



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, April 09, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
1320 SOUTH UNIVERSITY DRIVE, SUITE 500

FORT WORTH , TX 76107

Re: Permit approval for CORLEY N-8HM
47-051-02005-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.


James A. Martin
Chief

Operator's Well Number: CORLEY N-8HM
Farm Name: JAMES A. & JILL C. CORLEY
U.S. WELL NUMBER: 47-051-02005-00-00
Horizontal 6A New Drill
Date Issued: 4/9/2018

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.

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.

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: Corley N8HM Well Pad Name: Corley

3) Farm Name/Surface Owner: Corley, James A. & Jill C. Public Road Access: _____

4) Elevation, current ground: 1254.22' Elevation, proposed post-construction: 1254.22'

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 *ju 1/10/18*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6509' - 6562', thickness of 53' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,662'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 14,335'

11) Proposed Horizontal Leg Length: 7,266'

12) Approximate Fresh Water Strata Depths: 865'

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: 2049'

15) Approximate Coal Seam Depths: Sewickly Coal - 764' and Pittsburgh Coal - 859'

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

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

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(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	125'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	54.5#	997'	965'	1020ft^3(CTS)
Coal	13 3/8"	NEW	H40	54.5#	997'	965'	1020ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,654'	2,622'	869ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,356'	14,324'	3664ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,075'	
Liners	N/A						

Jan 11/10/18

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 1/2"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.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	8,000	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners	N/A						

PACKERS

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

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WW-6B
(10/14)

API NO. 47-051 - 02005

OPERATOR WELL NO. Corley N8HM

Well Pad Name: Corley

Handwritten signature
1/10/18

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. 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 18,165,000 lb proppant and 280,844 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.7

22) Area to be disturbed for well pad only, less access road (acres): 5.94

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 Attached

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.



Tug Hill Operating, LLC Casing and Cement Program

Corley N-8HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	965'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,622'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4	14,324'	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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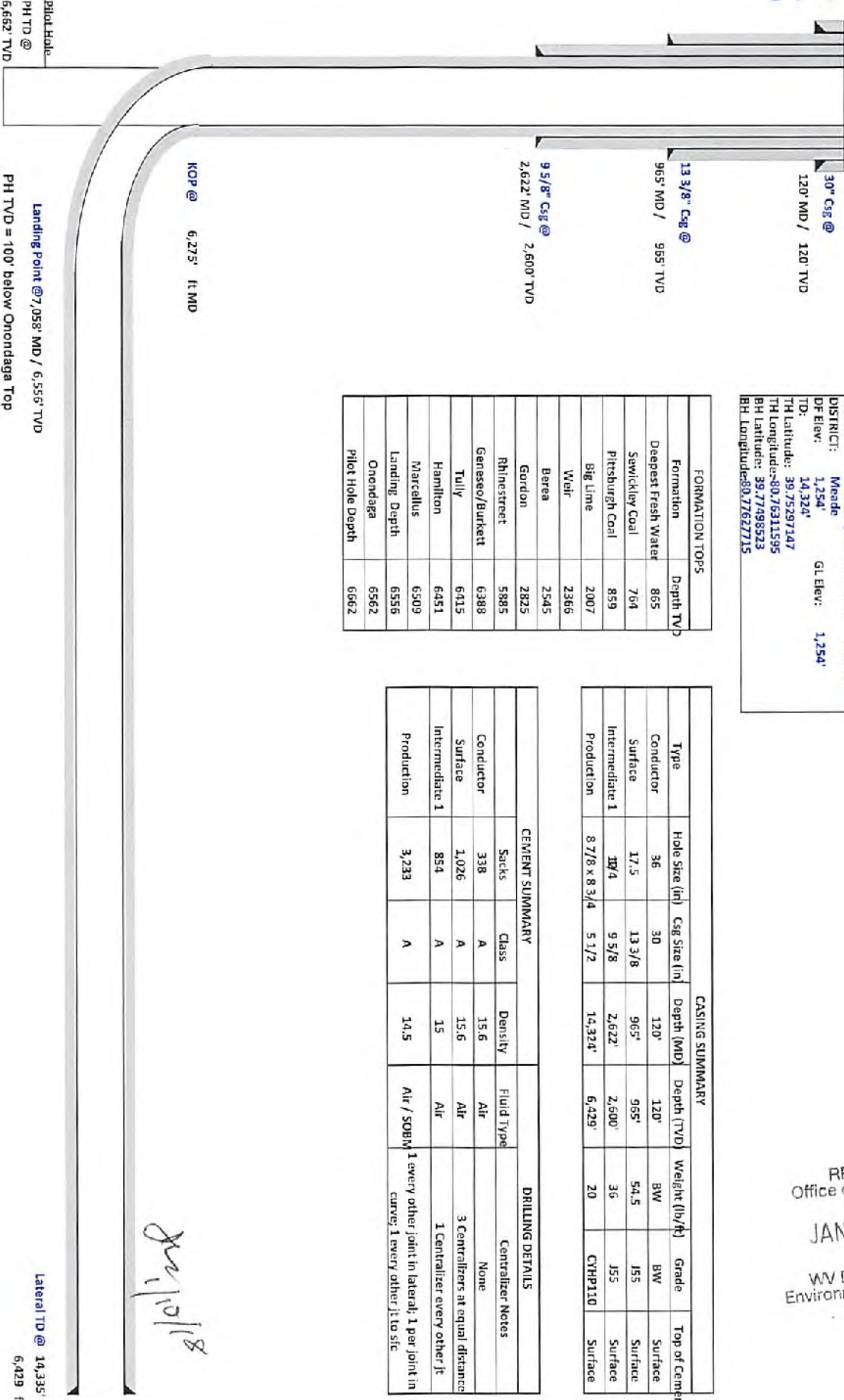
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51-02005



WELL NAME: Conley N-8HM
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,254' GL Elev: 1,254'
 TD: 14,324'
 TH Latitude: 39.75297147
 TH Longitude: 80.76311595
 BH Latitude: 39.77498523
 BH Longitude: 80.77827715

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FORMATION TOPS	Depth TVD
Formation	865
Deepest Fresh Water	764
Sawlickley Coal	859
Pitshburgh Coal	2007
Big Lime	2366
Weir	2545
Berea	2825
Gordon	5885
Rhinestreet	6388
Genesee/Burkett	6415
Tully	6451
Hamilton	6509
Marcellus	6556
Landing Depth	6562
Onondaga	6562
Pilot Hole Depth	6662

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	965'	965'	54.5	J55	Surface
Intermediate 1	10 1/4	9 5/8	2,622'	2,600'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	14,324'	6,429'	20	CYP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer	Notes
338	A	15.6	Air	None	
1,026	A	15.6	Air		3 Centralizers at equal distance
854	A	15	Air		1 Centralizer every other jt
3,233	A	14.5	Air / SOBWM		1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c

Landing Point @ 7,058' MD / 6,556' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 14,335' MD / 6,429' TVD

Jen 1/10/18



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-08HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-08HM (slot I)	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	Corey Pad				
Site Position:		Northing:	14,436,832.02 usft	Latitude:	39.75286638
From:	Lat/Long	Easting:	1,706,973.98 usft	Longitude:	-80.76319015
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well	Corley N-08HM (slot I)					
Well Position	+N/-S	0.00 usft	Northing:	14,436,870.34 usft	Latitude:	39.75297147
	+E/-W	0.00 usft	Easting:	1,706,994.74 usft	Longitude:	-80.76311595
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,254.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/6/2017	-8.65	66.92	52,137.28755076

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	335.08

Plan Survey Tool Program	Date	9/6/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,324.45 rev0 (Original Hole)	MWD MWD - Standard	

