



west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Tuesday, August 31, 2021
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

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

Re: Permit Modification Approval for OLD CROW N-8HM
47-051-02240-00-00

Casing Plan Update

TUG HILL OPERATING, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before 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, written in a cursive style.

James A. Martin
Chief

Operator's Well Number: OLD CROW N-8HM
Farm Name: DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO
U.S. WELL NUMBER: 47-051-02240-00-00
Horizontal 6A New Drill
Date Modification Issued: 08/31/2021

Promoting a healthy environment.

09/03/2021

Check #1051797
\$5,000.00
8/20/2021
MODIFICATION

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

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

2) Operator's Well Number: Old Crow N-8HM
Well Pad Name: Old Crow

3) Farm Name/Surface Owner: Donna 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 x Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow x Deep _____
Horizontal x _____

6) Existing Pad: Yes or No Yes
Bay Stillup 8-23-21

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6602' - 6855', thickness of 53' and an anticipated approximate pressure of 3800 psi.

8) Proposed Total Vertical Depth: 6,755'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 18,294'

11) Proposed Horizontal Leg Length: 9,076.32'

12) Approximate Fresh Water Strata Depths: 70'; 919'

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater, or determine using pre-drill tests, testing while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 1,353'

15) Approximate Coal Seam Depths: Sewickley Coal - 821' and Pittsburgh Coal - 913'

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

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

(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	13 3/8"	NEW	J55	54.5#	1,010'	1,010' ✓	1052ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	1,010'	1,010' ✓	1052ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	3,070'	3,070' ✓	1012ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	18,294'	18,294' ✓	4686ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	8,651'		
Liners							

B.S. 8-23-21

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	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640 ✓	10,112 ✓	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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

Drill through the Marcellus tagging less than 100' from the top of the Onondaga to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

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

Well to completed with approximately 22,687,500 lb. proppant and 350,765 barrels of water. Max rate = 80bpm; max psi = 9,000#.

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

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

*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.

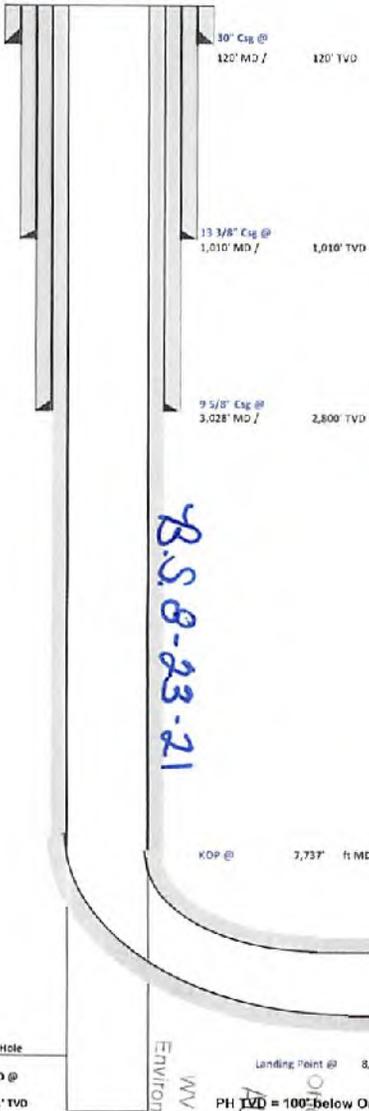


WELL NAME: Old Crow N-7HM
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,298' **GL Elev:** 1,265'
TU: 18,070'
TH Latitude: 39.7784951
TH Longitude: -80.76305068
BH Latitude: 39.809022
BH Longitude: -80.767737

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	919
Sewickley Coal	821
Pittsburgh Coal	913
Big Lime	2125
Weir	2479
Berea	2674
Gordon	3019
Rhinestreet	5992
Genesee/Darkest	6491
Tully	6517
Hamilton	6550
Marcellus	6598
Landing Depth	6637
Onondaga	6651
Pilot Hole Depth	6751

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	17.5	13 3/8	1,010'	1,010'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	3,028'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	18,070'	6,474'	20	CYIP110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,060	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	1,012	A	15	Air	1 Centralizer every other jt
Production	4,241	A	14.5	Air / SOBDM	1 every other joint in lateral; 1 per joint in curve; 1 every other ;t to stc



B.S. 8-23-21

Pilot Hole
 PH TD @ 6,751' TVD
 Landing Point @ 8,594 MD / 5,637 TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 18,070' H MD
 6,473' ft TVD

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4105102240



Tug Hill Operating, LLC Casing and Cement Program

Old Crow N-7HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,010'	CTS
Intermediate	9 5/8"	J55	12 1/4"	3,028'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	18,070'	CTS

Cement

Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19

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

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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Well: Old Crow N-08 HM (slot D)
 Site: Old Crow Pad
 Project: Marshall County, West Virginia.
 Design: rev6

SECTION DETAILS

Stac	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 3 1/2' build
3	1866.67	20.00	48.00	1853.21	77.07	85.59	3.00	48.00	72.75	Begin 3 1/2' build/turn
4	2830.57	48.60	56.30	2641.64	394.74	518.05	3.00	12.93	368.73	Begin 48.60° tangent
5	3311.22	48.60	56.30	6286.24	2676.91	3937.99	0.00	0.00	2478.63	Begin 8 1/2' build/turn
6	3446.26	50.00	42.15	6354.56	2742.56	4015.06	8.00	-87.21	2541.40	Begin 10 1/2' build/turn
7	3219.14	91.00	329.73	6641.00	3398.32	4019.66	10.00	-77.72	3196.13	Begin 91.00° lateral
8	18293.75	91.00	329.73	6482.00	11234.33	-554.21	0.00	0.0011247.99		PBHL/TD 18293.68 MD 6482.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL Old Crow N-08 HM r5	6482.00	11234.33	-554.21	14457390.70	1706443.37	39.609330	-80.764896
- plan hits target center							
LP Old Crow N-08 HM 50 E r5	6641.00	3398.23	4019.55	14449554.61	1711017.13	39.787776	-80.748678
- plan misses target center by 0.14usft at 9219.12usft MD (6641.00 TVD, 3398.30 N, 4019.67 E)							

