91.00	330.00	11,376.29	2,367.10	1,927.95	14,448,554.82	1,708,889.20	39.78504636	-80.75626238	
13,800.00	91.00	330.00	11,374.55	2,453.68	1,877.96	14,448,641.41	1,708,839.21	39.78528452	-80.75643951	
13,900.00	91.00	330.00	11,372.80	2,540.27	1,827.97	14,448,728.00	1,708,789.21	39.78552269	-80.75661663	
14,000.00	91.00	330.00	11,371.06	2,626.86	1,777.97	14,448,814.59	1,708,739.22	39.78576086	-80.75679376	
14,100.00	91.00	330.00	11,369.31	2,713.45	1,727.98	14,448,901.17	1,708,689.23	39.78599903	-80.75697088	
14,200.00	91.00	330.00	11,367.57	2,800.04	1,677.98	14,448,987.76	1,708,639.23	39.78623719	-80.75714801	

WVD Office of Environmental Protection



Planning Report - Geographic

4705102335

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

PROCESSED
Office of Mineral Gas
JUN 24 2020

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,300.00	91.00	330.00	11,365.82	2,886.63	1,627.99	14,449,074.35	1,708,589.24	39.78647536	-80.75732514	
14,400.00	91.00	330.00	11,364.08	2,973.21	1,577.99	14,449,160.94	1,708,539.24	39.78671353	-80.75750227	
14,500.00	91.00	330.00	11,362.34	3,059.80	1,528.00	14,449,247.53	1,708,489.25	39.78695169	-80.75767940	
14,600.00	91.00	330.00	11,360.59	3,146.39	1,478.00	14,449,334.12	1,708,439.25	39.78718986	-80.75785653	
14,700.00	91.00	330.00	11,358.85	3,232.98	1,428.01	14,449,420.70	1,708,389.26	39.78742802	-80.75803367	
14,800.00	91.00	330.00	11,357.10	3,319.57	1,378.01	14,449,507.29	1,708,339.26	39.78766619	-80.75821080	
14,900.00	91.00	330.00	11,355.36	3,406.15	1,328.02	14,449,593.88	1,708,289.27	39.78790435	-80.75838794	
15,000.00	91.00	330.00	11,353.61	3,492.74	1,278.03	14,449,680.47	1,708,239.27	39.78814252	-80.75856507	
15,100.00	91.00	330.00	11,351.87	3,579.33	1,228.03	14,449,767.06	1,708,189.28	39.78838068	-80.75874221	
15,200.00	91.00	330.00	11,350.13	3,665.92	1,178.04	14,449,853.64	1,708,139.29	39.78861885	-80.75891935	
15,300.00	91.00	330.00	11,348.38	3,752.51	1,128.04	14,449,940.23	1,708,089.29	39.78885701	-80.75909649	
15,400.00	91.00	330.00	11,346.64	3,839.09	1,078.05	14,450,026.82	1,708,039.30	39.78909517	-80.75927363	
15,500.00	91.00	330.00	11,344.89	3,925.68	1,028.05	14,450,113.41	1,707,989.30	39.78933334	-80.75945078	
15,600.00	91.00	330.00	11,343.15	4,012.27	978.06	14,450,200.00	1,707,939.31	39.78957150	-80.75962792	
15,700.00	91.00	330.00	11,341.40	4,098.86	928.06	14,450,286.58	1,707,889.31	39.78980966	-80.75980507	
15,800.00	91.00	330.00	11,339.66	4,185.45	878.07	14,450,373.17	1,707,839.32	39.79004783	-80.75998222	
15,900.00	91.00	330.00	11,337.92	4,272.04	828.07	14,450,459.76	1,707,789.32	39.79028599	-80.76015936	
16,000.00	91.00	330.00	11,336.17	4,358.62	778.08	14,450,546.35	1,707,739.33	39.79052415	-80.76033651	
16,100.00	91.00	330.00	11,334.43	4,445.21	728.09	14,450,632.94	1,707,689.33	39.79076231	-80.76051366	
16,200.00	91.00	330.00	11,332.68	4,531.80	678.09	14,450,719.53	1,707,639.34	39.79100047	-80.76069082	
16,300.00	91.00	330.00	11,330.94	4,618.39	628.10	14,450,806.11	1,707,589.35	39.79123863	-80.76086797	
16,400.00	91.00	330.00	11,329.19	4,704.98	578.10	14,450,892.70	1,707,539.35	39.79147680	-80.76104512	
16,500.00	91.00	330.00	11,327.45	4,791.56	528.11	14,450,979.29	1,707,489.36	39.79171496	-80.76122228	
16,600.00	91.00	330.00	11,325.71	4,878.15	478.11	14,451,065.88	1,707,439.36	39.79195312	-80.76139944	
16,700.00	91.00	330.00	11,323.96	4,964.74	428.12	14,451,152.47	1,707,389.37	39.79219128	-80.76157659	
16,800.00	91.00	330.00	11,322.22	5,051.33	378.12	14,451,239.05	1,707,339.37	39.79242944	-80.76175375	
16,900.00	91.00	330.00	11,320.47	5,137.92	328.13	14,451,325.64	1,707,289.38	39.79266760	-80.76193091	
17,000.00	91.00	330.00	11,318.73	5,224.50	278.13	14,451,412.23	1,707,239.38	39.79290575	-80.76210808	
17,100.00	91.00	330.00	11,316.98	5,311.09	228.14	14,451,498.82	1,707,189.39	39.79314391	-80.76228524	
17,200.00	91.00	330.00	11,315.24	5,397.68	178.15	14,451,585.41	1,707,139.39	39.79338207	-80.76246240	
17,300.00	91.00	330.00	11,313.50	5,484.27	128.15	14,451,671.99	1,707,089.40	39.79362023	-80.76263957	
17,400.00	91.00	330.00	11,311.75	5,570.86	78.16	14,451,758.58	1,707,039.41	39.79385839	-80.76281673	
17,500.00	91.00	330.00	11,310.01	5,657.45	28.16	14,451,845.17	1,706,989.41	39.79409655	-80.76299390	
17,600.00	91.00	330.00	11,308.26	5,744.03	-21.83	14,451,931.76	1,706,939.42	39.79433470	-80.76317107	
17,700.00	91.00	330.00	11,306.52	5,830.62	-71.83	14,452,018.35	1,706,889.42	39.79457286	-80.76334824	
17,800.00	91.00	330.00	11,304.77	5,917.21	-121.82	14,452,104.94	1,706,839.43	39.79481102	-80.76352541	
17,900.00	91.00	330.00	11,303.03	6,003.80	-171.82	14,452,191.52	1,706,789.43	39.79504917	-80.76370259	
18,000.00	91.00	330.00	11,301.29	6,090.39	-221.81	14,452,278.11	1,706,739.44	39.79528733	-80.76387976	
18,100.00	91.00	330.00	11,299.54	6,176.97	-271.81	14,452,364.70	1,706,689.44	39.79552549	-80.76405693	
18,200.00	91.00	330.00	11,297.80	6,263.56	-321.80	14,452,451.29	1,706,639.45	39.79576364	-80.76423411	
18,300.00	91.00	330.00	11,296.05	6,350.15	-371.79	14,452,537.88	1,706,589.45	39.79600180	-80.76441129	
18,400.00	91.00	330.00	11,294.31	6,436.74	-421.79	14,452,624.46	1,706,539.46	39.79623995	-80.76458847	
18,500.00	91.00	330.00	11,292.56	6,523.33	-471.78	14,452,711.05	1,706,489.47	39.79647811	-80.76476565	
18,600.00	91.00	330.00	11,290.82	6,609.91	-521.78	14,452,797.64	1,706,439.47	39.79671626	-80.76494283	
18,700.00	91.00	330.00	11,289.08	6,696.50	-571.77	14,452,884.23	1,706,389.48	39.79695442	-80.76512001	
18,800.00	91.00	330.00	11,287.33	6,783.09	-621.77	14,452,970.82	1,706,339.48	39.79719257	-80.76529719	
18,900.00	91.00	330.00	11,285.59	6,869.68	-671.76	14,453,057.40	1,706,289.49	39.79743073	-80.76547438	
19,000.00	91.00	330.00	11,283.84	6,956.27	-721.76	14,453,143.99	1,706,239.49	39.79766888	-80.76565156	
19,100.00	91.00	330.00	11,282.10	7,042.85	-771.75	14,453,230.58	1,706,189.50	39.79790703	-80.76582875	
19,200.00	91.00	330.00	11,280.35	7,129.44	-821.75	14,453,317.17	1,706,139.50	39.79814519	-80.76600594	
19,300.00	91.00	330.00	11,278.61	7,216.03	-871.74	14,453,403.76	1,706,089.51	39.79838334	-80.76618313	
19,400.00	91.00	330.00	11,276.87	7,302.62	-921.73	14,453,490.35	1,706,039.51	39.79862149	-80.76636032	
19,500.00	91.00	330.00	11,275.12	7,389.21	-971.73	14,453,576.93	1,705,989.52	39.79885964	-80.76653751	
19,600.00	91.00	330.00	11,273.38	7,475.80	-1,021.72	14,453,663.52	1,705,939.53	39.79909780	-80.76671471	
19,700.00	91.00	330.00	11,271.63	7,562.38	-1,071.72	14,453,750.11	1,705,889.53	39.79933595	-80.76689190	