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 (°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,288.85	15.78	6.39	2,276.92	107.25	12.01	2.00	2.00	0.00	6.39	
6,275.02	15.78	6.39	6,114.91	1,184.34	132.62	0.00	0.00	0.00	0.00	
7,058.46	91.00	330.00	6,556.00	1,714.71	-86.84	10.00	9.60	-4.84	-37.28	Corley N-08HM LP
14,324.45	91.00	330.00	6,429.00	8,006.28	-3,719.08	0.00	0.00	0.00	0.00	Corley N-08HM BHL

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Planning Report - Geographic



Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Corey Pad
 Well: Corley N-08HM (slot I)
 Wellbore: Original Hole
 Design: rev0

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well Corley N-08HM (slot I)
 GL=1254 @ 1254.00usft
 GL=1254 @ 1254.00usft
 Grid
 Minimum Curvature

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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	
0.00	0.00	0.00	0.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
100.00	0.00	0.00	100.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
200.00	0.00	0.00	200.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
300.00	0.00	0.00	300.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
400.00	0.00	0.00	400.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
500.00	0.00	0.00	500.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
600.00	0.00	0.00	600.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
700.00	0.00	0.00	700.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
800.00	0.00	0.00	800.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
900.00	0.00	0.00	900.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
KOP Begin 2"/100' build										
1,600.00	2.00	6.39	1,599.98	1.73	0.19	14,436,872.08	1,706,994.93	39.75297623	-80.76311524	
1,700.00	4.00	6.39	1,699.84	6.94	0.78	14,436,877.28	1,706,995.51	39.75299051	-80.76311312	
1,800.00	6.00	6.39	1,799.45	15.60	1.75	14,436,885.94	1,706,996.48	39.75301429	-80.76310859	
1,900.00	8.00	6.39	1,898.70	27.71	3.10	14,436,898.05	1,706,997.84	39.75304754	-80.76310465	
2,000.00	10.00	6.39	1,997.47	43.25	4.84	14,436,913.59	1,706,999.58	39.75309022	-80.76309831	
2,100.00	12.00	6.39	2,095.62	62.21	6.97	14,436,932.56	1,707,001.70	39.75314228	-80.76309058	
2,200.00	14.00	6.39	2,193.06	84.57	9.47	14,436,954.91	1,707,004.21	39.75320365	-80.76308146	
2,288.85	15.78	6.39	2,278.92	107.25	12.01	14,436,977.60	1,707,006.75	39.75326594	-80.76307221	
Begin 15.78° tangent										
2,300.00	15.78	6.39	2,289.65	110.27	12.35	14,436,980.61	1,707,007.08	39.75327421	-80.76307096	
2,400.00	15.78	6.39	2,385.88	137.29	15.37	14,437,007.63	1,707,010.11	39.75334839	-80.76305896	
2,500.00	15.78	6.39	2,482.11	164.31	18.40	14,437,034.65	1,707,013.14	39.75342258	-80.76304694	
2,600.00	15.78	6.39	2,578.35	191.33	21.42	14,437,061.67	1,707,016.16	39.75349676	-80.76303792	
2,700.00	15.78	6.39	2,674.58	218.35	24.45	14,437,088.69	1,707,019.19	39.75357094	-80.76302691	
2,800.00	15.78	6.39	2,770.81	245.37	27.46	14,437,115.71	1,707,022.21	39.75364513	-80.76301589	
2,900.00	15.78	6.39	2,867.05	272.39	30.50	14,437,142.73	1,707,025.24	39.75371931	-80.76300487	
3,000.00	15.78	6.39	2,963.28	299.41	33.53	14,437,169.75	1,707,028.26	39.75379350	-80.76299385	
3,100.00	15.78	6.39	3,059.51	326.43	36.55	14,437,196.77	1,707,031.29	39.75386768	-80.76298283	
3,200.00	15.78	6.39	3,155.74	353.45	39.58	14,437,223.79	1,707,034.31	39.75394187	-80.76297181	
3,300.00	15.78	6.39	3,251.98	380.47	42.60	14,437,250.81	1,707,037.34	39.75401605	-80.76296079	
3,400.00	15.78	6.39	3,348.21	407.49	45.63	14,437,277.84	1,707,040.37	39.75409024	-80.76294977	
3,500.00	15.78	6.39	3,444.44	434.51	48.65	14,437,304.86	1,707,043.39	39.75416442	-80.76293875	
3,600.00	15.78	6.39	3,540.67	461.54	51.68	14,437,331.88	1,707,046.42	39.75423860	-80.76292773	
3,700.00	15.78	6.39	3,636.91	488.56	54.71	14,437,358.90	1,707,049.44	39.75431279	-80.76291671	
3,800.00	15.78	6.39	3,733.14	515.58	57.73	14,437,385.92	1,707,052.47	39.75438697	-80.76290569	
3,900.00	15.78	6.39	3,829.37	542.60	60.76	14,437,412.94	1,707,055.49	39.75446116	-80.76289467	
4,000.00	15.78	6.39	3,925.60	569.62	63.78	14,437,439.96	1,707,058.52	39.75453534	-80.76288365	
4,100.00	15.78	6.39	4,021.84	596.64	66.81	14,437,466.98	1,707,061.55	39.75460953	-80.76287263	
4,200.00	15.78	6.39	4,118.07	623.66	69.83	14,437,494.00	1,707,064.57	39.75468371	-80.76286161	
4,300.00	15.78	6.39	4,214.30	650.68	72.86	14,437,521.02	1,707,067.60	39.75475789	-80.76285059	
4,400.00	15.78	6.39	4,310.54	677.70	75.89	14,437,548.04	1,707,070.62	39.75483208	-80.76283957	
4,500.00	15.78	6.39	4,406.77	704.72	78.91	14,437,575.06	1,707,073.65	39.75490626	-80.76282855	
4,500.00	15.78	6.39	4,503.00	731.74	81.94	14,437,602.08	1,707,076.67	39.75498045	-80.76281753	
4,700.00	15.78	6.39	4,599.23	758.76	84.96	14,437,629.10	1,707,079.70	39.75505463	-80.76280651	
4,800.00	15.78	6.39	4,695.47	785.78	87.99	14,437,656.12	1,707,082.72	39.75512882	-80.76279549	
4,900.00	15.78	6.39	4,791.70	812.80	91.01	14,437,683.14	1,707,085.75	39.75520300	-80.76278447	
5,000.00	15.78	6.39	4,887.93	839.82	94.04	14,437,710.17	1,707,088.78	39.75527718	-80.76277345	