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+32.5 @ 1297.50usft

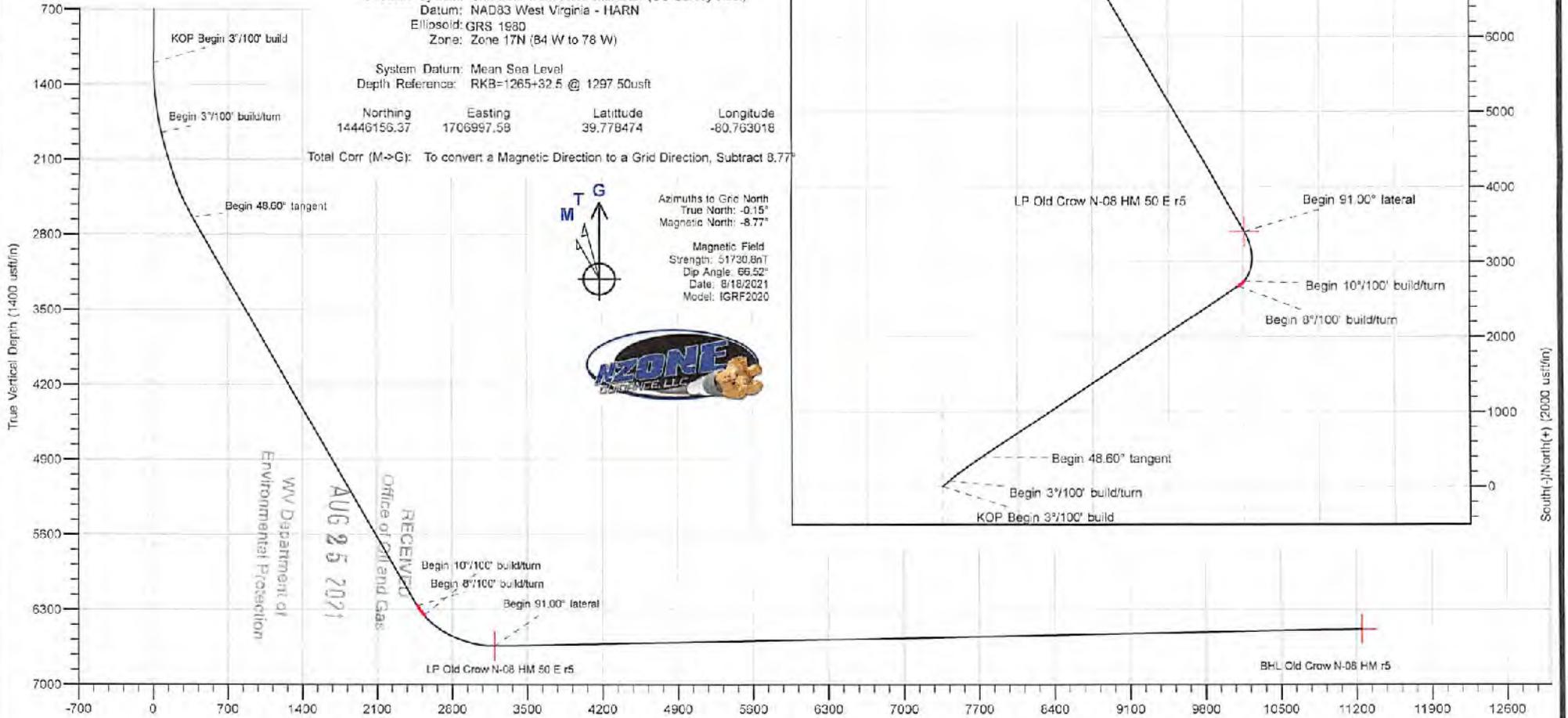
Northing	Easting	Latitude	Longitude
14446155.37	1706997.58	39.778474	-80.763018

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.77°



Azimuths to Grid North
 True North: -0.15°
 Magnetic North: -8.77°

Magnetic Field
 Strength: 51730.8nT
 Dip Angle: 66.52°
 Date: 8/18/2021
 Model: IGRF2020



Vertical Section at 357.18° (1400 usft/m)



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Old Crow N-08 HM (slot D)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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:	39.778538
From:	Lat/Long	Easting:	1,706,970.33 usft	Longitude:	-80.763115
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Old Crow N-08 HM (slot D)					
Well Position	+N/-S	0.00 usft	Northing:	14,446,156.38 usft	Latitude:	39.778474
	+E/-W	0.00 usft	Easting:	1,706,997.58 usft	Longitude:	-80.763019
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,265.00 usft	
Grid Convergence:						

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	8/18/2021	-8.62	66.52	51,730.80864967

Design	rev6			
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	357.18

Plan Survey Tool Program	Date					
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks		
1	0.00	18,293.17 rev6 (Original Hole)				

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Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Buidl Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,866.67	20.00	48.00	1,853.21	77.07	85.59	3.00	3.00	0.00	48.00	
2,830.57	48.60	56.30	2,641.64	394.74	518.05	3.00	2.97	0.86	12.93	
8,311.22	48.60	58.30	6,266.24	2,675.91	3,937.99	0.00	0.00	0.00	0.00	
8,446.26	50.00	42.15	6,354.56	2,742.56	4,015.06	8.00	1.04	-10.48	-87.21	
9,219.14	91.00	329.73	6,641.00	3,396.32	4,019.66	10.00	5.31	-9.37	-77.72	
18,293.75	91.00	329.73	6,482.00	11,234.33	-554.21	0.00	0.00	0.00	0.00	BHL Old Crow N-08 H



Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Old Crow N-08 HM (slot D)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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	14,446,156.38	1,706,997.58	39.778474	-80.763019	
100.00	0.00	0.00	100.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
200.00	0.00	0.00	200.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
300.00	0.00	0.00	300.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
400.00	0.00	0.00	400.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
500.00	0.00	0.00	500.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
600.00	0.00	0.00	600.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
700.00	0.00	0.00	700.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
800.00	0.00	0.00	800.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
900.00	0.00	0.00	900.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,446,156.38	1,706,997.58	39.778474	-80.763019	
KOP Begin 3°/100' build										
1,300.00	3.00	48.00	1,299.95	1.75	1.95	14,446,158.13	1,706,999.52	39.778478	-80.763012	
1,400.00	6.00	48.00	1,399.63	7.00	7.78	14,446,163.38	1,707,005.35	39.778493	-80.762991	
1,500.00	9.00	48.00	1,498.77	15.73	17.47	14,446,172.11	1,707,015.05	39.778517	-80.762956	
1,600.00	12.00	48.00	1,597.08	27.93	31.02	14,446,184.30	1,707,028.59	39.778550	-80.762908	
1,700.00	15.00	48.00	1,694.31	43.54	48.36	14,446,199.92	1,707,045.94	39.778593	-80.762846	
1,800.00	18.00	48.00	1,790.18	62.55	69.47	14,446,218.92	1,707,067.04	39.778645	-80.762771	
1,868.67	20.00	48.00	1,853.21	77.07	85.59	14,446,233.45	1,707,083.17	39.778685	-80.762713	
Begin 3°/100' build/turn										
1,900.00	20.98	48.63	1,884.43	84.83	94.31	14,446,241.20	1,707,091.89	39.778706	-80.762682	
2,000.00	23.91	50.21	1,976.85	109.64	123.32	14,446,266.01	1,707,120.90	39.778774	-80.762579	
2,100.00	26.87	51.46	2,067.18	136.69	156.57	14,446,293.07	1,707,154.15	39.778848	-80.762460	
2,200.00	29.83	52.48	2,155.18	165.92	193.98	14,446,322.30	1,707,191.56	39.778928	-80.762327	
2,300.00	32.79	53.33	2,240.61	197.25	235.44	14,446,353.62	1,707,233.02	39.779014	-80.762179	
2,400.00	35.77	54.06	2,323.23	230.58	280.83	14,446,386.96	1,707,278.41	39.779105	-80.762017	
2,500.00	38.74	54.69	2,402.82	265.83	330.04	14,446,422.20	1,707,327.61	39.779201	-80.761841	
2,600.00	41.72	55.24	2,479.15	302.90	382.92	14,446,459.27	1,707,380.50	39.779303	-80.761653	
2,700.00	44.70	55.73	2,552.03	341.69	439.33	14,446,498.06	1,707,436.91	39.779409	-80.761452	
2,800.00	47.69	55.17	2,621.24	382.08	499.12	14,446,538.46	1,707,496.70	39.779519	-80.761238	
2,830.57	48.60	56.30	2,641.64	394.74	518.05	14,446,551.11	1,707,515.63	39.779554	-80.761171	
2,830.60	48.60	56.30	2,641.66	394.75	518.07	14,446,551.12	1,707,515.64	39.779554	-80.761171	
Begin 48.60° tangent										
2,900.00	48.60	56.30	2,687.56	423.64	561.37	14,446,580.01	1,707,558.95	39.779633	-80.761017	
3,000.00	48.60	56.30	2,753.69	465.26	623.78	14,446,621.64	1,707,621.35	39.779747	-80.760794	
3,100.00	48.60	56.30	2,819.83	508.88	686.18	14,446,663.26	1,707,683.75	39.779861	-80.760572	
3,200.00	48.60	56.30	2,885.96	548.50	748.58	14,446,704.88	1,707,746.15	39.779974	-80.760349	
3,300.00	48.60	56.30	2,952.10	590.13	810.98	14,446,746.50	1,707,808.55	39.780088	-80.760127	
3,400.00	48.60	56.30	3,018.23	631.75	873.38	14,446,788.12	1,707,870.95	39.780202	-80.759904	
3,500.00	48.60	56.30	3,084.37	673.37	935.78	14,446,829.75	1,707,933.35	39.780316	-80.759682	
3,600.00	48.60	56.30	3,150.50	714.99	998.18	14,446,871.37	1,707,995.75	39.780430	-80.759459	
3,700.00	48.60	56.30	3,216.63	756.62	1,060.58	14,446,912.99	1,708,058.16	39.780544	-80.759237	
3,800.00	48.60	56.30	3,282.77	798.24	1,122.98	14,446,954.61	1,708,120.56	39.780658	-80.759014	
3,900.00	48.60	56.30	3,348.90	839.86	1,185.38	14,446,996.24	1,708,182.96	39.780771	-80.758791	
4,000.00	48.60	56.30	3,415.04	881.48	1,247.78	14,447,037.86	1,708,245.36	39.780885	-80.758569	
4,100.00	48.60	56.30	3,481.17	923.11	1,310.18	14,447,079.48	1,708,307.76	39.780999	-80.758346	
4,200.00	48.60	56.30	3,547.31	964.73	1,372.58	14,447,121.10	1,708,370.16	39.781113	-80.758124	
4,300.00	48.60	56.30	3,613.44	1,006.35	1,434.98	14,447,162.73	1,708,432.56	39.781227	-80.757901	
4,400.00	48.60	56.30	3,679.58	1,047.97	1,497.38	14,447,204.35	1,708,494.96	39.781341	-80.757679	
4,500.00	48.60	56.30	3,745.71	1,089.59	1,559.78	14,447,245.97	1,708,557.36	39.781454	-80.757456	
4,600.00	48.60	56.30	3,811.85	1,131.22	1,622.18	14,447,287.59	1,708,619.76	39.781568	-80.757234	
4,700.00	48.60	56.30	3,877.98	1,172.84	1,684.58	14,447,329.22	1,708,682.16	39.781682	-80.757011	