Environmental Protection



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
19,800.00	91.00	330.00	11,269.89	7,648.97	-1,121.71	14,453,836.70	1,705,839.54	39.79957410	-80.76706910	
19,900.00	91.00	330.00	11,268.14	7,735.56	-1,171.71	14,453,923.29	1,705,789.54	39.79981225	-80.76724629	
20,000.00	91.00	330.00	11,266.40	7,822.15	-1,221.70	14,454,009.87	1,705,739.55	39.80005040	-80.76742349	
20,100.00	91.00	330.00	11,264.66	7,908.74	-1,271.70	14,454,096.46	1,705,689.55	39.80028855	-80.76760069	
20,200.00	91.00	330.00	11,262.91	7,995.32	-1,321.69	14,454,183.05	1,705,639.56	39.80052670	-80.76777789	
20,300.00	91.00	330.00	11,261.17	8,081.91	-1,371.69	14,454,269.64	1,705,589.56	39.80076485	-80.76795509	
20,400.00	91.00	330.00	11,259.42	8,168.50	-1,421.68	14,454,356.23	1,705,539.57	39.80100300	-80.76813230	
20,500.00	91.00	330.00	11,257.68	8,255.09	-1,471.67	14,454,442.81	1,705,489.57	39.80124115	-80.76830950	
20,600.00	91.00	330.00	11,255.93	8,341.68	-1,521.67	14,454,529.40	1,705,439.58	39.80147930	-80.76848671	
20,700.00	91.00	330.00	11,254.19	8,428.26	-1,571.66	14,454,615.99	1,705,389.59	39.80171745	-80.76866391	
20,800.00	91.00	330.00	11,252.45	8,514.85	-1,621.66	14,454,702.58	1,705,339.59	39.80195560	-80.76884112	
20,900.00	91.00	330.00	11,250.70	8,601.44	-1,671.65	14,454,789.17	1,705,289.60	39.80219375	-80.76901833	
21,000.00	91.00	330.00	11,248.96	8,688.03	-1,721.65	14,454,875.76	1,705,239.60	39.80243189	-80.76919554	
21,100.00	91.00	330.00	11,247.21	8,774.62	-1,771.64	14,454,962.34	1,705,189.61	39.80267004	-80.76937275	
21,200.00	91.00	330.00	11,245.47	8,861.21	-1,821.64	14,455,048.93	1,705,139.61	39.80290819	-80.76954997	
21,300.00	91.00	330.00	11,243.72	8,947.79	-1,871.63	14,455,135.52	1,705,089.62	39.80314634	-80.76972718	
21,400.00	91.00	330.00	11,241.98	9,034.38	-1,921.63	14,455,222.11	1,705,039.62	39.80338448	-80.76990440	
21,500.00	91.00	330.00	11,240.24	9,120.97	-1,971.62	14,455,308.70	1,704,989.63	39.80362263	-80.77008161	
21,600.00	91.00	330.00	11,238.49	9,207.56	-2,021.61	14,455,395.28	1,704,939.63	39.80386078	-80.77025883	
21,700.00	91.00	330.00	11,236.75	9,294.15	-2,071.61	14,455,481.87	1,704,889.64	39.80409892	-80.77043605	
21,800.00	91.00	330.00	11,235.00	9,380.73	-2,121.60	14,455,568.46	1,704,839.65	39.80433707	-80.77061327	
21,900.00	91.00	330.00	11,233.26	9,467.32	-2,171.60	14,455,655.05	1,704,789.65	39.80457522	-80.77079049	
22,000.00	91.00	330.00	11,231.51	9,553.91	-2,221.59	14,455,741.64	1,704,739.66	39.80481336	-80.77096771	
22,100.00	91.00	330.00	11,229.77	9,640.50	-2,271.59	14,455,828.22	1,704,689.66	39.80505151	-80.77114494	
22,200.00	91.00	330.00	11,228.03	9,727.09	-2,321.58	14,455,914.81	1,704,639.67	39.80528965	-80.77132216	
22,300.00	91.00	330.00	11,226.28	9,813.67	-2,371.58	14,456,001.40	1,704,589.67	39.80552780	-80.77149939	
22,400.00	91.00	330.00	11,224.54	9,900.26	-2,421.57	14,456,087.99	1,704,539.68	39.80576594	-80.77167662	
22,500.00	91.00	330.00	11,222.79	9,986.85	-2,471.57	14,456,174.58	1,704,489.68	39.80600408	-80.77185385	
22,600.00	91.00	330.00	11,221.05	10,073.44	-2,521.56	14,456,261.17	1,704,439.69	39.80624223	-80.77203108	
22,700.00	91.00	330.00	11,219.30	10,160.03	-2,571.55	14,456,347.75	1,704,389.69	39.80648037	-80.77220831	
22,800.00	91.00	330.00	11,217.56	10,246.62	-2,621.55	14,456,434.34	1,704,339.70	39.80671851	-80.77238554	
22,900.00	91.00	330.00	11,215.82	10,333.20	-2,671.54	14,456,520.93	1,704,289.71	39.80695666	-80.77256277	
23,000.00	91.00	330.00	11,214.07	10,419.79	-2,721.54	14,456,607.52	1,704,239.71	39.80719480	-80.77274001	
23,100.00	91.00	330.00	11,212.33	10,506.38	-2,771.53	14,456,694.11	1,704,189.72	39.80743294	-80.77291724	
23,200.00	91.00	330.00	11,210.58	10,592.97	-2,821.53	14,456,780.69	1,704,139.72	39.80767108	-80.77309448	
23,300.00	91.00	330.00	11,208.84	10,679.56	-2,871.52	14,456,867.28	1,704,089.73	39.80790922	-80.77327172	
23,400.00	91.00	330.00	11,207.09	10,766.14	-2,921.52	14,456,953.87	1,704,039.73	39.80814737	-80.77344896	
23,500.00	91.00	330.00	11,205.35	10,852.73	-2,971.51	14,457,040.46	1,703,989.74	39.80838551	-80.77362620	
23,600.00	91.00	330.00	11,203.61	10,939.32	-3,021.51	14,457,127.05	1,703,939.74	39.80862365	-80.77380344	
23,700.00	91.00	330.00	11,201.86	11,025.91	-3,071.50	14,457,213.63	1,703,889.75	39.80886179	-80.77398069	
23,800.00	91.00	330.00	11,200.12	11,112.50	-3,121.49	14,457,300.22	1,703,839.75	39.80909993	-80.77415793	
23,900.00	91.00	330.00	11,198.37	11,199.08	-3,171.49	14,457,386.81	1,703,789.76	39.80933807	-80.77433518	
24,000.00	91.00	330.00	11,196.63	11,285.67	-3,221.48	14,457,473.40	1,703,739.76	39.80957621	-80.77451242	
24,100.00	91.00	330.00	11,194.88	11,372.26	-3,271.48	14,457,559.99	1,703,689.77	39.80981435	-80.77468967	
24,200.00	91.00	330.00	11,193.14	11,458.85	-3,321.47	14,457,646.58	1,703,639.78	39.81005249	-80.77486692	
24,300.00	91.00	330.00	11,191.40	11,545.44	-3,371.47	14,457,733.16	1,703,589.78	39.81029063	-80.77504417	
24,400.00	91.00	330.00	11,189.65	11,632.03	-3,421.46	14,457,819.75	1,703,539.79	39.81052877	-80.77522142	
24,500.00	91.00	330.00	11,187.91	11,718.61	-3,471.46	14,457,906.34	1,703,489.79	39.81076690	-80.77539868	
24,600.00	91.00	330.00	11,186.16	11,805.20	-3,521.45	14,457,992.93	1,703,439.80	39.81100504	-80.77557593	
24,700.00	91.00	330.00	11,184.42	11,891.79	-3,571.45	14,458,079.52	1,703,389.80	39.81124318	-80.77575319	
24,800.00	91.00	330.00	11,182.67	11,978.38	-3,621.44	14,458,166.10	1,703,339.81	39.81148132	-80.77593044	
24,900.00	91.00	330.00	11,180.93	12,064.97	-3,671.43	14,458,252.69	1,703,289.81	39.81171946	-80.77610770	
25,000.00	91.00	330.00	11,179.19	12,151.55	-3,721.43	14,458,339.28	1,703,239.82	39.81195759	-80.77628496	
25,100.00	91.00	330.00	11,177.44	12,238.14	-3,771.42	14,458,425.87	1,703,189.82	39.81219573	-80.77646222	
25,200.00	91.00	330.00	11,175.70	12,324.73	-3,821.42	14,458,512.46	1,703,139.83	39.81243387	-80.77663948	



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-21 HU (slot V)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-21 HU (slot V)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
25,300.00	91.00	330.00	11,173.95	12,411.32	-3,871.41	14,458,599.04	1,703,089.84	39.81267200	-80.77681675	
25,400.00	91.00	330.00	11,172.21	12,497.91	-3,921.41	14,458,685.63	1,703,039.84	39.81291014	-80.77699401	
25,500.00	91.00	330.00	11,170.46	12,584.49	-3,971.40	14,458,772.22	1,702,989.85	39.81314827	-80.77717128	
25,600.00	91.00	330.00	11,168.72	12,671.08	-4,021.40	14,458,858.81	1,702,939.85	39.81338641	-80.77734854	
25,700.00	91.00	330.00	11,166.98	12,757.67	-4,071.39	14,458,945.40	1,702,889.86	39.81362454	-80.77752581	
25,800.00	91.00	330.00	11,165.23	12,844.26	-4,121.39	14,459,031.99	1,702,839.86	39.81386268	-80.77770308	
25,900.00	91.00	330.00	11,163.49	12,930.85	-4,171.38	14,459,118.57	1,702,789.87	39.81410081	-80.77788035	
26,000.00	91.00	330.00	11,161.74	13,017.44	-4,221.37	14,459,205.16	1,702,739.87	39.81433895	-80.77805762	
26,100.00	91.00	330.00	11,160.00	13,104.02	-4,271.37	14,459,291.75	1,702,689.88	39.81457708	-80.77823489	
26,200.00	91.00	330.00	11,158.25	13,190.61	-4,321.36	14,459,378.34	1,702,639.88	39.81481521	-80.77841217	
26,300.00	91.00	330.00	11,156.51	13,277.20	-4,371.36	14,459,464.93	1,702,589.89	39.81505335	-80.77858944	
26,400.00	91.00	330.00	11,154.77	13,363.79	-4,421.35	14,459,551.51	1,702,539.90	39.81529148	-80.77876672	
26,500.00	91.00	330.00	11,153.02	13,450.38	-4,471.35	14,459,638.10	1,702,489.90	39.81552961	-80.77894400	
26,600.00	91.00	330.00	11,151.28	13,536.96	-4,521.34	14,459,724.69	1,702,439.91	39.81576775	-80.77912128	
26,673.18	91.00	330.00	11,150.00	13,600.33	-4,557.93	14,459,788.05	1,702,403.32	39.81594200	-80.77925100	

PBHL/TD 26673.18 MD/11150.00 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
BHL Old Crow N-19 HU - plan hits target center - Point	0.00	0.00	11,150.00	13,600.33	-4,557.93	14,459,788.05	1,702,403.32	39.81594200	-80.77925100	
LP Old Crow N-19 HU rē - plan misses target center by 0.18usft at 12742.99usft MD (11392.98 TVD, 1538.44 N, 2406.41 E) - Point	0.00	0.00	11,393.00	1,538.35	2,406.25	14,447,726.08	1,709,367.50	39.78276681	-80.75456791	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Comment	
1,300.00	1,300.00	0.00	0.00	KOP Begin 2°/100' build	
1,550.00	1,549.68	2.82	10.53	Begin 5.00° tangent	
4,009.68	4,000.00	58.31	217.60	Begin 2°/100' turn	
4,053.20	4,043.36	58.96	221.32	Begin 5.00° tangent	
6,920.75	6,900.00	80.74	470.29	Begin 3°/100' build	
7,420.75	7,386.76	90.15	577.79	Begin 20.00° tangent	
10,270.88	10,065.00	175.11	1,548.89	Begin 6°/100' build/turn	
11,138.97	10,657.78	372.81	2,108.04	Begin 6°/100' build/turn	
12,130.07	11,188.69	1,005.38	2,571.97	Begin 8°/100' build/turn	
12,743.06	11,392.98	1,538.50	2,406.37	Begin 91.00° lateral	
26,673.18	11,150.00	13,600.33	-4,557.93	PBHL/TD 26673.18 MD/11150.00 TVD	

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JUN 24 2020
WV Department of Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - 4705102335
Operator's Well No. Old Crow N-21HU

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 Quadrangle Powhatan Point 7.5'

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature James A. Pancake

Company Official (Typed Name) Jim Pancake

Company Official Title Vice President, Geoscience

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JUN 24 2020
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Environmental Protection

Subscribed and sworn before me this 4th day of MARCH, 20 20

[Signature] Notary Public

My commission expires 2-10-2024

Commonwealth of Pennsylvania - Notary Seal
Chester Arthur West IV, Notary Public
Washington County
My commission expires February 10, 2024
Commission number 1267179
Member, Pennsylvania Association of Notaries

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 19.18 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Ueber*
Comments: _____

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WV Department of
Environmental Protection

Title: Oil and Gas Inspector

Date: 3/4/2020

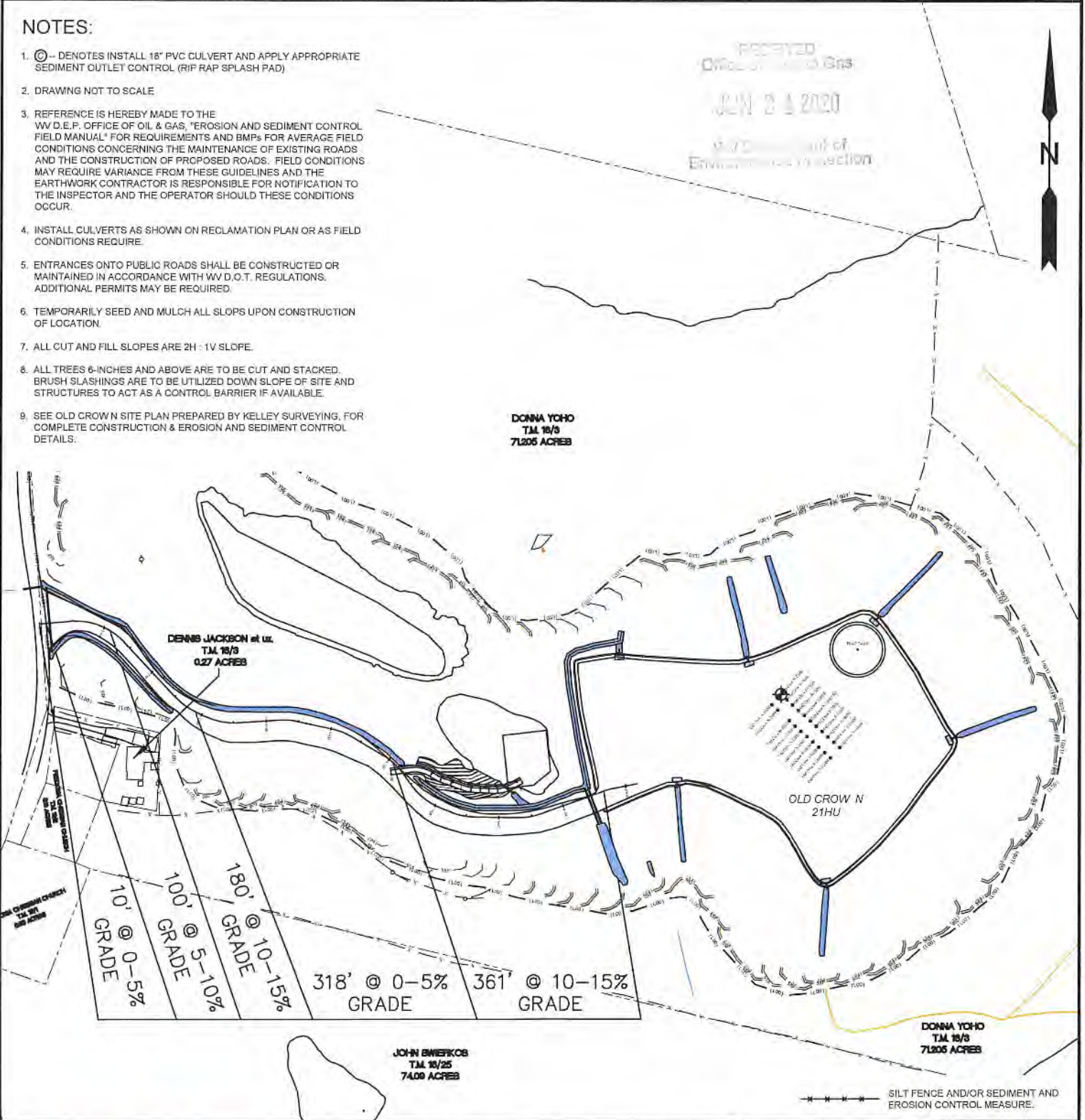
Field Reviewed? Yes No

PROPOSED OLD CROW N - 21HU

NOTES:

1. - DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE OLD CROW N SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

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12 Vanhorn Drive | P.O. Box 160 | Glenville, WV 26351 | 304.462.5654
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
sfsww.com

TOPO SECTION:		OPERATOR:	
POWhatan Point 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPPOINT BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	FRANKLIN		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8769	03/04/20	NONE

**TUG HILL
OPERATING**

4705102335



Well Site Safety Plan

Tug Hill Operating, LLC

ju
3/4/2020

Well Name: Old Crow N-21HU

Pad Location: Old Crow Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,403,194.88

Easting: 520,296.67

March 2020

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JUN 24 2020

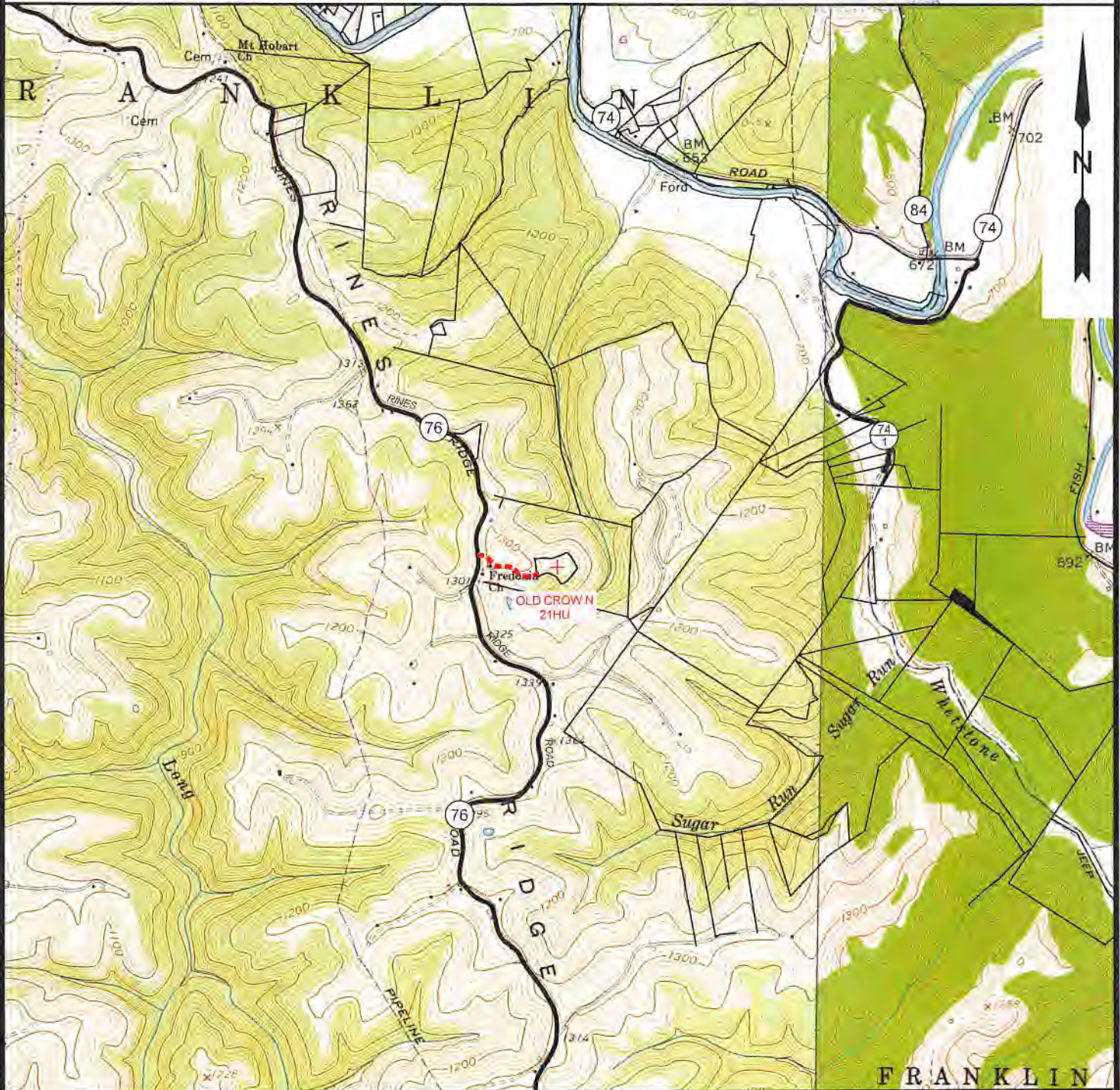
WV Department of
Environmental Protection

PROPOSED OLD CROW N - 21HU

4705102335
ORIGINAL SUPPLEMENT PG. 2

JUN 24 2020

WEST of



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE DISTRICT
PROCTOR, WV

LAT: 39.7137712
LON: -80.8259327
LOCATED: S 37°39'00" W AT 29,404.13' FROM OLD CROW N PAD LOCATION



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
234 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsww.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON & POWHATAN POINT 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	FRANKLIN	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8796	03/04/20	1" = 2000'



TUG HILL
OPERATING

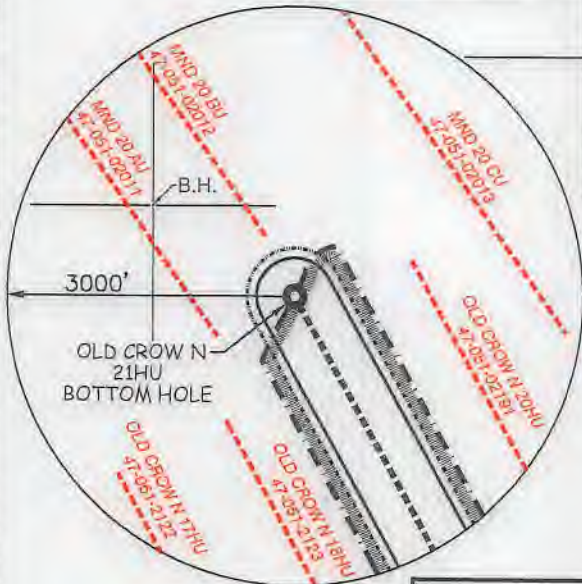
**OLD CROW N LEASE
UTICA UNIT - 484.05 AC ±
WELL 21HU
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

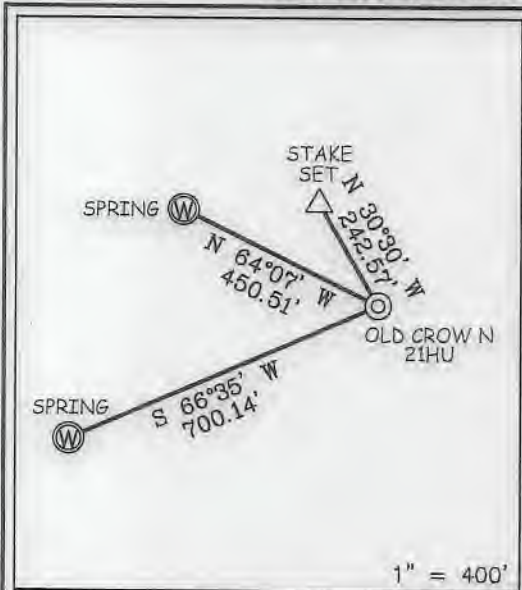
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C.(FT)	N. 468,186.86	E. 1,813,503.81
NAD'83 GEO.	LAT-(N) 39.778560	LONG-(W) 80.763147
NAD'83 UTM (M)	N. 4,403,206.82	E. 520,282.83
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 469,885.5	E. 1,815,936.4
NAD'83 GEO.	LAT-(N) 39.782767	LONG-(W) 80.754567
NAD'83 UTM (M)	N. 4,403,675.8	E. 521,018.3
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 481,866.1	E. 1,809,172.2
NAD'83 GEO.	LAT-(N) 39.815942	LONG-(W) 80.779251
NAD'83 UTM (M)	N. 4,407,352.2	E. 518,893.6

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-9-4.3	HARRY E. JR. & MICHELA KARR	1.471
5-9-4.5	DYLAN AULENBACHER	0.991
5-9-4.7	FRANCIS D. BARR, ET UX	0.481
5-9-4.9	THOMAS MIDCAP, ET UX	0.375
5-9-4.11	GARY PORTER	1.00
5-9-4.12	SAMUEL L. & DEBRA N. CANTERBURY	0.650
5-9-4.13	SAMUEL LEE CANTERBURY, ET UX	0.9284
5-9-4.16	SAMUEL L. & DEBRA N. CANTERBURY	0.517
5-9-13	KAREN M. KAZEMKA (N.K.A. KAREN M. WILSON)	3.69
5-9-14	DENNIS P. CADMUS	136 POLES
5-9-15	DENNIS P. CADMUS	3.85
5-9-16	SHEENA ROSE	1.65
5-9-17	DENNIS P. CADMUS	28.063
5-9-28	WILLIAM N. & DELORES E. MCDONOUGH - LIFE	4.01
5-9-29	JAMES M. & ROBERTA L. STERN	3.1777
5-9-30	MATTHEW B. GRIFFITH	2.708
5-9-30.1	DAVID JR. & MELISSA LOVE	2.518
5-9-30.3	MATTHEW B. GRIFFITH	0.82
5-9-32	MILLARD JUNIOR BONNETTE, ET UX	2.321
5-9-32.3	RUBY M. HENRY ESTATE	0.552
5-9-32.4	DAVID D. & CHRISTINE S. DANIELS	1.025
5-9-32.5	GARNET D. MIDCAP	270'x390'
5-9-32.8	TIMOTHY Q. HOYT, ET UX	0.711
5-9-32.10	TIMOTHY Q. HOYT, ET UX	0.588
5-9-32.11	TIMOTHY Q. HOYT, ET UX	1.717
5-9-32.12	JOHN DRAKE ALBAUGH	1.09
5-9-33.1	KEITH D. & BEVERLY A. DANIELS	1.00
5-9-33.2	KEITH D. & BEVERLY A. DANIELS	1.534
5-9-33.4	DAVID D. & CHRISTINE S. DANIELS	1.025
5-9-36	FRANK T. & ANNA M. WALKER	1.55
5-9-37	FRANK T. & ANNA M. WALKER	10.857
5-9-38	SHIRLEY A. HILL ESTATE	3.331
5-9-38.10	ROBERT S. COWGILL	0.920
5-9-40	SHIRLEY A. HILL ESTATE	3.92
5-10-4.2	JACK E. RECTOR	2.887
5-10-4.3	ANTHONY A. & KAREN L. ANKROM	5.697
5-10-4.7	LINDA BECHTOLD, ET AL	2.110
5-10-4.8	SAMUEL FRANKLIN	1.8808
5-10-4.9	JAMES E. KAREN M. WILSON	0.8692
5-10-4.10	SHEENA ROSE	0.803
5-10-4.11	JASON E. BONNETTE	1.50
5-10-11	JOSEPH LEE CROW	LOT
5-10-19	BRADLEY L. & CONNIE L. HUBBARD	3.209
5-10-20	LOUIS AULENBAUCHER	3.554
5-10-21	LOUIS AULENBAUCHER	3.667



REFERENCES



NOTES ON SURVEY

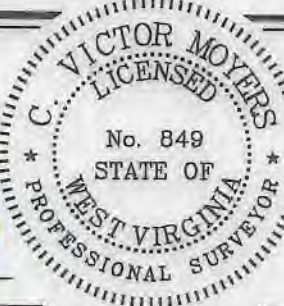
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 825' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO. MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF PROPOSED OLD CROW N-21HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF EXISTING WELLS: BRYAN N 13HU (47-051-02030), BRYAN N 14HU (47-051-02031), OLD CROW N-17HU (47-051-02122), OLD CROW N-18HU (47-051-02123), OLD CROW N-20HU (47-051-02191), MND20 AU (47-051-02011), MND20 BU (47-051-02012), MND20 CU (47-051-02013) & MND20 DU (47-051-02014).
- THE ASSESSMENT OF THE 1/10 ACRE LOT, OWNED BY JASON J. STEED AND DESCRIBED AS THE SECOND PARCEL IN DEED BOOK 643 PAGE 319 AND CORRECTIVE DEED 843 PAGE 300, IS NOT CURRENTLY ACCOUNTED FOR WITHIN THE 135.61 ACRE ASSESSMENT OF SURFACE TAX MAP 5-9-13.2
- THIS PLAT WAS CREATED FOR REVISED BOREHOLE PERMIT.
- MINIMUM OFFSET SPACING REQUIREMENTS EXEMPTED BY WAIVER WITH THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS AND OFFSET LEASEHOLDER AGREEMENTS AS PROVIDED BY TUG HILL OPERATING.