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-08HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-08HM (slot I)	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	
5,100.00	15.78	6.39	4,984.16	866.84	97.06	14,437,737.19	1,707,091.80	39.75535137	-80.78276243	
5,200.00	15.78	6.39	5,080.40	893.86	100.09	14,437,764.21	1,707,094.83	39.75542555	-80.78275141	
5,300.00	15.78	6.39	5,176.63	920.89	103.12	14,437,791.23	1,707,097.85	39.75549974	-80.78274039	
5,400.00	15.78	6.39	5,272.86	947.91	106.14	14,437,818.25	1,707,100.88	39.75557392	-80.78272937	
5,500.00	15.78	6.39	5,369.10	974.93	109.17	14,437,845.27	1,707,103.90	39.75564811	-80.78271835	
5,600.00	15.78	6.39	5,465.33	1,001.95	112.19	14,437,872.29	1,707,106.93	39.75572229	-80.78270733	
5,700.00	15.78	6.39	5,561.56	1,028.97	115.22	14,437,899.31	1,707,109.96	39.75579647	-80.78269631	
5,800.00	15.78	6.39	5,657.79	1,055.99	118.24	14,437,926.33	1,707,112.98	39.75587066	-80.78268529	
5,900.00	15.78	6.39	5,754.03	1,083.01	121.27	14,437,953.35	1,707,116.01	39.75594484	-80.78267427	
6,000.00	15.78	6.39	5,850.26	1,110.03	124.30	14,437,980.37	1,707,119.03	39.75601903	-80.78266325	
6,100.00	15.78	6.39	5,946.49	1,137.05	127.32	14,438,007.39	1,707,122.06	39.75609321	-80.78265223	
6,200.00	15.78	6.39	6,042.72	1,164.07	130.35	14,438,034.41	1,707,125.08	39.75616740	-80.78264121	
6,275.02	15.78	6.39	6,114.91	1,184.34	132.62	14,438,054.68	1,707,127.35	39.75622305	-80.78263294	
Begin 10°/100' build/turn										
6,300.00	17.83	1.44	6,138.83	1,191.54	133.09	14,438,061.88	1,707,127.83	39.75624262	-80.78263119	
6,400.00	26.79	349.48	6,231.30	1,229.09	129.35	14,438,099.43	1,707,124.09	39.75634567	-80.78264413	
6,500.00	38.26	343.32	6,316.47	1,279.71	118.72	14,438,150.05	1,707,111.45	39.75648506	-80.78268861	
6,600.00	45.94	339.46	6,391.74	1,341.84	95.57	14,438,212.19	1,707,090.31	39.75665567	-80.78276327	
6,700.00	55.71	336.70	6,454.84	1,413.62	66.56	14,438,283.96	1,707,061.29	39.75685319	-80.78286583	
6,800.00	65.53	334.52	6,503.84	1,492.65	30.55	14,438,363.19	1,707,025.29	39.75707103	-80.78299319	
6,900.00	75.38	332.66	6,537.26	1,577.12	-11.34	14,438,447.46	1,706,983.39	39.75730278	-80.78314148	
7,000.00	85.24	330.96	6,554.08	1,663.88	-57.86	14,438,534.23	1,706,936.67	39.75754139	-80.78330618	
7,058.46	91.00	330.00	6,556.00	1,714.71	-86.64	14,438,585.05	1,706,908.10	39.75768118	-80.78340810	
Begin 91.00° lateral section										
7,100.00	91.00	330.00	6,555.27	1,750.68	-107.41	14,438,621.02	1,706,887.33	39.75778011	-80.78348165	
7,200.00	91.00	330.00	6,553.53	1,837.26	-157.40	14,438,707.61	1,706,837.34	39.75801827	-80.78365872	
7,300.00	91.00	330.00	6,551.78	1,923.85	-207.39	14,438,794.20	1,706,787.35	39.75825643	-80.78383579	
7,400.00	91.00	330.00	6,550.03	2,010.44	-257.38	14,438,880.78	1,706,737.35	39.75849459	-80.78401287	
7,500.00	91.00	330.00	6,548.28	2,097.03	-307.37	14,438,967.37	1,706,687.36	39.75873275	-80.78418994	
7,600.00	91.00	330.00	6,546.53	2,183.62	-357.37	14,439,053.96	1,706,637.37	39.75897091	-80.78436701	
7,700.00	91.00	330.00	6,544.79	2,270.21	-407.36	14,439,140.55	1,706,587.38	39.75920907	-80.78454409	
7,800.00	91.00	330.00	6,543.04	2,356.80	-457.35	14,439,227.14	1,706,537.38	39.75944723	-80.78472117	
7,900.00	91.00	330.00	6,541.29	2,443.39	-507.34	14,439,313.73	1,706,487.39	39.75968539	-80.78489825	
8,000.00	91.00	330.00	6,539.54	2,529.98	-557.34	14,439,400.32	1,706,437.40	39.75992355	-80.78507533	
8,100.00	91.00	330.00	6,537.80	2,616.57	-607.33	14,439,486.91	1,706,387.41	39.76016171	-80.78525241	
8,200.00	91.00	330.00	6,536.05	2,703.16	-657.32	14,439,573.50	1,706,337.42	39.76039987	-80.78542949	
8,300.00	91.00	330.00	6,534.30	2,789.75	-707.31	14,439,660.09	1,706,287.42	39.76063802	-80.78560658	
8,400.00	91.00	330.00	6,532.55	2,876.34	-757.31	14,439,746.68	1,706,237.43	39.76087618	-80.78578366	
8,500.00	91.00	330.00	6,530.80	2,962.93	-807.30	14,439,833.27	1,706,187.44	39.76111434	-80.78596075	
8,600.00	91.00	330.00	6,529.06	3,049.52	-857.29	14,439,919.86	1,706,137.45	39.76135250	-80.78613784	
8,700.00	91.00	330.00	6,527.31	3,136.10	-907.28	14,440,006.45	1,706,087.45	39.76159065	-80.78631492	
8,800.00	91.00	330.00	6,525.56	3,222.69	-957.28	14,440,093.04	1,706,037.46	39.76182881	-80.78649201	
8,900.00	91.00	330.00	6,523.81	3,309.28	-1,007.27	14,440,179.62	1,705,987.47	39.76206697	-80.78666911	
9,000.00	91.00	330.00	6,522.06	3,395.87	-1,057.26	14,440,266.21	1,705,937.48	39.76230512	-80.78684620	
9,100.00	91.00	330.00	6,520.32	3,482.46	-1,107.25	14,440,352.80	1,705,887.48	39.76254326	-80.78702329	
9,200.00	91.00	330.00	6,518.57	3,569.05	-1,157.25	14,440,439.39	1,705,837.49	39.76278143	-80.78720039	
9,300.00	91.00	330.00	6,516.82	3,655.64	-1,207.24	14,440,525.98	1,705,787.50	39.76301959	-80.78737748	
9,400.00	91.00	330.00	6,515.07	3,742.23	-1,257.23	14,440,612.57	1,705,737.51	39.76325775	-80.78755458	
9,500.00	91.00	330.00	6,513.33	3,828.82	-1,307.22	14,440,699.16	1,705,687.51	39.76349590	-80.78773168	
9,600.00	91.00	330.00	6,511.58	3,915.41	-1,357.21	14,440,785.75	1,705,637.52	39.76373405	-80.78790878	
9,700.00	91.00	330.00	6,509.83	4,002.00	-1,407.21	14,440,872.34	1,705,587.53	39.76397221	-80.78808588	
9,800.00	91.00	330.00	6,508.08	4,088.59	-1,457.20	14,440,958.93	1,705,537.54	39.76421036	-80.78826298	
9,900.00	91.00	330.00	6,506.33	4,175.18	-1,507.19	14,441,045.52	1,705,487.54	39.76444852	-80.78844008	
10,000.00	91.00	330.00	6,504.59	4,261.77	-1,557.18	14,441,132.11	1,705,437.55	39.76468667	-80.78861719	

51-02005



Planning Report - Geographic



Database: DB_Jul2218dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Corey Pad
 Well: Corley N-08HM (slot I)
 Wellbore: Original Hole
 Design: rev0