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Old Crow N-08 HM (slot D)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4 800.00	48.60	56.30	3,944.12	1,214.46	1,746.96	14,447,370.84	1,708,744.56	39.781796	-80.756789	
4 900.00	48.60	56.30	4,010.25	1,256.06	1,809.38	14,447,412.46	1,708,806.96	39.781910	-80.756566	
5 000.00	48.60	56.30	4,076.38	1,297.71	1,871.78	14,447,454.08	1,708,869.36	39.782024	-80.756344	
5 100.00	48.60	56.30	4,142.52	1,339.33	1,934.18	14,447,495.70	1,708,931.76	39.782138	-80.756121	
5 200.00	48.60	56.30	4,208.65	1,380.95	1,996.58	14,447,537.33	1,708,994.16	39.782251	-80.755899	
5 300.00	48.60	56.30	4,274.79	1,422.57	2,058.96	14,447,578.95	1,709,056.56	39.782365	-80.755676	
5 400.00	48.60	56.30	4,340.92	1,464.20	2,121.36	14,447,620.57	1,709,118.96	39.782479	-80.755454	
5 500.00	48.60	56.30	4,407.06	1,505.82	2,183.78	14,447,662.19	1,709,181.36	39.782593	-80.755231	
5 600.00	48.60	56.30	4,473.19	1,547.44	2,246.18	14,447,703.82	1,709,243.76	39.782707	-80.755009	
5 700.00	48.60	56.30	4,539.33	1,589.06	2,308.58	14,447,745.44	1,709,306.16	39.782821	-80.754786	
5 800.00	48.60	56.30	4,605.46	1,630.69	2,370.96	14,447,787.06	1,709,368.56	39.782934	-80.754564	
5 900.00	48.60	56.30	4,671.60	1,672.31	2,433.36	14,447,828.68	1,709,430.96	39.783048	-80.754341	
6 000.00	48.60	56.30	4,737.73	1,713.93	2,495.78	14,447,870.31	1,709,493.36	39.783162	-80.754119	
6 100.00	48.60	56.30	4,803.87	1,755.55	2,558.18	14,447,911.93	1,709,555.76	39.783276	-80.753896	
6 200.00	48.60	56.30	4,870.00	1,797.17	2,620.58	14,447,953.55	1,709,618.16	39.783390	-80.753674	
6 300.00	48.60	56.30	4,936.13	1,838.80	2,682.96	14,447,995.17	1,709,680.56	39.783504	-80.753451	
6 400.00	48.60	56.30	5,002.27	1,880.42	2,745.39	14,448,036.79	1,709,742.96	39.783617	-80.753229	
6 500.00	48.60	56.30	5,068.40	1,922.04	2,807.79	14,448,078.42	1,709,805.36	39.783731	-80.753006	
6 600.00	48.60	56.30	5,134.54	1,963.66	2,870.19	14,448,120.04	1,709,867.76	39.783845	-80.752784	
6 700.00	48.60	56.30	5,200.67	2,005.29	2,932.59	14,448,161.66	1,709,930.16	39.783959	-80.752561	
6 800.00	48.60	56.30	5,266.81	2,046.91	2,994.99	14,448,203.28	1,709,992.56	39.784073	-80.752339	
6 900.00	48.60	56.30	5,332.94	2,088.53	3,057.39	14,448,244.91	1,710,054.96	39.784187	-80.752116	
7 000.00	48.60	56.30	5,399.08	2,130.15	3,119.79	14,448,286.53	1,710,117.36	39.784300	-80.751893	
7 100.00	48.60	56.30	5,465.21	2,171.78	3,182.19	14,448,328.15	1,710,179.76	39.784414	-80.751671	
7 200.00	48.60	56.30	5,531.35	2,213.40	3,244.59	14,448,369.77	1,710,242.17	39.784528	-80.751448	
7 300.00	48.60	56.30	5,597.48	2,255.02	3,306.99	14,448,411.40	1,710,304.57	39.784642	-80.751226	
7 400.00	48.60	56.30	5,663.61	2,296.64	3,369.39	14,448,453.02	1,710,366.97	39.784756	-80.751003	
7 500.00	48.60	56.30	5,729.75	2,338.27	3,431.79	14,448,494.64	1,710,429.37	39.784870	-80.750781	
7 600.00	48.60	56.30	5,795.88	2,379.89	3,494.19	14,448,536.26	1,710,491.77	39.784983	-80.750558	
7 700.00	48.60	56.30	5,862.02	2,421.51	3,556.59	14,448,577.89	1,710,554.17	39.785097	-80.750336	
7 800.00	48.60	56.30	5,928.15	2,463.13	3,618.99	14,448,619.51	1,710,616.57	39.785211	-80.750113	
7 900.00	48.60	56.30	5,994.29	2,504.75	3,681.39	14,448,661.13	1,710,678.97	39.785325	-80.749891	
8 000.00	48.60	56.30	6,060.42	2,546.38	3,743.79	14,448,702.75	1,710,741.37	39.785439	-80.749668	
8 100.00	48.60	56.30	6,126.56	2,588.00	3,806.19	14,448,744.37	1,710,803.77	39.785553	-80.749446	
8 200.00	48.60	56.30	6,192.69	2,629.62	3,868.59	14,448,785.00	1,710,866.17	39.785668	-80.749223	
8 300.00	48.60	56.30	6,258.83	2,671.24	3,930.99	14,448,827.62	1,710,928.57	39.785780	-80.749001	
8 311.15	48.60	56.30	6,266.20	2,675.86	3,937.95	14,448,832.26	1,710,935.53	39.785793	-80.748976	
Begin 8°/100' build/turn										
8 311.22	48.60	56.30	6,266.24	2,675.91	3,937.99	14,448,832.29	1,710,935.57	39.785793	-80.748976	
8 350.00	48.82	52.18	6,291.84	2,692.94	3,961.62	14,448,849.31	1,710,959.20	39.785839	-80.748891	
8 400.00	49.33	46.92	6,324.61	2,717.44	3,990.35	14,448,873.81	1,710,987.93	39.785907	-80.748799	
8 446.19	50.00	42.16	6,354.52	2,742.52	4,015.03	14,448,898.90	1,711,012.60	39.785975	-80.748701	
Begin 10°/100' build/turn										
8 446.26	50.00	42.15	6,354.56	2,742.56	4,015.06	14,448,898.94	1,711,012.64	39.785975	-80.748701	
8 450.00	50.08	41.67	6,356.97	2,744.70	4,016.98	14,448,901.07	1,711,014.56	39.785981	-80.748694	
8 500.00	51.34	35.42	6,388.65	2,774.95	4,041.05	14,448,931.32	1,711,038.63	39.786064	-80.748608	
8 550.00	52.92	29.41	6,419.36	2,808.25	4,062.18	14,448,964.63	1,711,059.75	39.786155	-80.748532	
8 600.00	54.79	23.66	6,448.86	2,844.36	4,080.18	14,449,000.73	1,711,077.76	39.786254	-80.748466	
8 650.00	56.92	18.20	6,478.94	2,882.99	4,094.93	14,449,039.37	1,711,092.51	39.786360	-80.748415	
8 700.00	59.27	13.00	6,503.38	2,923.86	4,106.31	14,449,080.23	1,711,103.89	39.786473	-80.748374	
8 750.00	61.83	8.05	6,527.97	2,966.64	4,114.24	14,449,123.02	1,711,111.82	39.786590	-80.748345	
8 800.00	64.55	3.38	6,550.53	3,011.02	4,118.66	14,449,167.40	1,711,116.23	39.786712	-80.748329	
8 850.00	67.41	358.87	6,570.89	3,058.67	4,119.52	14,449,213.04	1,711,117.10	39.786837	-80.748326	
8 900.00	70.39	354.57	6,588.90	3,103.22	4,118.84	14,449,259.59	1,711,114.42	39.786965	-80.748335	

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Planning Report - Geographic