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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 REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE FEBRUARY 28, 20 20
REVISED AUGUST 3, 2020
OPERATORS WELL NO. OLD CROW N-21HU
API WELL NO. 47-051-02335 *HBA*
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P21HUR.dwg
OLD CROW NORTH 21HU REV0
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE: OIL GAS INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: GROUND = 1,286.80' ELEVATION PROPOSED = 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±
ROYALTY OWNER DONNA VIVIAN YOHO, ET AL - SEE ADDITIONAL SHEETS ACREAGE 71.205±
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,613' / TMD: 26,673'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"
4,775' T.H.
6,335' B.H.

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC ±
WELL 21HU
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 75°57' E	225.35'
L2	N 69°48' W	1236.06'
L3	S 79°31' W	963.18'

NAD'83 GRID NORTH

TAG	SURFACE OWNER	PARCEL	ACRES
A	JOHN SWIERKOS	5-16-25	79.04
B	DONNA VIVIAN YOHO - TOD	5-16-3	71.205
C	JOHN SWIERKOS	5-10-14	100.00
D	JOHN SWIERKOS	5-16-5	52.07
E	JOHN SWIERKOS	5-16-6	134.05
F	LOUIS AULENBAUCHER	5-10-22	6.461
G	JOHN PAUL SMITH, JR. ET AL	5-10-12.1	8.86
H	LOUIS DELBERT VAN SCYOC	5-10-10	24.50
I	HERBERT M. AULENBAUCHER, JR.	5-10-9	141.43
J	HERBERT M. AULENBAUCHER, JR.	5-10-3	225.50
K	FISH CREEK-WV DIVISION OF NATURAL RESOURCES	N/A	N/A
L	JASON J. STEED	5-9-13.2	135.61
M	WILLIAM A. PRASCIK, ET AL	5-10-2	52.00
N	EDWIN C. MILLER	5-9-20	51.64
O	EDWIN C. MILLER	5-10-1	49.96
P	JOHN F. KAZEMKA	5-9-27	4.02
Q	EDWIN C. MILLER	5-9-26	1.00
R	ALBERT F. KAZEMKA	5-9-22	0.50
S	ALBERT F. KAZEMKA	5-9-21	100 PCL.
T	MARK S. STOCKLASK	5-9-17.1	1.187
U	MALCOMB H. BROWNLEE, ET AL	5-9-18	25,300 SQ FT
V	DENNIS P. CADMUS	5-9-42	5.42
W	MARK STEPHEN STOCKLASK	5-9-19	2.38
X	DELBERT K. & LINDA K. MYERS	5-9-23	7.00
Y	DELBERT K. & LINDA K. MYERS	5-9-25	14.49
Z	DENNIS P. CADMUS	5-9-24	21AC 49P
AA	DENNIS P. CADMUS	5-9-39	9.50
BB	KEITH D. DANIELS, ET UX	5-9-33	40.331
CC	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00
DD	LLOYD C. & JUDITH C. ARNOLD	5-9-4	18.854
EE	SAMUEL L. CANTERBURY, ET UX	5-9-4.19	2.078
FF	SAMUEL L. CANTERBURY, ET UX	5-9-4.17	0.500
GG	PAUL G. BROWN	5-9-4.18	0.657
HH	PAUL G. BROWN	5-9-4.15	0.500
II	PAUL G. BROWN	5-9-4.14	0.500
JJ	DEBORAH S. MIDCAP	5-9-4.10	0.819
KK	LLOYD C. & JUDITH C. ARNOLD	5-9-35	47.00
LL	THOMAS MIDCAP, ET UX	5-9-4.8	0.376
MM	GEORGE F. MINOR, ET AL - LIFE	5-9-35.1	0.641
NN	JAMES R. LEGG ESTATE	5-9-2	23.141
OO	KENNETH E. WHITE, ET UX	5-9-2.2	0.359
PP	JEFFREY L. LEGG ESTATE	5-9-2.1	20.5
QQ	EDWIN C. MILLER	5-8-7	180.31



SLS
FROM THE GROUND UP

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P.S. 849 *C. Victor Moyers*

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

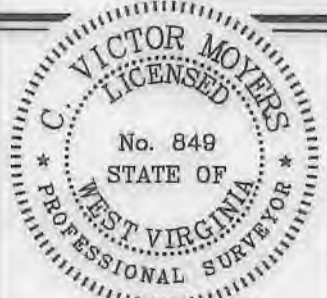
NAD'83 S.P.C.(FT)	N. 468,186.86	E. 1,613,508.81
NAD'83 GEO.	LAT-(N) 39.778560	LONG-(W) 80.763147
NAD'83 UTM (M)	N. 4,403,206.82	E. 520,282.83

LANDING POINT

NAD'83 S.P.C.(FT)	N. 468,685.5	E. 1,615,936.4
NAD'83 GEO.	LAT-(N) 39.782767	LONG-(W) 80.754567
NAD'83 UTM (M)	N. 4,403,675.8	E. 521,016.3

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 481,865.1	E. 1,609,172.2
NAD'83 GEO.	LAT-(N) 39.815942	LONG-(W) 80.779251
NAD'83 UTM (M)	N. 4,407,382.2	E. 518,893.6



SCALE 1" = 2000' FILE NO. 8796P21HUR.dwg
OLD CROW NORTH 21HU REV0


DATE FEBRUARY 28, 2020
REVISED AUGUST 3, 2020

OPERATORS WELL NO. OLD CROW N-21HU

API WELL NO. 47-051-02011-0233546A

NO. STATE COUNTY PERMIT

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



CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	7.86'	43.84'	N 83°34' E	7.85'
C2	101.88'	622.72'	N 79°44' E	101.77'
C3	550.42'	3343.70'	N 69°15' E	549.80'
C4	353.71'	856.34'	N 51°57' E	351.21'
C5	241.72'	654.77'	N 29°14' E	240.35'
C6	317.07'	619.32'	N 03°05' E	313.62'
C7	424.53'	1301.08'	N 20°01' W	422.65'

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

- UNIT BOUNDARY
- LEASED TRACTS INSIDE
- UNIT BOUNDARY
- SURFACE LINE
- PROPOSED UTICA
- WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- PROPOSED FIRST TAKE POINT
- PROPOSED LAST TAKE POINT
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE ADDITIONAL SHEETS)

● FTP
● LTP

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME PERMIT

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC±
WELL 21HU
TUG HILL OPERATING**



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No.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page	
1	10*21468	A	5-16-25	JOHN A SWIERKOS	953	317
2	10*19340	B	5-16-3	DONNA V YOHO	665	407
3	10*14920	C	5-10-14	CHESTNUT HOLDINGS INC	836	119
4	10*14919	D	5-16-5	CHESTNUT HOLDINGS INC	836	117
5	10*21468	E	5-16-6	JOHN A SWIERKOS	953	317
6	10*18396	F	5-10-22	LOUIS AULENBACHER	932	468
7	10*21468	G	5-10-12.1	JOHN A SWIERKOS	953	317
8	10*21468	H	5-10-10	JOHN A SWIERKOS	953	317
9	10*19249	I	5-10-9	HERBERT M AULENBACHER	914	551
10	10*14918	J	5-10-3	CHESTNUT HOLDINGS INC	836	115
11	Q091960000	K	FISH CREEK	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	865	558
12	10*47051.170.0	L	5-9-13.2	JASON J STEED	865	344
13	10*47051.260.0	M	5-10-2	WILLIAM A PRASCIC ET AL	879	302
14	10*47051.127.1	N	5-9-20	EDWIN C MILLER AND KIMBERLY ANN MILLER	885	61
15	10*18970	O	5-10-1	DONALD E BERISFORD	941	287
16	10*17512	P	5-9-27	BONNIE LOU POSTLEWAIT	917	68
17	10*17512	Q	5-9-26	BONNIE LOU POSTLEWAIT	917	68
18	10*17512	R	5-9-22	BONNIE LOU POSTLEWAIT	917	68
19	10*18796	S	5-9-21	DWG OIL & GAS ACQUISITIONS LLC	938	476
20	10*18796	T	5-9-17.1	DWG OIL & GAS ACQUISITIONS LLC	938	476
21	10*18796	U	5-9-18	DWG OIL & GAS ACQUISITIONS LLC	938	476
22	10*18796	V	5-9-42	DWG OIL & GAS ACQUISITIONS LLC	938	476
23	10*18796	W	5-9-19	DWG OIL & GAS ACQUISITIONS LLC	938	476
24	10*17512	X	5-9-23	BONNIE LOU POSTLEWAIT	917	68
25	10*17512	Y	5-9-25	BONNIE LOU POSTLEWAIT	917	68
26	CVX935271	Z	5-9-24	CHARLES W. MILLER	853	59
27	CVX935271	AA	5-9-39	CHARLES W. MILLER	853	59
28	10*27025	BB	5-9-33	STONE HILL MINERALS HOLDINGS LLC	1034	626
29	10*26046	CC	5-9-41	ARNOLD LLOYD C ET UX	915	628
30	CVX939752	DD	5-9-4	LLOYD C ARNOLD AND JUDITH C ARNOLD	915	582
31	CVX936589	EE	5-9-4.19	LLOYD C. ARNOLD AND JUDITH C ARNOLD	863	511
32	CVX936589	FF	5-9-4.17	LLOYD C. ARNOLD AND JUDITH C ARNOLD	863	511
33	CVX936589	GG	5-9-4.18	LLOYD C. ARNOLD AND JUDITH C ARNOLD	863	511
34	CVX936589	HH	5-9-4.15	LLOYD C. ARNOLD AND JUDITH C ARNOLD	863	511
35	CVX936589	II	5-9-4.14	LLOYD C. ARNOLD AND JUDITH C ARNOLD	863	511
36	CVX868468	JJ	5-9-4.10	DEBORAH S. MIDCAP	737	260
37	CVX935273	KK	5-9-35	PAUL PARSONS ET UX	853	430
38	CVX868688	LL	5-9-4.8	THOMAS E. MIDCAP FRED M MIDCAP	738	482
39	CVX935271	MM	5-9-35.1	CHARLES W. MILLER	853	59
40	Q081124002	NN	5-9-2	JAMES REDMAN LEGG II ET AL	879	580
41	Q080154002	OO	5-9-2.2	KENNETH EUGENE WHITE AND LESLIE A WHITE	879	577
42	Q081123002	PP	5-9-2.1	JEFFREY L LEGG	879	575
43	10*21546	QQ	5-8-7	EDWIN C MILLER AND KIMBERLY ANN MILLER	957	257

FILE NO. 8796P21HUR.dwg
OLD CROW NORTH 21HU REV0

DATE FEBRUARY 28, 20 20

REVISED AUGUST 3, 2020

OPERATORS WELL NO. OLD CROW N-21HU

API WELL NO. 47 — 051 — 02335 H6A
STATE COUNTY PERMIT



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



P.S. 849 *C. Victor Moyers*

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
ADDRESS CT CORPORATION SYSTEM
5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME

PERMIT

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC ±
WELL 21HU
TUG HILL OPERATING**