Local Co-ordinate Reference: Well Corley N-08HM (slot I)
 VTD Reference: GL=1254 @ 1254.00usft
 MD Reference: GL=1254 @ 1254.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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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
10,100.00	91.00	330.00	6,502.84	4,348.35	-1,607.18	14,441,218.70	1,705,387.56	39.76492482	-80.76879429
10,200.00	91.00	330.00	6,501.09	4,434.94	-1,657.17	14,441,305.29	1,705,337.57	39.76516298	-80.76897140
10,300.00	91.00	330.00	6,499.34	4,521.53	-1,707.16	14,441,391.87	1,705,287.58	39.76540113	-80.76914851
10,400.00	91.00	330.00	6,497.59	4,608.12	-1,757.15	14,441,478.46	1,705,237.59	39.76563923	-80.76932562
10,500.00	91.00	330.00	6,495.85	4,694.71	-1,807.15	14,441,565.05	1,705,187.59	39.76587743	-80.76950273
10,600.00	91.00	330.00	6,494.10	4,781.30	-1,857.14	14,441,651.64	1,705,137.60	39.76611559	-80.76967984
10,700.00	91.00	330.00	6,492.35	4,867.89	-1,907.13	14,441,738.23	1,705,087.61	39.76635374	-80.76985695
10,800.00	91.00	330.00	6,490.60	4,954.48	-1,957.12	14,441,824.82	1,705,037.61	39.76659189	-80.77003407
10,900.00	91.00	330.00	6,488.86	5,041.07	-2,007.12	14,441,911.41	1,704,987.62	39.76683004	-80.77021118
11,000.00	91.00	330.00	6,487.11	5,127.66	-2,057.11	14,441,998.00	1,704,937.63	39.76706819	-80.77038830
11,100.00	91.00	330.00	6,485.36	5,214.25	-2,107.10	14,442,084.59	1,704,887.64	39.76730634	-80.77056542
11,200.00	91.00	330.00	6,483.61	5,300.84	-2,157.09	14,442,171.18	1,704,837.64	39.76754449	-80.77074254
11,300.00	91.00	330.00	6,481.86	5,387.43	-2,207.09	14,442,257.77	1,704,787.65	39.76778264	-80.77091966
11,400.00	91.00	330.00	6,480.12	5,474.02	-2,257.08	14,442,344.36	1,704,737.66	39.76802079	-80.77109678
11,500.00	91.00	330.00	6,478.37	5,560.60	-2,307.07	14,442,430.95	1,704,687.67	39.76825894	-80.77127390
11,600.00	91.00	330.00	6,476.62	5,647.19	-2,357.06	14,442,517.54	1,704,637.67	39.76849709	-80.77145103
11,700.00	91.00	330.00	6,474.87	5,733.78	-2,407.05	14,442,604.12	1,704,587.68	39.76873524	-80.77162815
11,800.00	91.00	330.00	6,473.12	5,820.37	-2,457.05	14,442,690.71	1,704,537.69	39.76897339	-80.77180528
11,900.00	91.00	330.00	6,471.38	5,906.96	-2,507.04	14,442,777.30	1,704,487.70	39.76921153	-80.77198241
12,000.00	91.00	330.00	6,469.63	5,993.55	-2,557.03	14,442,863.89	1,704,437.70	39.76944968	-80.77215954
12,100.00	91.00	330.00	6,467.88	6,080.14	-2,607.02	14,442,950.48	1,704,387.71	39.76968783	-80.77233667
12,200.00	91.00	330.00	6,466.13	6,166.73	-2,657.02	14,443,037.07	1,704,337.72	39.76992598	-80.77251380
12,300.00	91.00	330.00	6,464.38	6,253.32	-2,707.01	14,443,123.66	1,704,287.73	39.77016412	-80.77269093
12,400.00	91.00	330.00	6,462.64	6,339.91	-2,757.00	14,443,210.25	1,704,237.74	39.77040227	-80.77286806
12,500.00	91.00	330.00	6,460.89	6,426.50	-2,806.99	14,443,296.84	1,704,187.74	39.77064042	-80.77304520
12,600.00	91.00	330.00	6,459.14	6,513.09	-2,856.99	14,443,383.43	1,704,137.75	39.77087856	-80.77322233
12,700.00	91.00	330.00	6,457.39	6,599.68	-2,906.98	14,443,470.02	1,704,087.76	39.77111671	-80.77339947
12,800.00	91.00	330.00	6,455.65	6,686.27	-2,956.97	14,443,556.61	1,704,037.77	39.77135486	-80.77357661
12,900.00	91.00	330.00	6,453.90	6,772.86	-3,006.96	14,443,643.20	1,703,987.77	39.77159300	-80.77375375
13,000.00	91.00	330.00	6,452.15	6,859.44	-3,056.96	14,443,729.79	1,703,937.78	39.77183115	-80.77393089
13,100.00	91.00	330.00	6,450.40	6,946.03	-3,106.95	14,443,816.38	1,703,887.79	39.77206929	-80.77410803
13,200.00	91.00	330.00	6,448.65	7,032.62	-3,156.94	14,443,902.96	1,703,837.80	39.77230744	-80.77428518
13,300.00	91.00	330.00	6,446.91	7,119.21	-3,206.93	14,443,989.55	1,703,787.80	39.77254558	-80.77446232
13,400.00	91.00	330.00	6,445.16	7,205.80	-3,256.93	14,444,076.14	1,703,737.81	39.77278372	-80.77463947
13,500.00	91.00	330.00	6,443.41	7,292.39	-3,306.92	14,444,162.73	1,703,687.82	39.77302187	-80.77481662
13,600.00	91.00	330.00	6,441.66	7,378.98	-3,356.91	14,444,249.32	1,703,637.83	39.77326001	-80.77499376
13,700.00	91.00	330.00	6,439.91	7,465.57	-3,406.90	14,444,335.91	1,703,587.83	39.77349815	-80.77517091
13,800.00	91.00	330.00	6,438.17	7,552.16	-3,456.89	14,444,422.50	1,703,537.84	39.77373630	-80.77534806
13,900.00	91.00	330.00	6,436.42	7,638.75	-3,506.89	14,444,509.09	1,703,487.85	39.77397444	-80.77552522
14,000.00	91.00	330.00	6,434.67	7,725.34	-3,556.88	14,444,595.68	1,703,437.86	39.77421258	-80.77570237
14,100.00	91.00	330.00	6,432.92	7,811.93	-3,606.87	14,444,682.27	1,703,387.86	39.77445072	-80.77587952
14,200.00	91.00	330.00	6,431.18	7,898.52	-3,656.86	14,444,768.86	1,703,337.87	39.77468887	-80.77605668
14,300.00	91.00	330.00	6,429.43	7,985.11	-3,706.86	14,444,855.45	1,703,287.88	39.77492701	-80.77623384
14,324.45	91.00	330.00	6,429.00	8,006.28	-3,719.08	14,444,876.62	1,703,275.86	39.77498523	-80.77627715

PBHL/TD 14324.45 MD/6429.00 TVD

SI-02005



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-08HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-08HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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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									
Corley N-08HM BHL - plan hits target center - Point	0.00	0.00	6,429.00	8,006.28	-3,719.08	14,444,876.62	1,703,275.66	39.77498523	-80.77627715
Corley N-08HM LP - plan hits target center - Point	0.00	0.00	6,556.00	1,714.71	-86.64	14,438,585.05	1,706,908.10	39.75768118	-80.76340810

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
		+N/-S	+E/-W		
(usft)	(usft)	(usft)	(usft)		
1,500.00	1,500.00	0.00	0.00	KOP Begin 2°/100' build	
2,288.85	2,278.92	107.25	12.01	Begin 15.78° tangent	
6,275.02	6,114.91	1,184.34	132.62	Begin 10°/100' build/turn	
7,058.46	6,556.00	1,714.71	-86.64	Begin 91.00° lateral section	
14,324.45	6,429.00	8,006.28	-3,719.08	PBHL/TD 14324.45 MD/6429.00 TVD	

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

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

Data Sources Reviewed:

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

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

Request maps for:

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

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

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

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Environmental Protection

Permit well - Corley N-8HM

Wells within 500' Buffer


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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101396	Tug Hill Operating	6625' TVD 12408' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101437	Tug Hill Operating	6632' TVD 12152' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101397	Tug Hill Operating	6633' TVD 12310' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101438	Tug Hill Operating	6627' TVD 11388' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.
4705101340	Tug Hill Operating	6450' TVD 10601' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.