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Old Crow N-08 HM (slot D)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Wall:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wallbore:	Original Hole		
Design:	rev6		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
8,950.00	73.48	350.43	8,804.41	3,150.33	4,110.62	14,449,306.70	1,711,106.20	39.787094	-80.748356	
9,000.00	76.64	346.42	8,617.30	3,197.63	4,100.92	14,449,354.01	1,711,098.49	39.787224	-80.748390	
9,050.00	79.86	342.51	8,627.49	3,244.78	4,087.80	14,449,401.15	1,711,085.38	39.787354	-80.748437	
9,100.00	83.13	338.68	8,634.89	3,291.40	4,071.37	14,449,447.78	1,711,068.95	39.787482	-80.748495	
9,150.00	86.42	334.91	8,639.45	3,337.15	4,051.75	14,449,493.52	1,711,049.33	39.787608	-80.748564	
9,200.00	89.74	331.16	8,641.12	3,381.67	4,029.10	14,449,538.05	1,711,026.68	39.787730	-80.748644	
9,219.07	91.00	329.73	8,641.00	3,398.26	4,019.70	14,449,554.63	1,711,017.27	39.787776	-80.748677	
Begin 91.00° lateral										
9,219.14	91.00	329.73	8,641.00	3,398.32	4,019.66	14,449,554.69	1,711,017.24	39.787776	-80.748678	
9,300.00	91.00	329.73	8,639.58	3,468.14	3,978.90	14,449,624.52	1,710,976.48	39.787968	-80.748822	
9,400.00	91.00	329.73	8,637.83	3,554.49	3,928.50	14,449,710.87	1,710,926.08	39.788206	-80.749001	
9,500.00	91.00	329.73	8,636.08	3,640.85	3,878.10	14,449,797.22	1,710,875.67	39.788443	-80.749179	
9,600.00	91.00	329.73	8,634.33	3,727.20	3,827.69	14,449,883.57	1,710,825.27	39.788681	-80.749358	
9,700.00	91.00	329.73	8,632.57	3,813.55	3,777.29	14,449,969.92	1,710,774.87	39.788918	-80.749536	
9,800.00	91.00	329.73	8,630.82	3,899.90	3,726.89	14,450,056.27	1,710,724.47	39.789156	-80.749715	
9,900.00	91.00	329.73	8,629.07	3,986.25	3,676.49	14,450,142.62	1,710,674.06	39.789393	-80.749893	
10,000.00	91.00	329.73	8,627.32	4,072.60	3,626.08	14,450,228.96	1,710,623.66	39.789631	-80.750072	
10,100.00	91.00	329.73	8,625.57	4,158.95	3,575.68	14,450,315.33	1,710,573.26	39.789869	-80.750251	
10,200.00	91.00	329.73	8,623.81	4,245.30	3,525.28	14,450,401.68	1,710,522.85	39.790106	-80.750429	
10,300.00	91.00	329.73	8,622.06	4,331.65	3,474.87	14,450,488.03	1,710,472.45	39.790344	-80.750608	
10,400.00	91.00	329.73	8,620.31	4,418.00	3,424.47	14,450,574.38	1,710,422.05	39.790581	-80.750786	
10,500.00	91.00	329.73	8,618.56	4,504.35	3,374.07	14,450,660.73	1,710,371.65	39.790819	-80.750965	
10,600.00	91.00	329.73	8,616.80	4,590.71	3,323.67	14,450,747.08	1,710,321.24	39.791056	-80.751143	
10,700.00	91.00	329.73	8,615.05	4,677.06	3,273.26	14,450,833.43	1,710,270.84	39.791294	-80.751322	
10,800.00	91.00	329.73	8,613.30	4,763.41	3,222.86	14,450,919.78	1,710,220.44	39.791531	-80.751501	
10,900.00	91.00	329.73	8,611.55	4,849.76	3,172.46	14,451,006.13	1,710,170.03	39.791769	-80.751679	
11,000.00	91.00	329.73	8,609.80	4,936.11	3,122.05	14,451,092.48	1,710,119.63	39.792006	-80.751858	
11,100.00	91.00	329.73	8,608.04	5,022.46	3,071.65	14,451,178.84	1,710,069.23	39.792244	-80.752036	
11,200.00	91.00	329.73	8,606.29	5,108.81	3,021.25	14,451,265.19	1,710,018.83	39.792481	-80.752215	
11,300.00	91.00	329.73	8,604.54	5,195.16	2,970.84	14,451,351.54	1,709,968.42	39.792719	-80.752393	
11,400.00	91.00	329.73	8,602.79	5,281.51	2,920.44	14,451,437.89	1,709,918.02	39.792956	-80.752572	
11,500.00	91.00	329.73	8,601.04	5,367.86	2,870.04	14,451,524.24	1,709,867.62	39.793194	-80.752751	
11,600.00	91.00	329.73	8,599.28	5,454.21	2,819.64	14,451,610.59	1,709,817.21	39.793431	-80.752929	
11,700.00	91.00	329.73	8,597.53	5,540.57	2,769.23	14,451,696.94	1,709,766.81	39.793669	-80.753108	
11,800.00	91.00	329.73	8,595.78	5,626.92	2,718.83	14,451,783.29	1,709,716.41	39.793906	-80.753286	
11,900.00	91.00	329.73	8,594.03	5,713.27	2,668.43	14,451,869.64	1,709,666.00	39.794144	-80.753465	
12,000.00	91.00	329.73	8,592.27	5,799.62	2,618.02	14,451,955.99	1,709,615.60	39.794382	-80.753644	
12,100.00	91.00	329.73	8,590.52	5,885.97	2,567.62	14,452,042.34	1,709,565.20	39.794619	-80.753822	
12,200.00	91.00	329.73	8,588.77	5,972.32	2,517.22	14,452,128.70	1,709,514.80	39.794857	-80.754001	
12,300.00	91.00	329.73	8,587.02	6,058.67	2,466.82	14,452,215.05	1,709,464.39	39.795094	-80.754179	
12,400.00	91.00	329.73	8,585.27	6,145.02	2,416.41	14,452,301.40	1,709,413.99	39.795332	-80.754358	
12,500.00	91.00	329.73	8,583.51	6,231.37	2,366.01	14,452,387.75	1,709,363.59	39.795569	-80.754537	
12,600.00	91.00	329.73	8,581.76	6,317.72	2,315.61	14,452,474.10	1,709,313.18	39.795807	-80.754715	
12,700.00	91.00	329.73	8,580.01	6,404.07	2,265.20	14,452,560.45	1,709,262.78	39.796044	-80.754894	
12,800.00	91.00	329.73	8,578.26	6,490.42	2,214.80	14,452,646.80	1,709,212.38	39.796282	-80.755072	
12,900.00	91.00	329.73	8,576.51	6,576.78	2,164.40	14,452,733.15	1,709,161.98	39.796519	-80.755251	
13,000.00	91.00	329.73	8,574.75	6,663.13	2,113.99	14,452,819.50	1,709,111.57	39.796757	-80.755430	
13,100.00	91.00	329.73	8,573.00	6,749.48	2,063.59	14,452,905.85	1,709,061.17	39.796994	-80.755608	
13,200.00	91.00	329.73	8,571.25	6,835.83	2,013.19	14,452,992.20	1,709,010.77	39.797232	-80.755787	
13,300.00	91.00	329.73	8,569.50	6,922.18	1,962.79	14,453,078.55	1,708,960.36	39.797469	-80.755965	
13,400.00	91.00	329.73	8,567.75	7,008.53	1,912.38	14,453,164.91	1,708,909.96	39.797707	-80.756144	
13,500.00	91.00	329.73	8,566.00	7,094.88	1,861.98	14,453,251.26	1,708,859.56	39.797944	-80.756323	
13,600.00	91.00	329.73	8,564.24	7,181.23	1,811.58	14,453,337.61	1,708,809.16	39.798182	-80.756501	
13,700.00	91.00	329.73	8,562.49	7,267.58	1,761.17	14,453,423.96	1,708,758.75	39.798419	-80.756680	