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NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
201	090932001	T	5-9-17-1	WILLIAM E MILLER AND KAREN S MILLER	860 538
202	090932002	T	5-9-17-2	LORETTA JEAN RIGGLE ET VIR	860 538
203	090932003	T	5-9-17-3	PATTY BERISFORD ET VIR	860 558
204	090932007	T	5-9-17-1	ROBERT RANDOLPH WOODBURN ET UX	860 568
205	10*18796	U	5-9-18	DWG OIL & GAS ACQUISITIONS LLC, et al	939 476
206	10*21814	U	5-9-18	CHARLES R STOCKTON AND BETTY M HUDSON	959 310
207	10*21473	U	5-9-18	MARY E BISHOP	957 232
208	10*21475	U	5-9-18	WOODROW N WARD AND HILDA A WARD	957 124
209	10*21478	U	5-9-18	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	960 173
210	10*21547	U	5-9-18	GARY A MILLER AND MARCELLE T MILLER	952 370
211	10*21549	U	5-9-18	JEANNE M MILLER	952 386
212	10*21608	U	5-9-18	BONNIE LOU POSTLEWAT	959 313
213	10*21719	U	5-9-18	ROBERT A MILLER	952 389
214	10*21835	U	5-9-18	KENNETH ALLEN AND CARLA JO ALLEN	962 572
215	10*21937	U	5-9-18	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	960 33
216	10*22044	U	5-9-18	MICHAEL A BISHOP	960 421
217	10*22045	U	5-9-18	DOUGLAS R BISHOP	961 417
218	10*22296	U	5-9-18	NOAH BAKER AND ALISA BAKER	962 200
219	10*22326	U	5-9-18	RACHEL SONDA AND SCOTT SONDA	962 532
220	10*22407	U	5-9-18	BRADLEY MURPHY	962 575
221	10*22430	U	5-9-18	DEBORAH VANVRANKEN	964 510
222	10*22451	U	5-9-18	GERALD L BISHOP III	964 32
223	10*22492	U	5-9-18	FAITH MARIE FREESTONE AND ERIC FREESTONE	972 50
224	10*22566	U	5-9-18	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	966 628
225	10*22636	U	5-9-18	KENNETH A MILLER	964 233
226	10*22806	U	5-9-18	ROBERT B MURPHY AND LINDA MURPHY	966 469
227	10*22836	U	5-9-18	CHANDA WILSON AND DANIEL WILSON	966 226
228	10*23035	U	5-9-18	DEAN S CARR	977 364
229	10*23058	U	5-9-18	MICHAEL A MURPHY	1009 98
230	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
231	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
232	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
233	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
234	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
235	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
236	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
237	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
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244	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
245	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
246	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
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255	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
256	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
257	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
258	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
259	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
260	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
261	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
262	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
263	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
264	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
265	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
266	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
267	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
268	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
269	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
270	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
271	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
272	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
273	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
274	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
275	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
276	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
277	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
278	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
279	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
280	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
281	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
282	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
283	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
284	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
285	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
286	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
287	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
288	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
289	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
290	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
291	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
292	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
293	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
294	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
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297	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
298	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
299	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187
300	10*24888	U	5-9-18	ARTHUR LEE MILLER ET AL	1027 187

NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
301	10*17512	X	5-9-23	BONNIE LOU POSTLEWAT, et al	957 68
302	10*22044	X	5-9-23	MICHAEL A BISHOP	960 421
303	10*22296	X	5-9-23	NOAH BAKER AND ALISA BAKER	962 200
304	10*22326	X	5-9-23	RACHEL SONDA AND SCOTT SONDA	962 532
305	10*22407	X	5-9-23	BRADLEY MURPHY	962 575
306	10*22430	X	5-9-23	DEBORAH VANVRANKEN	964 510
307	10*22451	X	5-9-23	FAITH MARIE FREESTONE AND ERIC FREESTONE	972 50
308	10*22566	X	5-9-23	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	966 628
309	10*22636	X	5-9-23	ROBERT B MURPHY AND LINDA MURPHY	966 469
310	10*22806	X	5-9-23	CHANDA WILSON AND DANIEL WILSON	966 226
311	10*23035	X	5-9-23	DEAN S CARR	977 364
312	10*23058	X	5-9-23	MICHAEL A MURPHY	1009 98
313	10*24888	X	5-9-23	ARTHUR LEE MILLER ET AL	1027 187
314	10*24888	X	5-9-23	ARTHUR LEE MILLER ET AL	1027 187
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325	10*24888	X	5-9-23	ARTHUR LEE MILLER ET AL	1027 187
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327	10*24888	X	5-9-23	ARTHUR LEE MILLER ET AL	1027 187
328	10*21937	Y	5-9-25	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	960 33
329	10*22044	Y	5-9-25	MICHAEL A BISHOP	960 421
330	10*22296	Y	5-9-25	NOAH BAKER AND ALISA BAKER	962 200
331	10*22326	Y	5-9-25	RACHEL SONDA AND SCOTT SONDA	962 532
332	10*22407	Y	5-9-25	BRADLEY MURPHY	962 575
333	10*22430	Y	5-9-25	DEBORAH VANVRANKEN	964 510
334	10*22451	Y	5-9-25	FAITH MARIE FREESTONE AND ERIC FREESTONE	972 50
335	10*22566	Y	5-9-25	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	966 628
336	10*22636	Y	5-9-25	ROBERT B MURPHY AND LINDA MURPHY	966 469
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370	10*24888	Y	5-9-25	ARTHUR LEE MILLER ET AL	1027 187
371	10*24888	Y	5-9-25	ARTHUR LEE MILLER ET AL	1027 187
372	10*24888	Y	5-9-25	ARTHUR LEE MILLER ET AL	1027 187
373	10*24888	Y	5-9-25		

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC±
WELL 21HU
TUG HILL OPERATING**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slswv.com

NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page	
403	CVX935969	MM	5-9-35.1	TIMOTHY HUFF ET UX	864	47
404	CVX936053	MM	5-9-35.1	LLOYD C. ARNOLD ET UX	864	39
405	CVX936054	MM	5-9-35.1	MARY JO CRONIN	864	43
406	CVX936058	MM	5-9-35.1	RICHARD KURPILET UX	863	594
407	CVX936061	MM	5-9-35.1	CLARA MAE CLIFTON	853	426
408	CVX936062	MM	5-9-35.1	GEORGE EDWARDS ET UX	853	418
409	CVX936112	MM	5-9-35.1	DONNA FAE KYLE	853	449
410	CVX936113	MM	5-9-35.1	JUDITH MAY CONNER	853	445
411	CVX866958	MM	5-9-35.1	ANITA L. SLOUGH ET AL	696	7
412	CVX866959	MM	5-9-35.1	PAUL SCHEIBELHOOD ET AL	695	629
413	Q081124002	NN	5-9-2	JAMES REDMAN LEGG II ET AL	879	580
414	Q080154002	OO	5-9-2.2	KENNETH EUGENE WHITE AND LESLIE A WHITE	879	577
415	Q081123002	PP	5-9-2.1	JEFFREY L LEGG	879	575
416	10*21546	QQ	5-8-7	EDWIN C MILLER AND KIMBERLY ANN MILLER	957	257

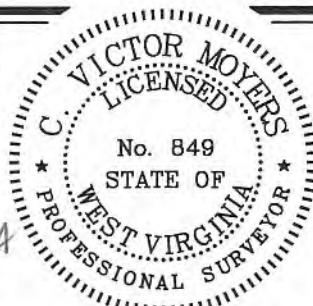
RECEIVED
Office of Oil and Gas

JUN 24 2020

WV Department of
Environmental Protection

4705102335

FILE NO. 8796P21HU.dwg
OLD CROW NORTH 19HU REV0
DATE FEBRUARY 25, 20 20
REVISED _____
OPERATORS WELL NO. OLD CROW N-21HU
API WELL NO. 47 — 051 — 0233546A
STATE COUNTY PERMIT



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



P.S.
849

C. Victor Moyers

COUNTY NAME

PERMIT

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
ADDRESS CT CORPORATION SYSTEM
5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

**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

***Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.**

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

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

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

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

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

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 Bryan 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.

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

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

Execution Version

ASSIGNMENT AND BILL OF SALE

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

THIS ASSIGNMENT AND BILL OF SALE (this "*Assignment*"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "*Effective Time*"), is between Gastar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("*Assignor*"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("*Assignee*"). Assignor and Assignee are each, individually, referred to herein as a "*Party*" and, collectively, as the "*Parties*".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "*Purchase Agreement*"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

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

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in *subsections (a) through (k)* of this Section 1, less and except the Excluded Assets, collectively, the "*Conveyed Interests*"):

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

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

MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

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

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

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

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

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

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

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

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

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

This **ASSIGNMENT AND BILL OF SALE** (this "Assignment") dated as of February 7, 2019 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on February 1, 2019 (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 Crawford 1 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.
- 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 February 1, 2019 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

WW-6A1 Well Bore Tracts

Operator's Well No. Old Crow N - 21HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19340	5-16-3	B	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar & Atinum to AB Resources LLC: 23/617	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000: 24/319	Chief, Chief Oil & Gas LLC, Radler & Enerplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration LLC: 40/57
10*14920	5-10-14	C	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	119	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14919	5-16-5	D	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	117	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*21468	5-16-6	E	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*14918	5-10-3	J	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	115	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
Q091960000	FISH CREEK	K	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NOBLE ENERGY INC	1/8+	865	558	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*47051.170.0	5-9-13.2	L	JASON J STEED	TH EXPLORATION LLC	1/8+	865	344	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.260.0	5-10-2	M	WILLIAM A PRASCIK ET AL	TH EXPLORATION LLC	1/8+	879	302	N/A	N/A	N/A	N/A	N/A	N/A
10*17512	5-9-26	Q	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917	68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-26	Q	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916	208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-26	Q	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	916	129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-26	Q	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927	167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-26	Q	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943	10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-26	Q	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-26	Q	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943	12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-26	Q	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-26	Q	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-26	Q	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-26	Q	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-26	Q	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-26	Q	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-26	Q	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-26	Q	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-26	Q	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-26	Q	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-26	Q	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-26	Q	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-26	Q	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-26	Q	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-26	Q	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-26	Q	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-26	Q	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063 594	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.1	5-9-26	Q	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885 61	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-26	Q	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-26	Q	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-26	Q	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-23	X	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917 68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-23	X	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916 208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-23	X	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-23	X	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927 167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-23	X	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943 10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-23	X	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-23	X	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943 12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-23	X	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-23	X	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-23	X	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-23	X	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-23	X	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-23	X	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-23	X	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-23	X	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-23	X	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-23	X	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-23	X	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-23	X	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-23	X	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-23	X	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-23	X	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25250	5-9-23	X	LINDA KAY MYERS	TH EXPLORATION LLC	1/8+	1030 118	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-23	X	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-23	X	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063 594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-23	X	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q090332003	5-9-23	X	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-23	X	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-25	Y	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917	68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-25	Y	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916	208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-25	Y	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916	129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-25	Y	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927	167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-25	Y	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943	10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-25	Y	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-25	Y	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943	12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-25	Y	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-25	Y	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-25	Y	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-25	Y	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-25	Y	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-25	Y	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-25	Y	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-25	Y	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-25	Y	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-25	Y	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-25	Y	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-25	Y	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-25	Y	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-25	Y	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-25	Y	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25250	5-9-25	Y	LINDA KAY MYERS	TH EXPLORATION LLC	1/8+	1030	118	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-25	Y	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-25	Y	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-25	Y	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-25	Y	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-25	Y	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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10*27025	5-9-33	BB	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1034	626	N/A	N/A	N/A	N/A	N/A	N/A
10*26046	5-9-41	CC	ARNOLD LLOYD C ET UX	CHEVRON USA INC	1/8+	915	628	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 43/95
CVX939752	5-9-4	DD	LLOYD C ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	915	582	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-35	KK	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-35	KK	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-35	KK	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-35	KK	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-35	KK	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-35	KK	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-35	KK	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-35	KK	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936112	5-9-35	KK	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-35	KK	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-35	KK	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-35	KK	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q081124002	5-9-2	NN	JAMES REDMAN LEGG II ET AL	NOBLE ENERGY INC	1/8+	879	580	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*21546	5-8-7	QQ	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	957	257	N/A	N/A	N/A	N/A	N/A	N/A