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Select County: (051) Marshall (Check All)

Enter Permit #: 01396

Get Data Reset

Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Blm Hole Log

Tools: Data/Statistics
Country Code Translation
Permit Information/Status
License Notes
Complete Information
Dashboard
WVGIS Map
Pipeline Plat

WV Geological & Economic Survey: Well: County = 81 Permit = 01396

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_25	QUAD_16	LAY_CD	LOG_CD	UTME	UTMN
4705101396	Marshall	1396	Franklin	Reynolds Park	Chapman	39.727865	-93.763137	500237	4400245

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LOG_CD	LAY_CD	
4705101396	1	As Proposed	521823.8	4300017.7	-93.763137	39.762074


Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR/AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_FR	
4705101396	11/15/2011		Drill Origin Log	Completed	JAMES A & J C Corley, et al		114	Corley	WV16-0018-001-1-285082-001/WV16-0018-002	JAMES A & J C Corley, et al	Owner	Exploration/USA, Inc	6720	Marcellus Sh

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTO	Q_BEF	Q_AFT	O_BSP	Q_AFT	NGL_BSP	NGL_AFT	F_BEF
4705101396	11/15/2011	6/11/2011	1272	Ground Level	Campano-Gainer	Chapman	LA	Marcellus Sh	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6625	12408	15403	2028	2413	29	24	

Comment: 11/17/2011 Additional Lease # WV16-0015-000 Rock pressure listed as 2500 psig



Select County: (051) Marshall (Check All)

Enter Permit #: 01437

Get Data Reset

Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Blm Hole Log

Tools: Data/Statistics
Country Code Translation
Permit Information/Status
License Notes
Complete Information
Dashboard
WVGIS Map
Pipeline Plat

WV Geological & Economic Survey: Well: County = 81 Permit = 01437

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_25	QUAD_16	LAY_CD	LOG_CD	UTME	UTMN
4705101437	Marshall	1437	Franklin	Reynolds Park	Chapman	39.727865	-93.763137	500237	4400245

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LOG_CD	LAY_CD	
4705101437	1	As Proposed	521823.8	4300017.7	-93.763137	39.762074

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR/AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_FR	
4705101437	11/17/2011		Drill Origin Log	Completed	JAMES A & J C Corley, et al		214	Corley	WV16-0018-001/WV16-0065-000	JAMES A & J C Corley, et al	Owner	Exploration/USA, Inc	6720	Marcellus Sh

Completion Information:

API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTO	Q_BEF	Q_AFT	O_BSP	Q_AFT	NGL_BSP	NGL_AFT	F_BEF
4705101437	11/17/2011	7/21/2011	1272	Ground Level	Campano-Gainer	Chapman	LA	Marcellus Sh	Development Well	Development Well	Gas	Unknown	Fractured	6625	12152	12152	2028	2413			

Comment: 11/17/2011 Additional Lease # WV16-0018-002/WV16-0065-000/1-285082-001

4705102005

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Corley N-8HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature _____
Company Official (Typed Name) David Patterson
Company Official Title Senior Vice President, Operations

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WV Department of
Environmental Protection

Subscribed and sworn before me this 10th day of January, 20 18

Kelly S. Donnelly Notary Public
My commission expires 08-31-2021



51-02005

Form WW-9

Operator's Well No. Corley N-8HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 17.78 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

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Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Jim Trilobek

Comments: _____

Title: Oil & Gas Inspector Date: 1/10/18

Field Reviewed? Yes No

WW-9

PROPOSED CORLEY N-8HM

SUPPLEMENT PG 1

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

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

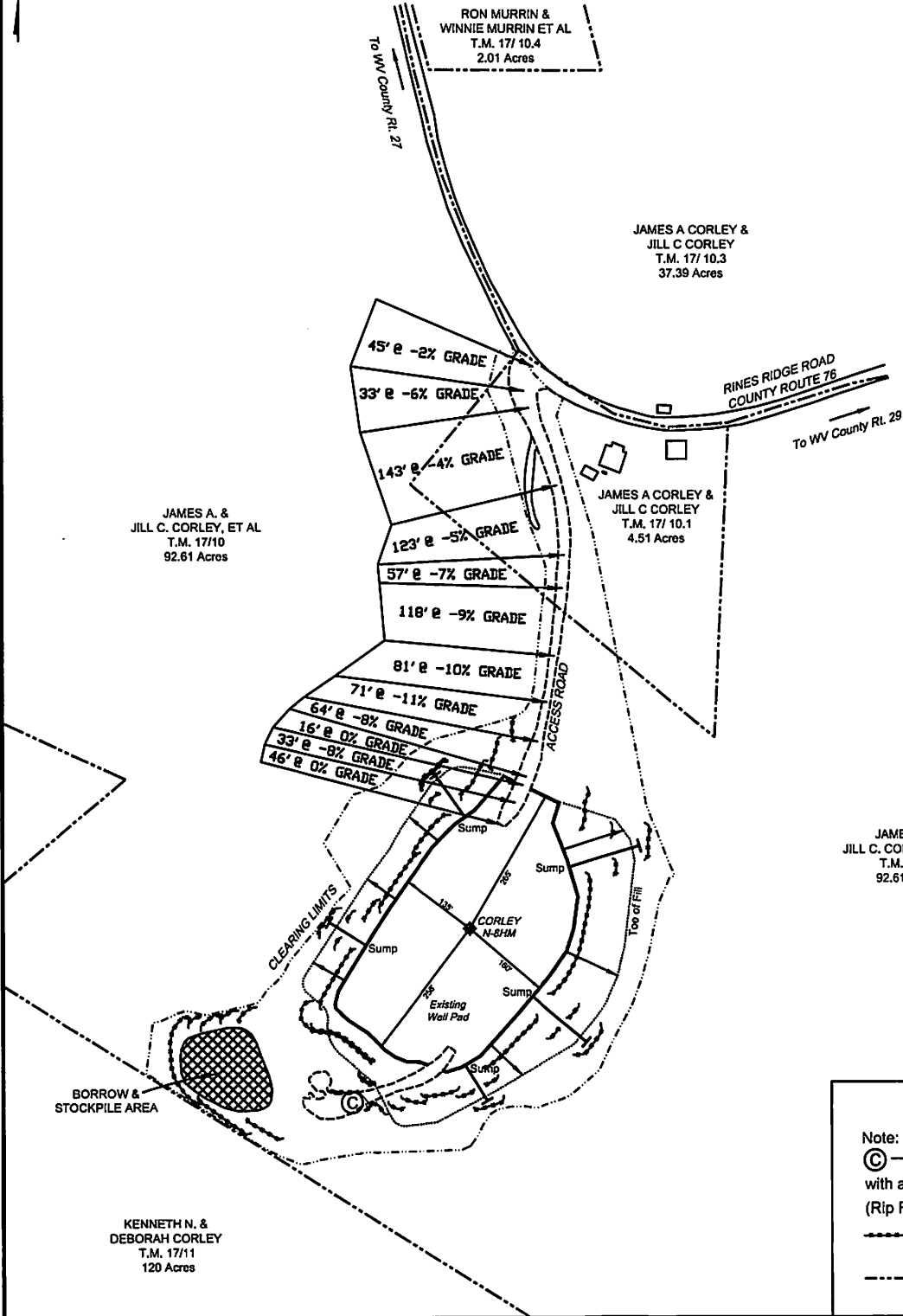
ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

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

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

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DRAWING NOT TO SCALE



JAMES A. & JILL C. CORLEY, ET AL
T.M. 17/10
92.61 Acres

JAMES A CORLEY & JILL C CORLEY
T.M. 17/ 10.3
37.39 Acres

JAMES A CORLEY & JILL C CORLEY
T.M. 17/ 10.1
4.51 Acres

JAMES A. & JILL C. CORLEY, ET AL
T.M. 17/10
92.61 Acres

KENNETH N. & DEBORAH CORLEY
T.M. 17/11
120 Acres

LEGEND

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

DATE: 01-10-2018

PROJECT NO: 494510851

DRAWN BY: J.A.H.