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Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
13,800.00	91.00	329.73	6,560.74	7,353.93	1,710.77	14,453,510.31	1,708,708.35	39.798657	-80.756658	
13,900.00	91.00	329.73	6,558.98	7,440.28	1,660.37	14,453,596.66	1,708,657.95	39.798894	-80.757037	
14,000.00	91.00	329.73	6,557.23	7,526.84	1,609.97	14,453,683.01	1,708,607.54	39.799132	-80.757216	
14,100.00	91.00	329.73	6,555.48	7,612.99	1,559.56	14,453,769.36	1,708,557.14	39.799369	-80.757394	
14,200.00	91.00	329.73	6,553.73	7,699.34	1,509.16	14,453,855.71	1,708,506.74	39.799607	-80.757573	
14,300.00	91.00	329.73	6,551.98	7,785.69	1,458.76	14,453,942.06	1,708,456.33	39.799844	-80.757752	
14,400.00	91.00	329.73	6,550.22	7,872.04	1,408.35	14,454,028.41	1,708,405.93	39.800082	-80.757930	
14,500.00	91.00	329.73	6,548.47	7,958.39	1,357.95	14,454,114.77	1,708,355.53	39.800320	-80.758109	
14,600.00	91.00	329.73	6,546.72	8,044.74	1,307.55	14,454,201.12	1,708,305.13	39.800557	-80.758287	
14,700.00	91.00	329.73	6,544.97	8,131.09	1,257.15	14,454,287.47	1,708,254.72	39.800795	-80.758466	
14,800.00	91.00	329.73	6,543.22	8,217.44	1,206.74	14,454,373.82	1,708,204.32	39.801032	-80.758645	
14,900.00	91.00	329.73	6,541.46	8,303.79	1,156.34	14,454,460.17	1,708,153.92	39.801270	-80.758823	
15,000.00	91.00	329.73	6,539.71	8,390.14	1,105.94	14,454,546.52	1,708,103.51	39.801507	-80.759002	
15,100.00	91.00	329.73	6,537.96	8,476.50	1,055.53	14,454,632.87	1,708,053.11	39.801745	-80.759181	
15,200.00	91.00	329.73	6,536.21	8,562.85	1,005.13	14,454,719.22	1,708,002.71	39.801982	-80.759359	
15,300.00	91.00	329.73	6,534.45	8,649.20	954.73	14,454,805.57	1,707,952.31	39.802220	-80.759538	
15,400.00	91.00	329.73	6,532.70	8,735.55	904.32	14,454,891.92	1,707,901.90	39.802457	-80.759716	
15,500.00	91.00	329.73	6,530.95	8,821.90	853.92	14,454,978.27	1,707,851.50	39.802695	-80.759895	
15,600.00	91.00	329.73	6,529.20	8,908.25	803.52	14,455,064.63	1,707,801.10	39.802932	-80.760074	
15,700.00	91.00	329.73	6,527.45	8,994.60	753.12	14,455,150.98	1,707,750.69	39.803170	-80.760252	
15,800.00	91.00	329.73	6,525.69	9,080.95	702.71	14,455,237.33	1,707,700.29	39.803407	-80.760431	
15,900.00	91.00	329.73	6,523.94	9,167.30	652.31	14,455,323.68	1,707,649.89	39.803645	-80.760610	
16,000.00	91.00	329.73	6,522.19	9,253.65	601.91	14,455,410.03	1,707,599.49	39.803882	-80.760788	
16,100.00	91.00	329.73	6,520.44	9,340.00	551.50	14,455,496.38	1,707,549.08	39.804120	-80.760967	
16,200.00	91.00	329.73	6,518.69	9,426.36	501.10	14,455,582.73	1,707,498.68	39.804357	-80.761145	
16,300.00	91.00	329.73	6,516.93	9,512.71	450.70	14,455,669.08	1,707,448.28	39.804595	-80.761324	
16,400.00	91.00	329.73	6,515.18	9,599.06	400.30	14,455,755.43	1,707,397.87	39.804832	-80.761503	
16,500.00	91.00	329.73	6,513.43	9,685.41	349.89	14,455,841.78	1,707,347.47	39.805070	-80.761682	
16,600.00	91.00	329.73	6,511.68	9,771.76	299.49	14,455,928.13	1,707,297.07	39.805307	-80.761860	
16,700.00	91.00	329.73	6,509.92	9,858.11	249.09	14,456,014.49	1,707,246.66	39.805545	-80.762039	
16,800.00	91.00	329.73	6,508.17	9,944.46	198.68	14,456,100.84	1,707,196.26	39.805782	-80.762217	
16,900.00	91.00	329.73	6,506.42	10,030.81	148.28	14,456,187.19	1,707,145.86	39.806020	-80.762396	
17,000.00	91.00	329.73	6,504.67	10,117.16	97.88	14,456,273.54	1,707,095.46	39.806257	-80.762575	
17,100.00	91.00	329.73	6,502.92	10,203.51	47.48	14,456,359.89	1,707,045.05	39.806495	-80.762753	
17,200.00	91.00	329.73	6,501.16	10,289.86	-2.93	14,456,446.24	1,706,994.65	39.806732	-80.762932	
17,300.00	91.00	329.73	6,499.41	10,376.21	-53.33	14,456,532.59	1,706,944.25	39.806970	-80.763111	
17,400.00	91.00	329.73	6,497.66	10,462.57	-103.73	14,456,618.94	1,706,893.84	39.807207	-80.763289	
17,500.00	91.00	329.73	6,495.91	10,548.92	-154.14	14,456,705.29	1,706,843.44	39.807445	-80.763468	
17,600.00	91.00	329.73	6,494.16	10,635.27	-204.54	14,456,791.64	1,706,793.04	39.807682	-80.763647	
17,700.00	91.00	329.73	6,492.40	10,721.62	-254.94	14,456,877.99	1,706,742.64	39.807920	-80.763825	
17,800.00	91.00	329.73	6,490.65	10,807.97	-305.35	14,456,964.34	1,706,692.23	39.808157	-80.764004	
17,900.00	91.00	329.73	6,488.90	10,894.32	-355.75	14,457,050.70	1,706,641.83	39.808395	-80.764183	
18,000.00	91.00	329.73	6,487.15	10,980.67	-406.15	14,457,137.05	1,706,591.43	39.808632	-80.764361	
18,100.00	91.00	329.73	6,485.39	11,067.02	-456.55	14,457,223.40	1,706,541.02	39.808870	-80.764540	
18,200.00	91.00	329.73	6,483.64	11,153.37	-506.96	14,457,309.75	1,706,490.62	39.809107	-80.764719	
18,293.68	91.00	329.73	6,482.00	11,234.27	-554.18	14,457,390.65	1,706,443.40	39.809330	-80.764886	
PBHL/TD 18293.68 MD 6482.00 TVD										
18,293.75	91.00	329.73	6,482.00	11,234.33	-554.21	14,457,390.70	1,706,443.37	39.809330	-80.764886	

AUG 25 2021

WV Department of Environmental Protection

Database:	DB_Dec2220_v16	Local Co-ordinate Reference:	Well Old Crow N-08 HM (slot D)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+32.5 @ 1297.50usft
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+32.5 @ 1297.50usft
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-08 HM (slot D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
BHL Old Crow N-08 HM - plan hits target center - Point	0.00	0.00	6,482.00	11,234.33	-554.21	14,457,390.70	1,706,443.37	39.809330	-80.764886
LP Old Crow N-08 HM 5 - plan misses target center by 0.14usft at 9219.12usft MD (6641.00 TVD, 3398.30 N, 4019.87 E) - Point	0.00	0.00	6,641.00	3,398.23	4,019.55	14,449,554.61	1,711,017.13	39.787776	-80.748678

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
18,293.75	6,482.00	20" Casing	20	24

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,200.00	1,200.00	0.00	0.00	KOP Begin 3"/100' build
1,866.67	1,853.21	77.07	85.59	Begin 3"/100' build/turn
2,830.60	2,841.66	394.75	518.07	Begin 48.60° tangent
8,311.15	6,266.20	2,675.88	3,937.95	Begin 8"/100' build/turn
8,446.19	6,354.52	2,742.52	4,015.03	Begin 10"/100' build/turn
9,219.07	6,641.00	3,398.26	4,019.70	Begin 91.00° lateral
18,293.66	6,482.00	11,234.27	-554.18	PBHL/TD 18293.66 MD 6482.00 TVD