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10*18396	5-10-22	F	LOUIS AULENBACHER	TH EXPLORATION LLC	1/8+	932 468	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-22	F	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953 317	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-12.1	G	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953 317	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.1	5-10-12.1	G	WILLIAM HUBBARD	TH EXPLORATION LLC	1/8+	882 536	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.2	5-10-12.1	G	BONNIE G ZELIC	TH EXPLORATION LLC	1/8+	882 539	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.3	5-10-12.1	G	JOHN P SMITH JR	TH EXPLORATION LLC	1/8+	882 542	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.4	5-10-12.1	G	BRADLEY L HUBBARD AND CONNIE L HUBBARD	TH EXPLORATION LLC	1/8+	898 573	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-10	H	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953 317	N/A	N/A	N/A	N/A	N/A	N/A
10*22295	5-10-10	H	RACHEL B OSTRANDER	FOSSIL CREEK OHIO, LLC	1/8+	822 210	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corp.: 34/366	Gulfport Energy Corp & Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588	American Petroleum Partners Operating LLC to TH Exploration LLC: 40/408
10*22319	5-10-10	H	SHARON G VAN SCYOC	FOSSIL CREEK OHIO, LLC	1/8+	822 204	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corp.: 34/366	Gulfport Energy Corp & Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588	American Petroleum Partners Operating LLC to TH Exploration LLC: 40/408
10*26004	5-10-10	H	VAN SCYOC LOUIS ET UX	AB RESOURCES LLC	1/8+	697 461	N/A	AB Resources LLC to NPAR LLC: 25/484	AB resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/382	Chief Exploration & Development LLC & Radler 2000 LP, et al to Chevron USA Inc: 25/1 & 25/105	NPAR LLC to Chevron USA Inc: 765/332	Chevron USA Inc to TH Exploration LLC: 43/95
10*19249	5-10-9	I	HERBERT M AULENBACHER	CHEVRON USA INC	1/8+	914 551	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*47051.127.1	5-9-20	N	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885 61	N/A	N/A	N/A	N/A	N/A	N/A
10*18970	5-10-1	O	DONALD E BERISFORD	TH EXPLORATION LLC	1/8+	941 287	N/A	N/A	N/A	N/A	N/A	N/A
10*19036	5-10-1	O	HAROLD W HOWARD JR	CHEVRON USA INC	1/8+	813 91	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19037	5-10-1	O	NEVELLE SEELEY	CHEVRON USA INC	1/8+	813 116	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19039	5-10-1	O	RALPH B RUSSELL MARY ANN RUSSELL	CHEVRON USA INC	1/8+	813 106	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19040	5-10-1	O	RUTHANNE RUSSELL TOPPING	CHEVRON USA INC	1/8+	813 79	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19041	5-10-1	O	CHERYL L HILL	CHEVRON USA INC	1/8+	813 101	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19043	5-10-1	O	JACK R BERISFORD LINDA JO BERISFORD	CHEVRON USA INC	1/8+	813 96	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19045	5-10-1	O	JOHN W MURDOCK HELEN CAROLINA MURDOCK	CHEVRON USA INC	1/8+	814 327	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19049	5-10-1	O	RUTH ANN FERRIS	CHEVRON USA INC	1/8+	814 313	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19050	5-10-1	O	LARRY F JEFFERSON CATHY L JEFFERSON	CHEVRON USA INC	1/8+	814 473	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19059	5-10-1	O	MARY VANESSA GILSON	CHEVRON USA INC	1/8+	815 464	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19060	5-10-1	O	ALYSIA JORDAN	CHEVRON USA INC	1/8+	815 135	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127

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10*19503	5-10-1	O	FRANK DALE BERISFORD AND KATHLEEN BERISFORD	TH EXPLORATION LLC	1/8+	942 625	N/A	N/A	N/A	N/A	N/A	N/A
10*19610	5-10-1	O	BRENT BERISFORD AND JEAN MARIE COSTA	TH EXPLORATION LLC	1/8+	944 207	N/A	N/A	N/A	N/A	N/A	N/A
10*22637	5-10-1	O	HOWARD T CONNER AND NANETTE CONNER	TH EXPLORATION LLC	1/8+	968 219	N/A	N/A	N/A	N/A	N/A	N/A
10*22639	5-10-1	O	EDWIN MARK KNABENSHUE	TH EXPLORATION LLC	1/8+	968 217	N/A	N/A	N/A	N/A	N/A	N/A
10*22640	5-10-1	O	JESSICA M CREMEANS	TH EXPLORATION LLC	1/8+	984 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22641	5-10-1	O	CHRISTOPHER STALEY & MICHAEL ANNE STALEY	TH EXPLORATION LLC	1/8+	968 221	N/A	N/A	N/A	N/A	N/A	N/A
10*22772	5-10-1	O	BILLIE J STALEY AND APRIL STALEY	TH EXPLORATION LLC	1/8+	970 8	N/A	N/A	N/A	N/A	N/A	N/A
10*23040	5-10-1	O	MARY L WHITTINGTON	TH EXPLORATION LLC	1/8+	977 300	N/A	N/A	N/A	N/A	N/A	N/A
10*23725	5-10-1	O	GRAYSVILLE CALVARY UNITED METHODIST	TH EXPLORATION LLC	1/8+	1011 550	N/A	N/A	N/A	N/A	N/A	N/A
10*24029	5-10-1	O	MICHAEL I STEWART	TH EXPLORATION LLC	1/8+	1020 353	N/A	N/A	N/A	N/A	N/A	N/A
10*24261	5-10-1	O	GREG STEWART *	TH EXPLORATION LLC	1/8+	1020 351	N/A	N/A	N/A	N/A	N/A	N/A
10*24514	5-10-1	O	GAYLE F BRITTON TRUST *	TH EXPLORATION LLC	1/8+	1026 253	N/A	N/A	N/A	N/A	N/A	N/A
10*24515	5-10-1	O	AARON M BROWN *	TH EXPLORATION LLC	1/8+	1024 269	N/A	N/A	N/A	N/A	N/A	N/A
10*24525	5-10-1	O	DAVID E BOWYER	TH EXPLORATION LLC	1/8+	1027 285	N/A	N/A	N/A	N/A	N/A	N/A
10*24554	5-10-1	O	JOSH D AND LAUREN K HALE *	TH EXPLORATION LLC	1/8+	1024 254	N/A	N/A	N/A	N/A	N/A	N/A
10*24555	5-10-1	O	DAVID W HALE JR *	TH EXPLORATION LLC	1/8+	1024 257	N/A	N/A	N/A	N/A	N/A	N/A
10*24556	5-10-1	O	BETTY L KEAN *	TH EXPLORATION LLC	1/8+	1024 263	N/A	N/A	N/A	N/A	N/A	N/A
10*25617	5-10-1	O	GLEN DALE UNITED METHODIST CHURCH	AMERICAN PETROLEUM PARTNERS OPERATING LLC	1/8+	1031 610	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 43/503
10*27947	5-10-1	O	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063 568	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-10-1	O	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063 594	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.1	5-10-1	O	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885 61	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.2	5-10-1	O	JANE S BLANEY	TH EXPLORATION LLC	1/8+	898 547	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.3	5-10-1	O	JOANNE SCHALL FOSTER	TH EXPLORATION LLC	1/8+	895 29	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.4	5-10-1	O	RAYMOND E SCHALL	TH EXPLORATION LLC	1/8+	898 550	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.5	5-10-1	O	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	898 600	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.6	5-10-1	O	BARBARA GODWIN AND CHARLES RODNEY GODWIN	TH EXPLORATION LLC	1/8+	902 419	N/A	N/A	N/A	N/A	N/A	N/A
PENDING	5-10-1	O	FORREST O MILLER	HG ENERGY II APPALACHIA, LLC	1/8+	1029 581	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-27	P	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917 68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-27	P	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916 208	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-27	P	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927 167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-27	P	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943 10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-27	P	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*18836	5-9-27	P	JOHN W MIDCAP AND ELDA FAYE MIDCAP	TH EXPLORATION LLC	1/8+	941 450	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-27	P	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943 12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-27	P	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-27	P	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-27	P	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-27	P	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-27	P	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-27	P	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-27	P	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-27	P	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A

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10*22492	5-9-27	P	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-27	P	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-27	P	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-27	P	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-27	P	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-27	P	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-27	P	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-27	P	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	562	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-27	P	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-27	P	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-27	P	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-27	P	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-27	P	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-22	R	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917	68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-22	R	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916	208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-22	R	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916	129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-22	R	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927	167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-22	R	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943	10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-22	R	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*19107	5-9-22	R	ALBERT F KAZEMKA	CHEVRON USA INC	1/8+	853	73	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19572	5-9-22	R	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943	12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-22	R	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-22	R	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-22	R	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-22	R	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-22	R	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-22	R	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-22	R	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-22	R	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-22	R	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-22	R	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-22	R	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-22	R	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-22	R	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-22	R	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-22	R	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-22	R	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-22	R	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-22	R	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-22	R	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-22	R	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-21	S	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-21	S	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959	310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-21	S	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957	232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-21	S	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957	124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-21	S	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-21	S	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952	370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-21	S	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952	386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-21	S	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959	313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-21	S	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952	389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-21	S	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962	572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-21	S	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-21	S	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-21	S	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961	417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-21	S	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-21	S	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-21	S	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-21	S	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-21	S	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-21	S	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-21	S	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-21	S	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-21	S	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-21	S	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-21	S	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-21	S	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-21	S	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-21	S	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-21	S	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A

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Q090332001	5-9-21	S	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858 256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-21	S	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-21	S	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-21	S	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-17.1	T	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-17.1	T	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959 310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-17.1	T	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957 232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-17.1	T	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957 124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-17.1	T	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-17.1	T	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-17.1	T	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-17.1	T	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959 313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-17.1	T	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-17.1	T	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962 572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-17.1	T	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-17.1	T	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-17.1	T	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961 417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-17.1	T	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-17.1	T	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-17.1	T	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-17.1	T	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-17.1	T	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964 31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-17.1	T	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-17.1	T	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-17.1	T	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964 233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-17.1	T	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-17.1	T	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-17.1	T	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-17.1	T	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-17.1	T	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-17.1	T	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-17.1	T	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A

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10*27959	5-9-17.1	T	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-17.1	T	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-17.1	T	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-17.1	T	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-17.1	T	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-18	U	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-18	U	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959	310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-18	U	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957	232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-18	U	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957	124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-18	U	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-18	U	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952	370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-18	U	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952	386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-18	U	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959	313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-18	U	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952	389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-18	U	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962	572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-18	U	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-18	U	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-18	U	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961	417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-18	U	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-18	U	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-18	U	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-18	U	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-18	U	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-18	U	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-18	U	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-18	U	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-18	U	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-18	U	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-18	U	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-18	U	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-18	U	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-18	U	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-18	U	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-18	U	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063 594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-18	U	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858 256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-18	U	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-18	U	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-18	U	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-42	V	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-42	V	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959 310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-42	V	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957 232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-42	V	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957 124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-42	V	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-42	V	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-42	V	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-42	V	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959 313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-42	V	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-42	V	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962 572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-42	V	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-42	V	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-42	V	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961 417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-42	V	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-42	V	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-42	V	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-42	V	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-42	V	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964 31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-42	V	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-42	V	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-42	V	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964 233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-42	V	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-42	V	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-42	V	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-42	V	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-42	V	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-42	V	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 562	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-42	V	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-42	V	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-42	V	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-42	V	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-42	V	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-42	V	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-19	W	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-19	W	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959	310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-19	W	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957	232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-19	W	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957	124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-19	W	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-19	W	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952	370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-19	W	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952	386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-19	W	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959	313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-19	W	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952	389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-19	W	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962	572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-19	W	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-19	W	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-19	W	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961	417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-19	W	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-19	W	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-19	W	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-19	W	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-19	W	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-19	W	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-19	W	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-19	W	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-19	W	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-19	W	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-19	W	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-19	W	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-19	W	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-19	W	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-19	W	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
10*27959	5-9-19	W	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	594	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-19	W	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-19	W	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-19	W	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-19	W	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-24	Z	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-24	Z	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-24	Z	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-24	Z	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-24	Z	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936054	5-9-24	Z	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-24	Z	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-24	Z	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-24	Z	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-24	Z	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-24	Z	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-24	Z	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-24	Z	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-39	AA	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX935273	5-9-39	AA	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-39	AA	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-39	AA	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-39	AA	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-39	AA	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-39	AA	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-39	AA	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-39	AA	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-39	AA	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-39	AA	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX866958	5-9-39	AA	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-39	AA	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.19	EE	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.19	EE	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.17	FF	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.17	FF	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.18	GG	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.18	GG	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.15	HH	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.15	HH	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

4705102335

WW-6A1

Non-Well Bore Tracts

Operator's Well No. Old Crow N - 21HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
CVX936589	5-9-4.14	II	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.14	II	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX868468	5-9-4.10	JJ	DEBORAH S. MIDCAP	TRIENERGY HOLDINGS, LLC	1/8+	737	260	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX868688	5-9-4.8	LL	THOMAS E. MIDCAP FRED A MIDCAP	TRIENERGY HOLDINGS, LLC	1/8+	738	482	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-35.1	MM	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-35.1	MM	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-35.1	MM	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-35.1	MM	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-35.1	MM	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-35.1	MM	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
CVX936058	5-9-35.1	MM	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-35.1	MM	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-35.1	MM	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-35.1	MM	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-35.1	MM	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-35.1	MM	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-35.1	MM	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q080154002	5-9-2.2	OO	KENNETH EUGENE WHITE AND LESLIE A WHITE	NOBLE ENERGY INC	1/8+	879	577	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q081123002	5-9-2.1	PP	JEFFREY L LEGG	NOBLE ENERGY INC	1/8+	879	575	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

*Co-tenancy utilization - At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.

MATT M REESE
380 SOUTHPOINTE BLVD
STE 200
CANONSBURG PA 15317-8561

CERTIFICATE OF CONSENT AND EASEMENT

I, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Franklin District, Marshall County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b) (4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to TH Exploration, LLC, its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 27 day of November, 2017.