Well Site Safety Plan

Tug Hill Operating, LLC

Handwritten signature and date: 1/10/18

Well Name: Corley N-8HM

Pad Location: Corley Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,400,366.88

Easting: 520,293.04

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Environmental Protection

January 2018

CORLEY LEASE WELL N-8HM 566.192± ACRES

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

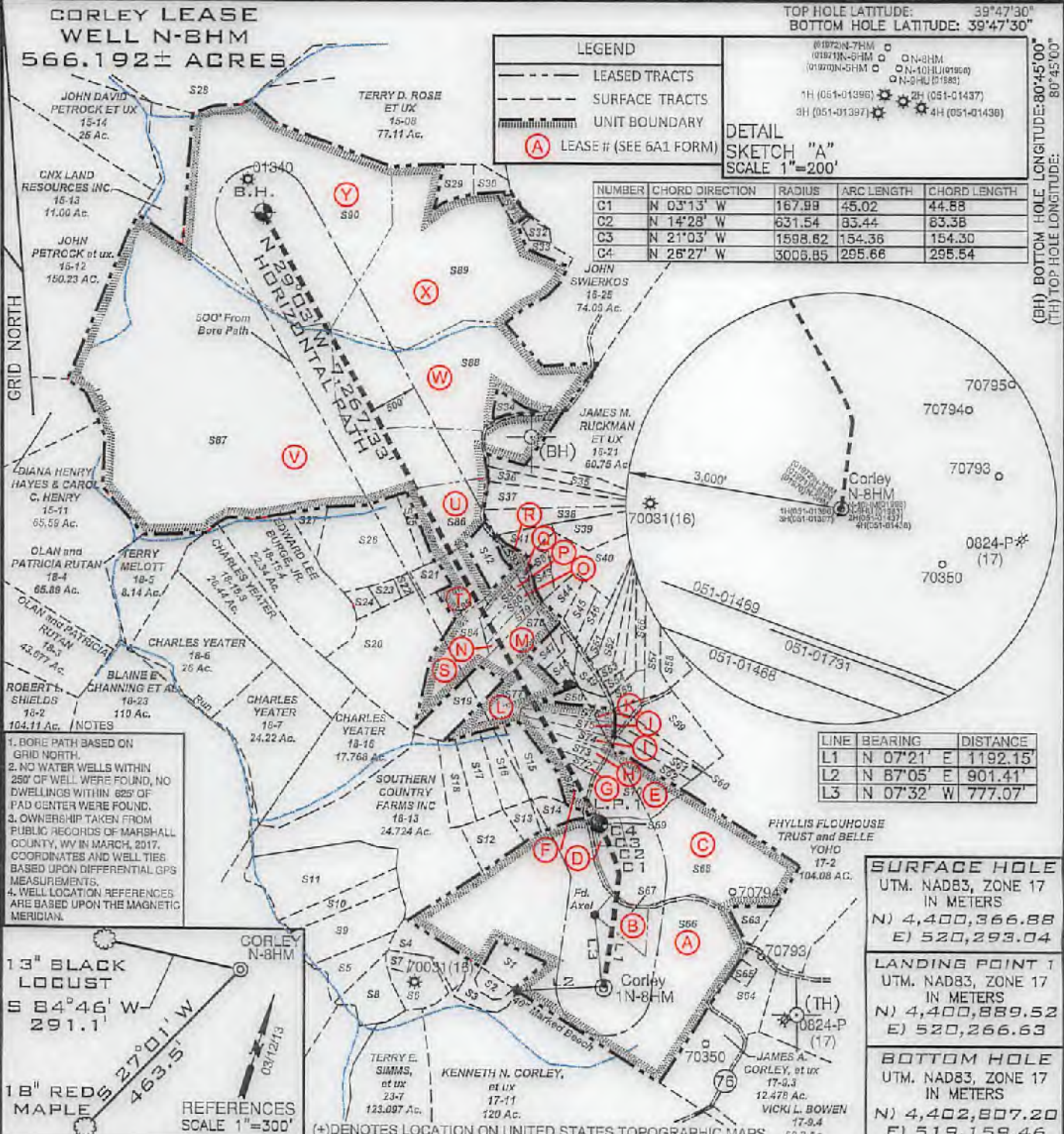
(BH) BOTTOM HOLE LONGITUDE: 80°45'00"
(TH) TOP HOLE LONGITUDE: 80°45'00"

LEGEND

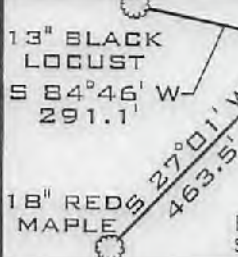
- LEASED TRACTS
- SURFACE TRACTS
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

DETAIL SKETCH "A"
SCALE 1"=200'

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 03°13' W	167.89	45.02	44.88
C2	N 14°28' W	631.54	83.44	83.38
C3	N 21°03' W	1598.62	154.36	154.30
C4	N 26°27' W	3008.85	295.66	295.54



- NOTES**
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 825' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.



LINE	BEARING	DISTANCE
L1	N 07°21' E	1192.15'
L2	N 87°05' E	901.41'
L3	N 07°32' W	777.07'

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,366.88
E) 520,293.04

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,889.52
E) 520,266.63

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,807.20
E) 519,159.46

FILE NUMBER _____

DRAWING NUMBER CORLEY_WP_N-8HM

SCALE 1" = 1500'

MINIMUM DEGREE OF ACCURACY 1/200

PROVEN SOURCE OF ELEVATION SUBMETER MAPPING GRADE GPS

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

P.S. 708 *David L Jackson*



JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-8881



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

DATE: OCTOBER 31, 2017
REVISED DATE: January 4, 2018
OPERATORS WELL NO. CORLEY N-8HM
API WELL NO. _____
STATE 47 COUNTY 051 PERMIT 0200546A

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

LOCATION ELEVATION 1254.22' WATERSHED (HUC 10) Fish Creek

DISTRICT Franklin COUNTY Marshall
QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE 6A1 Form

SURFACE OWNER James A. & Jill C. Corley, et al ACREAGE 92.61
OIL & GAS ROYALTY OWNER James A. & Jill C. Corley, et al LEASE ACREAGE 92.61
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____

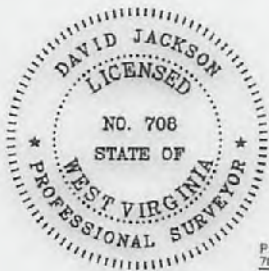
TARGET FORMATION Marcellus ESTIMATED DEPTH TVD: 6,662' TMD: 14,335'
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME _____
PERMIT _____