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: 8/23/2021 **Date Permit Application Filed:** 8/23/2021

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: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

RECEIVED
OFFICE OF OIL AND GAS
AUG 25 2021

*Please attach additional forms if necessary. WV Department of Environmental Protection

09/03/2021

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

RECEIVED
Office of Oil and Gas
AUG 25 2021
WV Department of
Environmental Protection

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.**

09/03/2021

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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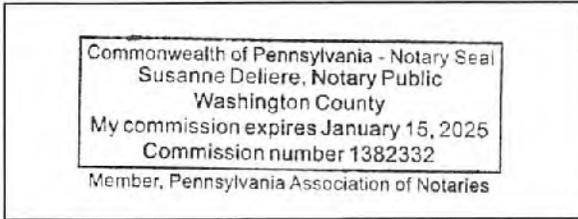
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 23rd day of August 2021.
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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Environmental Protection

7016 0040 0000 4434 8429

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Total	\$



Donna Yoho
 3682 Rines Ridge Road
 Proctor, WV 26055

PS Form 3800, June 2019

Instructions

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Total

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Street

City

PS Form 3800, October 2019 Edition

Consol Energy, Inc.
Leatherwood, Inc.
Attn: Casey Saunders
10000 Consol Energy Drive
Canonsburg, PA 15317



7018 0040 0000 4414 8412

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Environmental Protection

09/03/2021

**OLD CROW N LEASE
WELL 8HM
TUG HILL OPERATING**

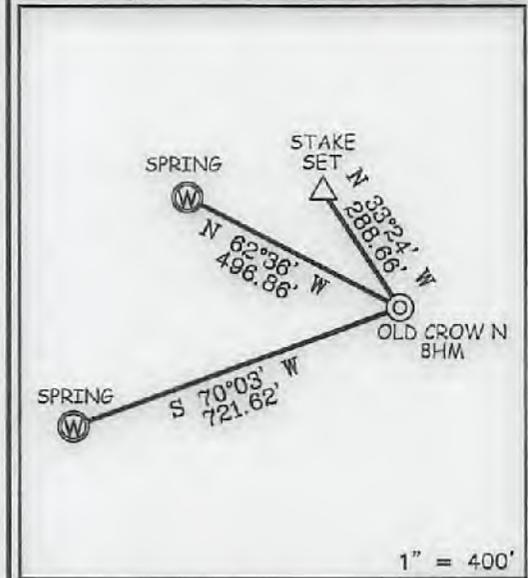
T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°50'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 468,154.90	E. 1,613,539.62
NAD'83 GEO.	LAT-(N) 39.778474	LONG-(W) 80.763018
NAD'83 UTM (M)	N. 4,403,197.27	E. 520,293.90
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 471,486.7	E. 1,617,616.9
NAD'83 GEO.	LAT-(N) 39.787778	LONG-(W) 80.748677
NAD'83 UTM (M)	N. 4,404,233.1	E. 521,519.1
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 479,400.7	E. 1,613,173.0
NAD'83 GEO.	LAT-(N) 39.809330	LONG-(W) 80.764886
NAD'83 UTM (M)	N. 4,406,621.5	E. 520,125.0

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"



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 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- 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
- TAX MAPS AND TAX ASSESSMENTS FOR PARCELS 5-9-4, 5-9-35 AND 5-9-41 DO NOT APPEAR TO CORRECTLY DEPICT PARCEL BOUNDARIES AND/OR ACREAGES AS DESCRIBED IN THEIR RESPECTIVE DEEDS.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.6634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295
slsvv.com

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. Gregory A. Smith
677



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE MAY 28, 20 19
REVISED FEBRUARY 4, AUGUST 23, 20 21
OPERATORS WELL NO. OLD CROW N-8HM
API WELL NO. 47 - 051 - 02240
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P8HMR2.dwg
OLD CROW NORTH 8HM REV6
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

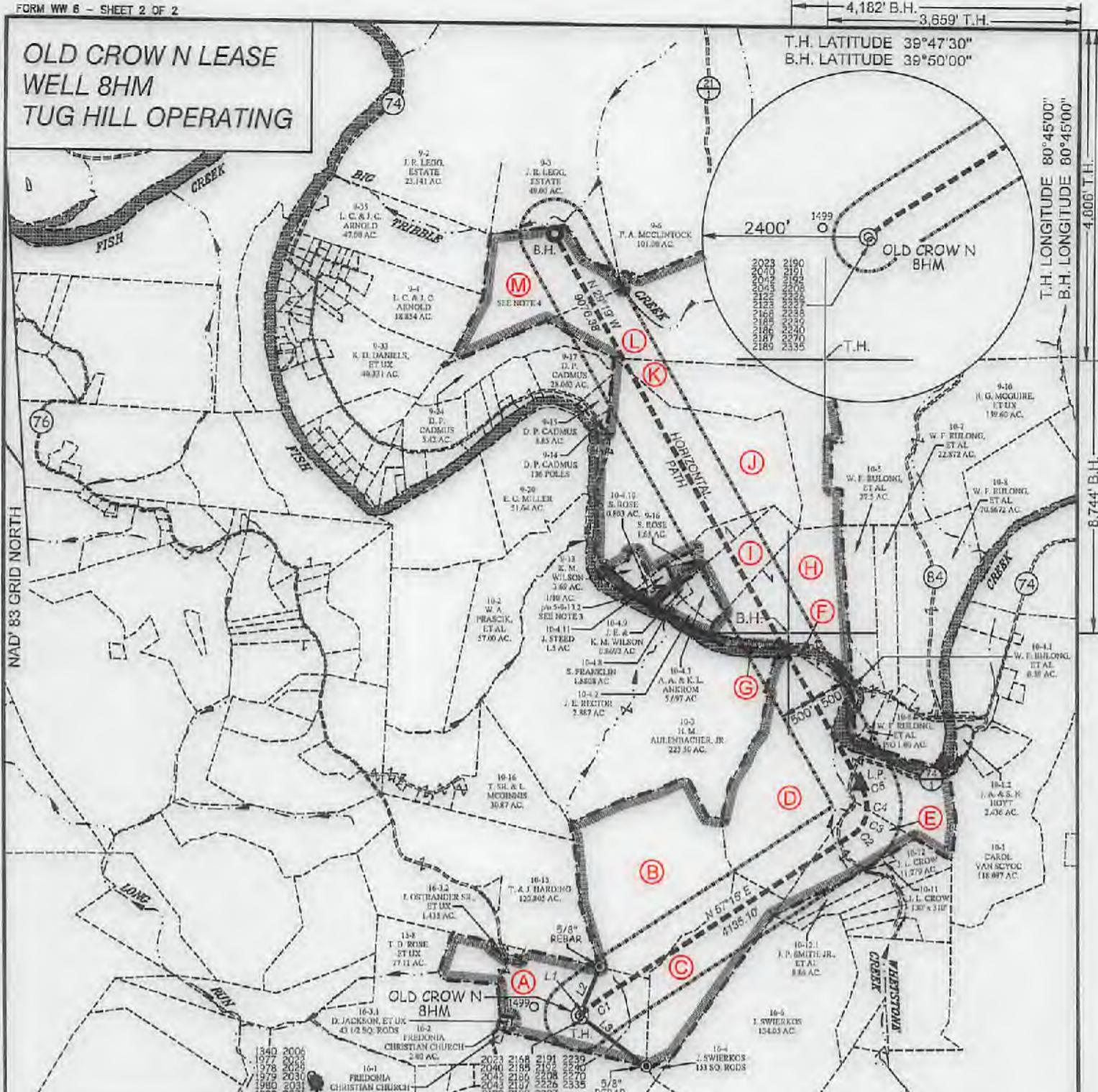
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW
LOCATION: ELEVATION 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'
SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±
ROYALTY OWNER DONNA VIVIAN YOHO, ET AL 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 MARCELLUS
ESTIMATED DEPTH TVD: 6,755' / TMD: 18,294'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