Donna Vivian Yoho
Donna Vivian Yoho

Marshall County
Jan Pest, Clerk
Instrument 1447177
10/26/2018 @ 10:48:47 AM
RIGHT OF WAY W/D CONSIDERATION
Book 1021 @ Page 450
Pages Recorded 2
Recording Cost \$ 11.00

ACKNOWLEDGMENT

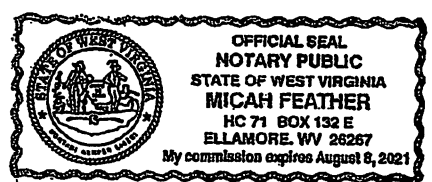
STATE OF WEST VIRGINIA §
§ SS:
COUNTY OF MARSHALL §

On this the ___ day of November 2017, before me, a notary public, the undersigned authority, personally appeared Donna Vivian Yoho, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.

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

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

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



RECEIVED
Office of Oil and Gas

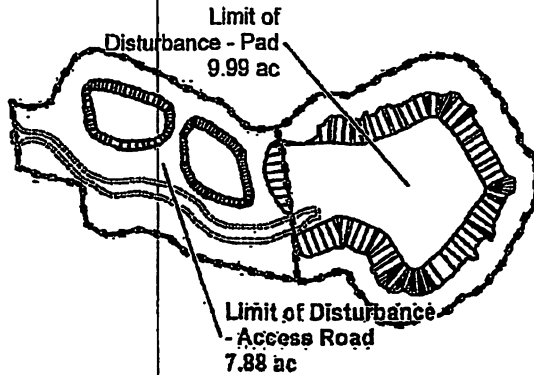
FEB 26 2019

WV Department of
Environmental Protection



BOOK 1021 PAGE 0451

5-16-3
DONNA
YOHO



- Limit of Disturbance - Access Road
- Limit of Disturbance - Pad
- Road Breakline
- Pad
- Padsite Road

1 Inch: 472 feet

0 110 220 440 Feet



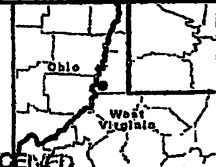
Exhibit "A"

DONNA YOHO
Marshall, WV

Date: 11-27-17

Name: Donna Vivian Yoho

Name: _____



RECEIVED
Office of Oil and Gas

FEB 26 2019

WV Department of
Environmental Protection

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



TUG HILL

4705102335

June 19, 2020

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

RE: Old Crow N-21HU

Subject: Proposed Voluntary Pooling and Unitization

Dear Susan:

Tug Hill Operating, LLC is authorized through, either lease or other agreement, to unitize and pool all lands falling within the boundaries of the proposed voluntary unit included with this submission.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 724-749-8388, or by email at amiller@tug-hilop.com.

Sincerely,

Amy L. Miller
Permitting Specialist
Tug Hill Operating

RECEIVED
Office of Oil and Gas

JUN 24 2020

WV Department of
Environmental Protection



4705102335

west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

July 21, 2020

TH Exploration
1320 S. University Dr Ste 500
Ft Worth TX 76107

9489 0090 0027 6201 4222 89

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Old Crow N-21HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commission's granting approval to the proposed deviations. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in black ink that reads 'Susan Rose'.

Susan Rose
Administrator

encl:



4705102335

August 17, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number: **9489 0090 0027 6201 4222 89**.

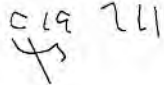
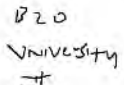
Item Details

Status: Delivered, Left with Individual
Status Date / Time: July 28, 2020, 1:25 pm
Location: FORT WORTH, TX 76107
Postal Product: First-Class Mail®
Extra Services: Certified Mail™
Return Receipt Electronic

Shipment Details

Weight: 3lb, 4.8oz

Recipient Signature

Signature of Recipient: 
Address of Recipient: 

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004



4705102335

west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

July 21, 2020

HG Energy II Appalachia LLC
5260 Dupont Rd
Parkersburg WV 26101

9489 0090 0027 6201 4222 72

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Old Crow N-21HU

Dear Sir or Ma'am:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commission's granting approval to the proposed deviations. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 414-1239.

Sincerely,

A handwritten signature in cursive script that reads "Susan Rose".
Susan Rose
Administrator

encl:



4705102335

August 17, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number: **9489 0090 0027 6201 4222 72.**

Item Details

Status:	Delivered to Agent for Final Delivery
Status Date / Time:	July 27, 2020, 1:12 pm
Location:	PARKERSBURG, WV 26101
Postal Product:	First-Class Mail®
Extra Services:	Certified Mail™ Return Receipt Electronic

Shipment Details

Weight:	3lb, 4.8oz
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Recipient Signature

Signature of Recipient: (Authorized Agent)	<i>OFF RCI COV-19</i>
Address of Recipient:	<i>5260 W. Jefferson Rd</i>

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004

Offset Operators within 500'				
Old Crow N - 21HU				
County	District	Parcel	Owner	Address
MARSHALL	FRANKLIN	5-8-5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8-7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-2.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-2.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.14	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.15	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.18	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.19	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-13.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-17.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-17.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-18	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-18	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-19	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-19	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-20	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-21	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-21	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-22	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-22	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-23	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-23	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-24	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-25	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101

MARSHALL	FRANKLIN	5-9-25	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-26	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-26	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-27	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-27	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-33	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-35	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-35.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-41	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-42	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-9-42	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-10-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-10-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-10	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-12.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-10-14	TH EXPLORATION II LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-3	TH EXPLORATION II LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-5	TH EXPLORATION II LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-6	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	FISH CREEK	*HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101

*Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

WW-6AC
(1/12)

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

Date of Notice Certification: 06/11/2020

API No. 47- 051 - _____
Operator's Well No. Old Crow N-21HU
Well Pad Name: Old Crow

Notice has been given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Eastings:	<u>520,282.83</u>
County:	<u>Marshall</u>		Northing:	<u>4,403,206.82</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Rines Ridge Road (CR 76)</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Donna Yoho</u>	
Watershed:	<u>Fish Creek (HUC 10)</u>			

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

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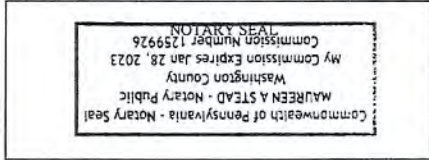
Required Attachments:

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

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 11 day of JUNE, 2020
[Signature] Notary Public
My Commission Expires 1/28/23

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 6/8/2020 Date Permit Application Filed: 6/11/2020

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: Donna Yoho
Address: 3682 Rines Ridge Road
Proctor, WV 26055
Name: _____
Address: _____

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

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

COAL OWNER OR LESSEE
Name: Consol Energy, Inc. Leatherwood, Inc. Attn: Casey Saunders
Address: 1000 CONSOL Energy DRive
Canonsburg, PA 15317
 COAL OPERATOR
Name: _____
Address: _____

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

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

*Please attach additional forms if necessary

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Old Crow N-21HU
Well Pad Name: Old Crow

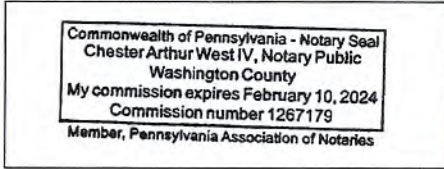
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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

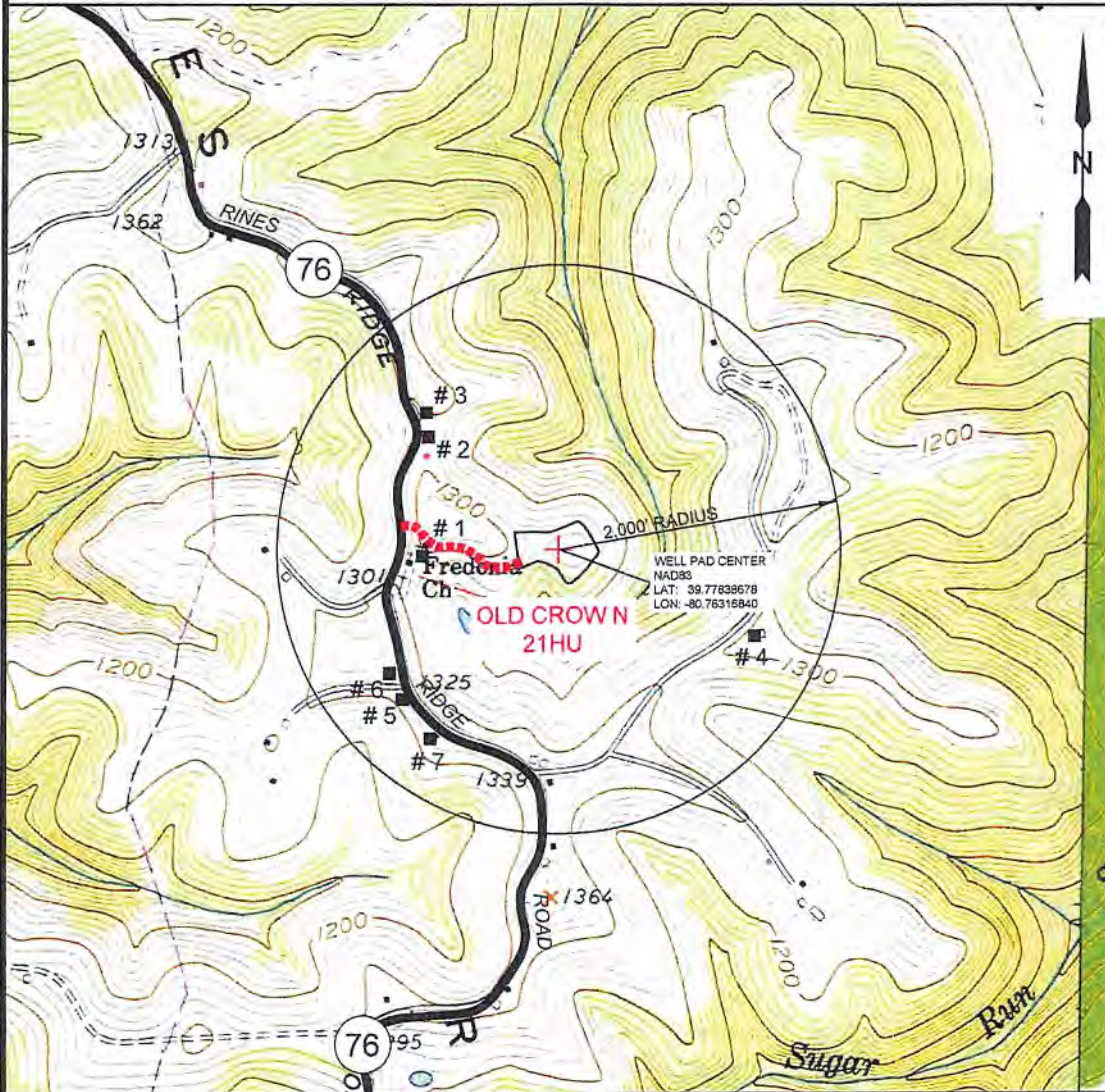


Subscribed and sworn before me this 8th day of June, 2020.

[Signature] Notary Public

My Commission Expires 2-10-2024

PROPOSED OLD CROW N - 21HU



NOTE: THERE APPEARS TO BE SEVEN (7) POSSIBLE WATER SOURCES WITHIN 2,000'.