**BRYAN LEASE
WELL S-10HM
471.0556± ACRES**

GRID NORTH

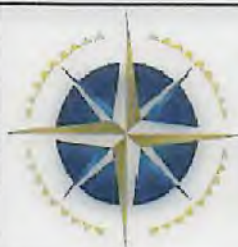
Number	TAX MAP -PARCEL	ADJOINER OWNER	ACRES	S52	18-49	Tanner Butler	2.023
S1	15-13	CNX Land Resources Inc.	11.0	S53	18-50	Steven Berisford	2.170
S2	15-6.1	Joseph J. Kramer Et Ux	39.40	S54	18-45	Michael Fincham & Kezia Winters	2.07
S3	15-7	Terry D. Rose Et Ux	4.5	S55	18-46	Dale W. & Patricia Gardner	2.030
S4	16-4	John Swierkos	0.96	S56	18-47	Robert Pelley II & Susan Briggs	2.010
S5	16-6	John Swierkos	134.05	S57	18-13.5	Wesley Bryan	1.023
S6	16-3.2	Jimmy Ostrander Sr. Et Ux	1.435	S58	18-36	Ruth Mulligan Est.	2.030
S7	16-3.1	Dennis Jackson Et Ux	0.27	S59	18-15.2	Edward Burge	4.171
S8	16-2	Fredonia Christian Church	0.19	S60	18-11	Benjamin Robinson	1.023
S9	16-1	Fredonia Christian Church	0.50	S61	18-11.2	Edward Lee Burge Jr.	2.0
S10	16-23.1	Ray E. Minor Et Ux	2.0	S62	18-11.1	Edward Lee Burge Jr.	18.0
S11	16-23.4	Michael R. & Brenda K. Bryan	3.0	S63	17-02	Phyllis Flouhouse Trust & Belle Yoho	104.08
S12	16-23.3	Greg & Christina Riddle	1.0	S64	18-15.1	Jason Blair	5.948
S13	16-24	Alan M. Beyser Et Ux	1.083	S65	18-12	William Wayne Et Ux	2.27
S14	16-23.2	Alan M. Beyser Et Ux	1.726	S66	18-10	David & Nancy Anderson	0.907
S15	17-16	Glen A. Gunto	9.702	S67	18-10.2	David Anderson Et Ux	1.377
S16	16-15.1	Glen A. Gunto	10.17	S68	18-10.1	David Anderson Et Ux	1.65
S17	17-15	Glen A. Gunto	10.22	S69	18-15.5	Darrell & Teresa Doley	23.547
S18	18-13	Southern Country Farms Inc.	11.415	S70	18-13.3	Robert Closterman	9.813
S19	18-13.9	Roy & Renee Butler	9.603	S71	18-17	Michael S. Fincham & Kezia M. Winters	6.555
S20	18-13.4	Renee D. Straight	9.938	S72	18-13.1	Betty Tagg Est.	9.248
S21	18-13.12	Charles A. & Mary Nice	5.969	S73	18-13.7	Victor W. Woods Jr. & Jessica L. Woods	5.255
S22	18-13	Southern Country Farms Inc.	8.037	S74	18-13.6	Glenn Eugene Whisler Et Ux	5.384
S23	17-3.1	Wilbur L. Riddle Et Ux	10.148	S75	18-13.13	Glenn E. & Sandra K. Whisler	5.59
S24	17-1.6	Lola M. Slaughter	6.347	S76	18-34	Jodi A. & Gary A. Hall	5.002
S25	17-1.5	Donnie R. & Lola M. Slaughter	5.607	S77	18-13	Southern Country Farms Inc.	24.724
S26	17-1.3	Jody & Michelle Anderson	5.0	S78	18-57	Marvin D. Roberts	2.228
S27	17-1.2	Donnie R. & Lola M. Slaughter	5.073	S79	18-18	Linda Coan	3.0
S28	17-1.1	Donnie R. & Lola M. Slaughter	8.078	S80	17-10.4	Ron Murin Et Al	2.01
S29	17-1.4	Donnie R. & Lola M. Slaughter	8.844	S81	18-48	Marvin Dean Roberts Et Al	2.920
S30	17-14	Southern Country Farms Inc.	7.314	S82	18-13.14	Glenn & Sandra Whisler	2.116
S31	17-13	Roy E. & Renee Butler	5.433	S83	18-16	Charles Yeater	17.768
S32	17-1.7	Roy E. & Renee Butler	5.22	S84	15-09	CNX Land Resources Inc.	81.98
S33	17-1	Southern Country Farms Inc.	5.030	S85	15-08	Terry D. Rose et ux	77.11
S34	18-13	Southern Country Farms Inc.	8.743	S86	16-23	CNX Land Resources Inc.	60.138
S35	18-58	Kevin W. Roberts	2.435	S87	16-22	James M. Ruckman et ux	54.605
S36	18-35	Mary Anderson	2.635	S88	16-22.1	Heather A. Burgy	1.465
S37	18-42	Roger Howard Hall	2.383	S89	16-21	James M. Ruckman et ux	60.75
S38	18-19	Roger Howard Hall Jr.	10.0	S90	18-56	William O'Hara	3.965
S39	18-53	Christopher M. Previtera	2.0	S91	18-55	William O'Hara	3.202
S40	18-61	Roger White Jr.	2.984	S92	18-28	Dotson Harrison	6.36
S41	18-52	Roger Hall	2.536	S93	18-28.1	Carol Helmick	5.696
S42	18-51	Roger Hall	2.505	S94	18-13.2	Steven Berisford	6.023
S43	18-43	Roy E. & Renee Butler	2.532	S95	18-13	Southern Country Farms, Inc.	11.054
S44	18-44	Renee Straight Butler	2.133	S96	18-27.1	Marlon R. Conner	2.003
S45	18-25	Charles & Maria Rayl	2.133	S97	18-27.2	Linda L. Moore	3.009
S46	18-41	Cory A. Holt	2.308	S98	18-27	Linda L. Moore	2.447
S47	18-40	Cory A. Holt	2.237	S99	18-26	Linda L. Moore	2.624
S48	18-14	Michael Fincham & Kezia Winters	6.386	S100	18-13.11	Linda L. Moore	3.156
S49	18-39	Marlon R. Conner	2.001	S101	18-53.1	Christopher M. Previtera	6.283
S50	18-38	Marlon R. Conner	2.231	S102	18-60	Christopher M. Previtera	6.297
S51	18-37	John W. Wetzel	2.064				



P.S. 708

David L Jackson

51-02005H6A



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Bryan S-10HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 2
DATE: 01/08/2018

WW-6A1
(5/13)

Operator's Well No. Corley N-8HM

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

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

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

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

*See attached pages

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

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

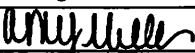
- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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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 Miller 
 Its: Permitting Specialist

LEASE NO.	TAG	PARCEL	LESSOR	LESSEE	ROYALTY	BOOK	PG	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT
10*14095	A	5-17-10	JAMES A CORLEY AND JILL C CO	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14096	A	5-17-10	RUTH A CORLEY	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14096	B	5-17-10.1	RUTH A CORLEY	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14095	C	5-17-10.3	JAMES A CORLEY AND JILL C CO	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14095	D	5-17-10.4	JAMES A CORLEY AND JILL C CO	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14298	E	5-18-19	MICHAEL L WEST	TRIENERGY HOLDINGS, LLC	1/8+	702	115	N/A	N/A	N/A	24/29 TriEnergy Holdings, LLC to AB Resources, LLC	24/32 AB Resources to Gastar Exploration USA, Inc. and Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14299	E	5-18-19	CONRAD A. FLOUHOUSE	GASTAR EXPLORATION USA INC	1/8+	735	271	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14099	F	5-18-18	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC	40/552 TH Exploration II, LLC to TH Exploration, LLC
10*14099	G	5-18-57	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC	40/552 TH Exploration II, LLC to TH Exploration, LLC
10*18898	G	5-18-57	COLBY FLOUHOUSE	TH EXPLORATION LLC	1/8+	940	266	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18143	H	5-18-61	ROGER D WHITE JR	TH EXPLORATION LLC	1/8+	940	279	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18898	H	5-18-61	COLBY FLOUHOUSE	TH EXPLORATION LLC	1/8+	940	266	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17644	I	5-18-52	ROGER HALL	TH EXPLORATION LLC	1/8+	942	404	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18898	I	5-18-52	COLBY FLOUHOUSE	TH EXPLORATION LLC	1/8+	940	266	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17644	J	5-18-51	ROGER HALL	TH EXPLORATION LLC	1/8+	942	404	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18898	J	5-18-51	COLBY FLOUHOUSE	TH EXPLORATION LLC	1/8+	940	266	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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51-07005