COUNTY NAME
PERMIT

09/03/2021

**OLD CROW N LEASE
WELL 8HM
TUG HILL OPERATING**



CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	502.66'	4568.87'	N 64°40' E	502.40'
C2	143.70'	416.54'	N 47°06' E	142.98'
C3	163.66'	424.49'	N 24°37' E	162.64'
C4	276.30'	607.36'	N 00°10' W	273.93'
C5	217.22'	775.94'	N 21°05' W	216.51'

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 48°59' E	126.89'
L2	N 22°46' E	761.72'
L3	S 52°54' E	1204.10'

TAG	SURFACE OWNER	PARCEL	ACRES
A	DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO	5-16-3	71.205
B	JOHN SWIERKOS	5-10-14	100.00
C	JOHN SWIERKOS	5-16-5	52.07
D	HERBERT M. AULENBACHER, JR.	5-10-9	141.43
E	LOUIS DELBERT VAN SCYOC	5-10-10	24.50
F	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
G	CARL J. & LAURA A. GILBERT	5-10-4-7	2.110
H	SHEENA ROSE	5-10-4	74.229
I	SHEENA ROSE	5-10-4-12	20.07
J	JASON J. STEED	5-9-13.2	135.61
K	ROBERT G. McGUIRE, ET UX	5-9-12	78.28
L	PATRICIA A. McCLINTOCK	5-9-7	110.02
M	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00



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 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.248.3982
 254 East Beckley Bypass | Beckley, WV 25801 | 304.253.5296
 slsww.com

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

NAD'83 S.P.C.(FT) N. 468,154.90 E. 1,619,539.62
 NAD'83 GEO. LAT-(N) 39.778474 LONG-(W) 80.783018
 NAD'83 UTM (M) N. 4,403,197.27 E. 520,293.90

LANDING POINT

NAD'83 S.P.C.(FT) N. 471,488.7 E. 1,617,616.9
 NAD'83 GEO. LAT-(N) 39.787776 LONG-(W) 80.748877
 NAD'83 UTM (M) N. 4,404,233.1 E. 521,519.1

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 479,400.7 E. 1,619,173.0
 NAD'83 GEO. LAT-(N) 39.809330 LONG-(W) 80.764886
 NAD'83 UTM (M) N. 4,406,821.5 E. 520,125.0



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

P.S. 677

Gregory A. Smith

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- 00-00
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE WW-8A1)

SCALE 1" = 2000' FILE NO. 8798P8HMR2.dwg
 OLD CROW NORTH 8HM REV6

DATE MAY 28, 20 19
 REVISED FEBRUARY 4, AUGUST 23, 20 21

OPERATORS WELL NO. OLD CROW N-8HM
 API WELL NO. 47 - 051 - 02240
 NO. STATE COUNTY PERMIT MWD

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



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

DESIGNATED AGENT DARREN BROWN - CT CORPORATION
 ADDRESS 5098 WASHINGTON ST. W, STE 407
 CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

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.

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided*, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, Donna Yoho, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>520,293.00</u>
County: <u>Marshall</u>		Northing: <u>4,403,197.27</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>		

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

*Please check the box that applies

- SURFACE OWNER
- SURFACE OWNER (Road and/or Other Disturbance)
- SURFACE OWNER (Impoundments/Pits)
- COAL OWNER OR LESSEE
- COAL OPERATOR
- WATER PURVEYOR
- OPERATOR OF ANY NATURAL GAS STORAGE FIELD

FOR EXECUTION BY A NATURAL PERSON

Signature: Donna Yoho
Print Name: Donna Yoho
Date: 8-25-21

FOR EXECUTION BY A CORPORATION, ETC.

Company: _____
By: _____
Its: _____

Signature: _____
Date: _____

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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.

09/03/2021



August 24, 2021

MR. CHARLES T. BREWER
WV DEP OFFICE OF OIL & GAS
601 57TH STREET SE
CHARLESTON, WV 25304-2345

VIA FEDEX

RE: **Old Crow N-8HM Modification (API # 47-051-02240)**
Franklin District, Marshall County, WV
Updated Freshwater/Coal String Depth

Dear Taylor:

Tug Hill Operating, LLC is submitting an expedited modification request to our Old Crow N-8HM permit (47-051-02240).

- Check – Expedited Fee of \$5,000
- Updated WW-6B
- New WW-6A Notice of Application for the Surface Owner and Coal Owner
- Updated Well Plat

If you have any questions or need any additional information, please do not hesitate to call me on (304) 376-0111. Thank you for attention to this matter, it is greatly appreciated.

Sincerely,

AMY MORRIS
PERMIT SPECIALIST-APPALACHIA REGION
TUG HILL OPERATING, LLC

Enclosures

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WV Department of
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Stansberry, Wade A <wade.a.stansberry@wv.gov>

Expedited Modification Horizontal H6A Well Work Permit (API: 47-051-02240)

1 message

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Tue, Aug 31, 2021 at 9:10 AM

To: Amy Morris <amorris@tug-hilop.com>, Barry Stollings <barry.w.stollings@wv.gov>, Eric Buzzard <ebuzzard@marshallcountywv.org>

have attached a copy of the newly issued well [permit](#) number, "OLD CROW N-8HM", API: (47-051-02240). This will serve as your copy.

If you have any questions, then [please](#) contact us here at the Office of Oil and Gas.

Thank you,

Wade A. Stansberry**Environmental Resource Specialist 3****West Virginia Department of Environmental Protection****Office of Oil & Gas****601 57th St. SE****Charleston, WV 25304****(304) 926-0499 ext. 41115****(304) 926-0452 fax****Wade.A.Stansberry@wv.gov**

2 attachments**IR-26 Blank.pdf**

152K

**47-051-02240 - mod.pdf**

2597K

09/03/2021