 <p>SLS FROM THE GROUND UP</p> <p>12 Vanborn Drive P.O. Box 150 Glenville, WV 26351 304-462-5634 1412 Kanawha Boulevard, East Charleston, WV 25301 304-346-3952 254 East Beckley Bypass Beckley, WV 25801 304-255-5296 slsw.com</p>	TOPO SECTION: GLEN EASTON & POWHATAN POINT 7.5'		OPERATOR: PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317										
	COUNTY MARSHALL	DISTRICT FRANKLIN	<table border="1"> <tr> <th>DRAWN BY</th> <th>JOB NO.</th> <th>DATE</th> <th>SCALE</th> </tr> <tr> <td>K.G.M.</td> <td>8796</td> <td>03/04/20</td> <td>1" = 1000'</td> </tr> </table>			DRAWN BY	JOB NO.	DATE	SCALE	K.G.M.	8796	03/04/20	1" = 1000'
	DRAWN BY	JOB NO.	DATE	SCALE									
	K.G.M.	8796	03/04/20	1" = 1000'									

Exhibit WW-6A

Tug Hill Operating, LLC
380 Southpointe Blvd, Suite 200
Cannonsburg, PA 15137

Residences within Two-Thousand Feet (2,000')

Well: Old Crow N – 21HU
District: Franklin (Residence #'s 1-7)
State: WV

There are seven (7) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

Residence 1 TM 16 Pcl. 3.1 Dennis Jackson, Et Ux Phone: 304-843-1762 Physical Address: 4004 Rines Ridge Rd. Proctor, WV 26055 Tax Address: P.O. Box 109 Woodsfield, OH 43793	Residence 2 TM 16 Pcl. 3 Donna Vivian Yoho - TOD Phone: 304-845-5590 (Rev. Address) Physical Address: 3862 Rines Ridge Rd. Proctor, WV 26055 Tax Address: Same	Residence 3 TM 16 Pcl. 3.2 Jimmy Ostrander, Sr., Et Ux Phone: 304-845-5599, 304-845-5590 Physical Address: 3810 Rines Ridge Rd. Proctor, WV 26055 Tax Address: Same
Residence 4 TM 16 Pcl. 6 John Swierkos Phone: 304-810-4092 Physical Address: 110 Rahm Dr. Proctor, WV 26055 Tax Address: Same	Residence 5 TM 16 Pcl. 23.3 Greg & Christina Riddle Phone: 304-843-0173 Physical Address: 4205 Rines Ridge Rd. Proctor, WV 26055 Tax Address: Same	Residence 6 TM 16 Pcl. 23.1 Ray E. Minor, Et Ux Phone: 304-843-1713 Physical Address: 4193 Rines Ridge Rd. Proctor, WV 26055 Tax Address: Same
Residence 7 TM 16 Pcl. 24 Alan M. Beyser, Et Ux Phone: 304-810-0617 Physical Address: 4271 Rines Ridge Rd. Proctor, WV 26055 Tax Address: Same		

**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: 11/16/2018 **Date of Planned Entry:** 11/17/2018

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Donna Yoho

Address: 3682 Rines Ridge Road

Proctor, WV 26055

Name: _____

Address: _____

Name: _____

Address: _____

COAL OWNER OR LESSEE

Name: Consol Energy, Inc. Leatherwood, Inc. Attn: Casey Saunders

Address: 1000 CONSOL Energy Drive

Canonsburg, PA 15317

MINERAL OWNER(s)

Name: _____

Address: _____

*please attach additional forms if necessary

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.7784004; -80.7631353</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
District: <u>Franklin</u>	Watershed: <u>TrIBUTARY OF FISH CREEK (HUC 10)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Donna Yoho</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 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

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

Oil and Gas Privacy Notice:

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

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

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**
Date of Notice: 06/08/2020 **Date Permit Application Filed:** 06/11/2020

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: <u>Donna Yoho</u>	Name: _____
Address: <u>3862 Rines Ridge Road</u>	Address: _____
<u>Proctor, WV 26055</u>	_____

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>520,282.83</u>
County: <u>Marshall</u>		Northing: <u>4,403,206.82</u>
District: <u>Franklin</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Donna Yoho</u>
Watershed: <u>Tributary of 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 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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

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.



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

March 2, 2020

Byrd E. White, III
Secretary of Transportation

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

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

Subject: DOH Permit for the Old Crow Pad, Marshall County
Old Crow N-21HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2018-0130 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off Marshall County Route 76 SLS.

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

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

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



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Old Crow N-21HU

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

Area of Review

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (02/11/2020) 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

Permit well - Old Crow N-21HU

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102023	Tug Hill Operating	5681' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102040	Tug Hill Operating	6689' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102042	Tug Hill Operating	6203' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102043	Tug Hill Operating	6699' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102122	Tug Hill Operating	11592' TVD	None	None	No, Point Pleasant well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled uncompleted.
4705102123	Tug Hill Operating	11531' TVD	None	None	No, Point Pleasant well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled uncompleted.
4705102168	Tug Hill Operating	6706' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102185	Tug Hill Operating	6718' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102186	Tug Hill Operating	6726' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102187	Tug Hill Operating	6730' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Drilled uncompleted.
4705102189	Tug Hill Operating	6679' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
4705102191	Tug Hill Operating	11561' TVD	None	None	No, existing Point Pleasant permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Currently a permit.
4705102192	Tug Hill Operating	6684' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
4705102208	Tug Hill Operating	6701' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
4705102226	Tug Hill Operating	6689' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
4705102227	Tug Hill Operating	6694' TVD	None	None	No, Marcellus well. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
470510813	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be affected by fracturing in the planned Point Pleasant well.	State records are incomplete.



Page 3 of 5

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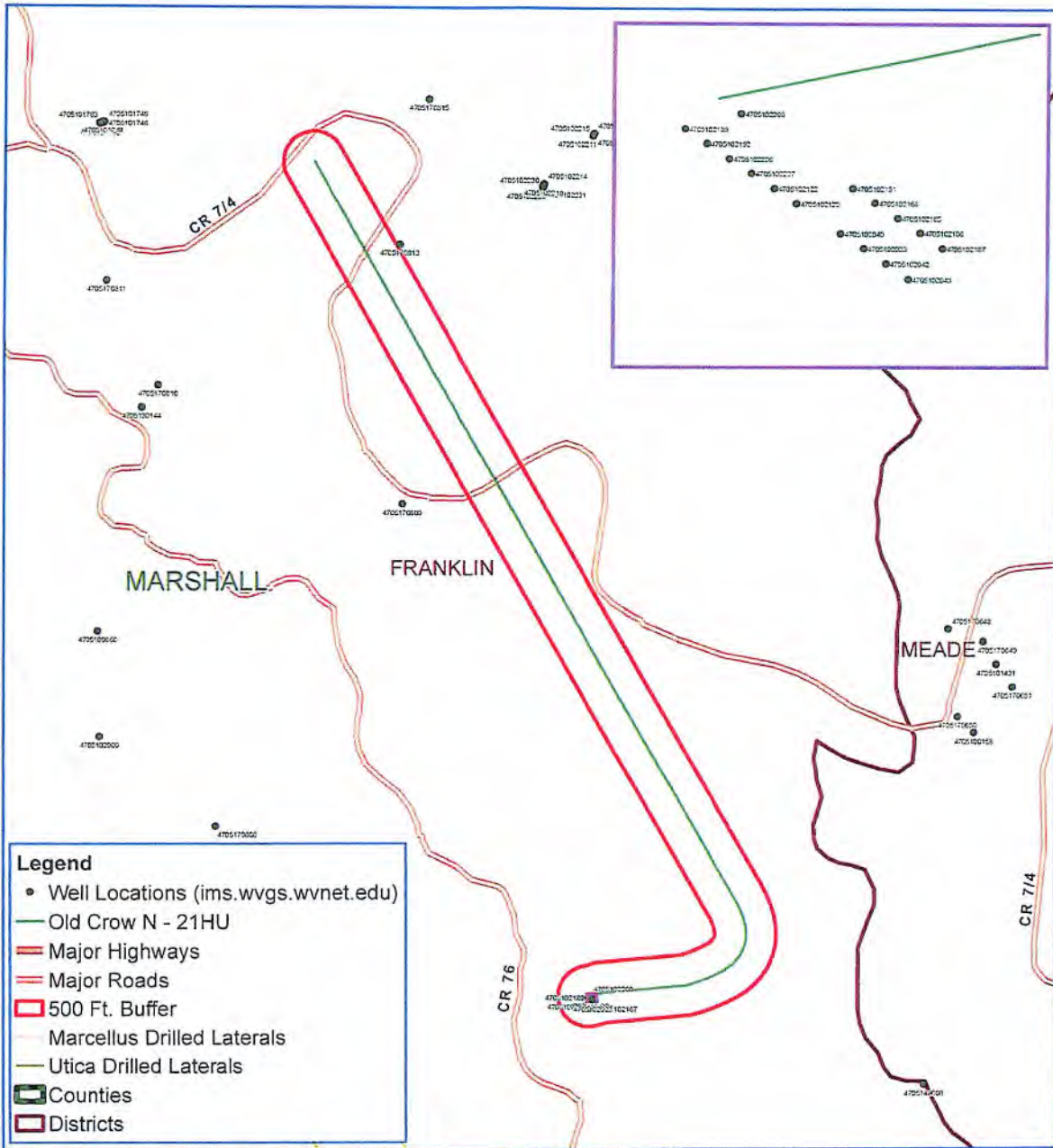
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- Legend**
- Well Locations (ims.wvgs.wvnet.edu)
 - Old Crow N - 21HU
 - Major Highways
 - Major Roads
 - ▭ 500 Ft. Buffer
 - Marcellus Drilled Laterals
 - Utica Drilled Laterals
 - ▭ Counties
 - ▭ Districts



Old Crow N - 21HU
 Franklin District
 Marshall County, WV

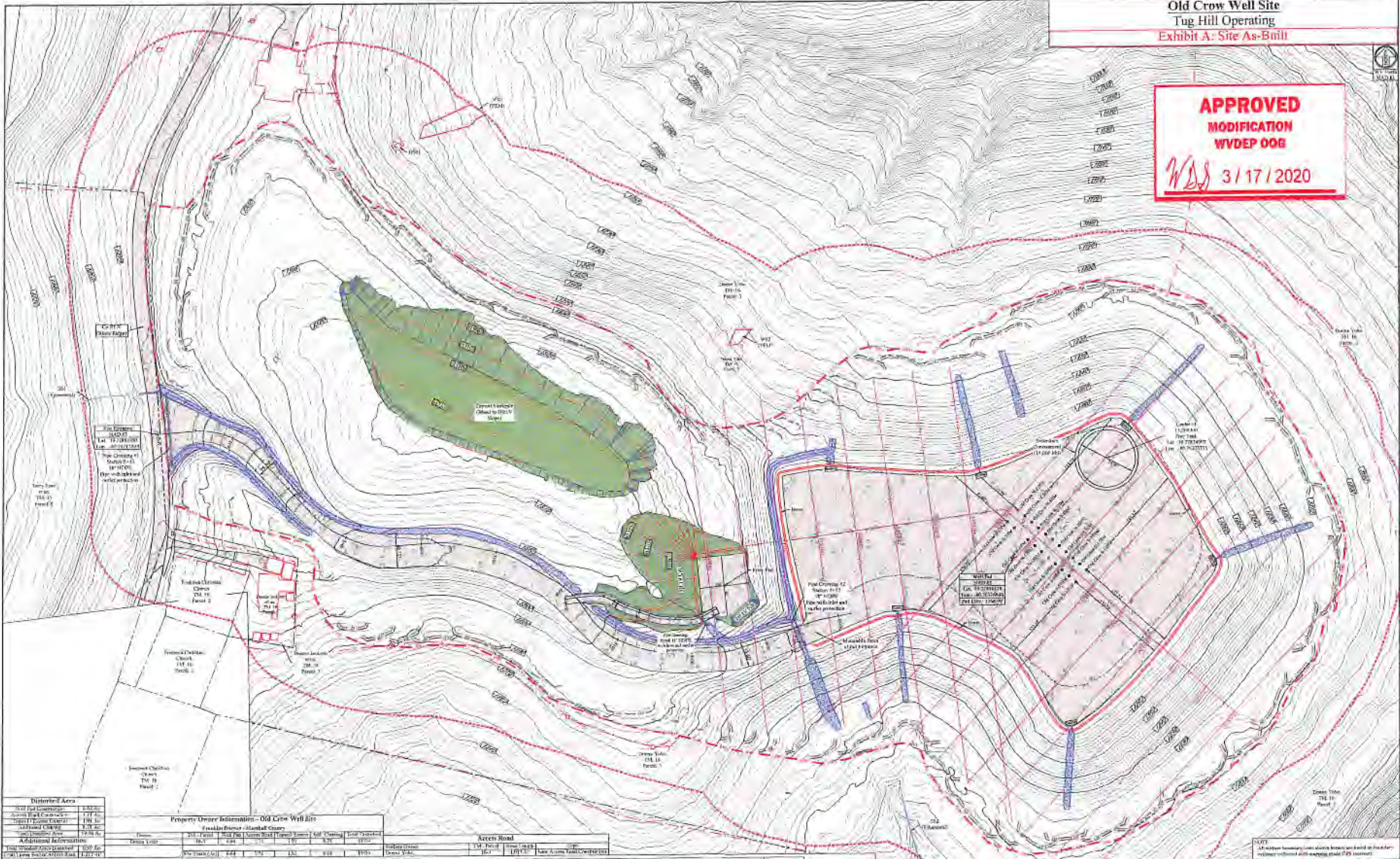


Notes:
 All locations are approximate and are for visualization purposes only.



Map Created February 11, 2020
 Map Current As Of March 4, 2020

APPROVED
MODIFICATION
WVDEP 006
WDS 3/17/2020



Disturbed Area	
Area of Disturbance	1,840.00
Area of Wetland	1,720.00
Area of Forest	1,000.00
Area of Pasture	1,000.00
Area of Agriculture	1,000.00
Area of Other	1,000.00
Total Disturbed Area	10,000.00

Property Owner Information - Old Crow Well Site

Parcel ID	Owner Name	Address	City	State	Zip
100-000-000
100-000-001
100-000-002
100-000-003
100-000-004
100-000-005
100-000-006
100-000-007
100-000-008
100-000-009
100-000-010

Access Road	
Surface Area	1,000.00
Gravel Area	1,000.00
Total Area	2,000.00



Legend

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- 1000' Contour

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Old Crow Well Site
Franklin District
Narath County, NY

Scale: As Shown
Designed By: ZS
File No:
Sheet 4 of 6