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Environmental Protection

10*14099	K	5-18-43	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/9 Gastar Exploration Inc to TH Exploration II, LLC	40/552 TH Exploration II, LLC to TH Exploration, LLC	
10*14099	K	5-18-43	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc and Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*19341	L	5-18-13.1	FRANKLIN BOYD TAGG ET UX	TH EXPLORATION, LLC	1/8+	936	569	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*19342	L	5-18-13.1	SONNY MICHAEL TAGG ET UX	TH EXPLORATION, LLC	1/8+	936	521	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*19343	L	5-18-13.1	SUZANNA LYNETT GUSEMAN ET CON	TH EXPLORATION, LLC	1/8+	936	537	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*19222	M	5-18-14	CHARLES E. GALLOWAY SR. AND LINDA S. GALLOWAY	TRIENERGY HOLDINGS, LLC	1/8+	737	437	N/A	N/A	N/A	N/A	25/449 TriEnergy Holdings, LLC to NPAR, LLC	756/332 NPAR, LLC to Chevron U.S.A. Inc.	40/127 Chevron U.S.A. Inc. to TH Exploration, LLC	
10*14099	N	5-18-45	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*14099	O	5-18-46	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*14099	P	5-18-47	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*14099	Q	5-18-13.5	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*14099	R	5-18-36	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC	
10*14099	S	5-18-13.3	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I, LLC to Chevron U.S.A. Inc.	40/127 Chevron U.S.A. Inc. to TH Exploration, LLC

WW-6A1 Supplement

Operator's Well No. Corley North- 8HM

51-02005

10*19155	T	5-18-15.1	JAMES A WAYNE AND BETTY LUE WAYNE	GASTAR EXPLORATION USA, Inc.	1/8+	701	78	N/A	N/A	RECEIVED Office of Oil and Gas JAN 18 2018 WV Department of Environmental Protection	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration, Inc. to Chevron USA Inc.	40/127 Chevron USA Inc. to TH Exploration, LLC	
10*19218	U	5-18-11	ROBINSON BENJAMIN	TRIENERGY HOLDINGS, LLC	1/8+	727	211	N/A	N/A		N/A	N/A	25/463 Tri Energy Holdings, LLC to NPAR, LLC	26/269 NPAR, LLC to Chevron USA, Inc.	40/127 Chevron U.S.A. Inc. to TH Exploration, LLC
10*19339	V	5-15-10	MARK STANLEY RUCKMAN	TRIENERGY INC	1/8+	664	495	N/A	N/A		N/A	N/A	N/A	28/356 TriEnergy Inc. & TriEnergy Holdings, LLC to Chevron U.S.A. Inc.	40/57 Chevron U.S.A. Inc. to TH Exploration, LLC
10*19338	W	5-16-22	JAMES M AND KIMBERLY L RUCKMAN	TRIENERGY INC	1/8+	741	72	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership		685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19294	X	5-16-23	BRENDA K BRYAN, ET AL	TRIENERGY INC	1/8+	741	78	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership		685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19295	Y	5-15-9	BRENDA K BRYAN, ET AL	TRIENERGY INC	1/8+	741	78	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC	

ASSIGNMENT OF OIL AND GAS LEASES

This ASSIGNMENT OF OIL AND GAS LEASES (the "Assignment") is made and entered into this 29th day of November, 2017 (the "Effective Date"), from TH Exploration II, LLC, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignor"), and TH Exploration, LLC, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

WITNESSETH:

WHEREAS, Assignor is the owner of the right, title, and interest in those certain Oil and Gas Leases situated in Marshall County, West Virginia, which are described in Exhibit "A" and Exhibit "A-1" attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, subject to the exceptions and reservations herein contained, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases.

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, subject to the terms, reservations, waivers and provisions as hereinafter set forth, an undivided interest of all of Assignor's right, title and interest in and to the Leases and all oil, natural gas, natural gas liquids, condensate, casinghead gas and other liquefied or gaseous hydrocarbons or products ("Hydrocarbons") thereby held, in any and all depths and formations ("Assigned Formations"), together with any and all other rights that are reasonably necessary or convenient to explore for and produce Hydrocarbons from the Assigned Formations, including, but not limited to, the right of surface access, use and occupancy, the right of ingress and egress, the right to conduct geophysical and other exploratory activities, the right to lay pipeline, the right to drill through, but not perforate or stimulate, all other depths and formations necessary for the purpose of reaching the Assigned Formations and to conduct operations therein.

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

2. Representations and Warranties. Assignor represents and warrants that such Assignor has not conveyed or otherwise encumbered its interest in the Leases since the time that Assignor obtained its interests in the Leases.

Assignor represents and warrants that, as to its interests in the Leases, Assignor has paid all royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, including, but not limited to, the interests assigned hereunder, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period.

Assignor represents and warrants that, as to its interests in the Leases, Assignor shall not, by virtue of this Assignment or otherwise, retain any interest in the Assigned Formations, including, without limitation, any overriding royalty interest or working interest therein or with respect thereto.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors

DFS LAND SERVICES CORP-JESSICA LEMON
6000 TOWN CENTER BLVD, SUITE 145
CANDLERBURG PA 15317-5870

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JAN 18 2018

WV Department of
Environmental Protection

51-02005

MICHAEL MORAN
BRIGHTON RESOURCES
8851 ELLSWORTH AVENUE, #1
PITTSBURGH PA 15232-1707

BOOK 040 PAGE 0127

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Marshall County
Jan Pest, Clerk
Instrument 1628356
08/16/2017 @ 12:08:49 PM
ASSIGNMENTS
Book 40 @ Page 127
Pages Recorded 25
Recording Cost \$ 33.00

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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ASSIGNMENT OF OIL AND GAS LEASES

This ASSIGNMENT OF OIL AND GAS LEASES (the "Assignment") is made and entered into this 29th day of November, 2017 (the "Effective Date"), from TH Exploration II, LLC, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignor"), and TH Exploration, LLC, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

WITNESSETH:

WHEREAS, Assignor is the owner of the right, title, and interest in those certain Oil and Gas Leases situated in Marshall County, West Virginia, which are described in Exhibit "A" and Exhibit "A-1" attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, subject to the exceptions and reservations herein contained, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases.

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, subject to the terms, reservations, waivers and provisions as hereinafter set forth, an undivided interest of all of Assignor's right, title and interest in and to the Leases and all oil, natural gas, natural gas liquids, condensate, casinghead gas and other liquefied or gaseous hydrocarbons or products ("Hydrocarbons") thereby held, in any and all depths and formations ("Assigned Formations"), together with any and all other rights that are reasonably necessary or convenient to explore for and produce Hydrocarbons from the Assigned Formations, including, but not limited to, the right of surface access, use and occupancy, the right of ingress and egress, the right to conduct geophysical and other exploratory activities, the right to lay pipeline, the right to drill through, but not perforate or stimulate, all other depths and formations necessary for the purpose of reaching the Assigned Formations and to conduct operations therein.

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

2. Representations and Warranties. Assignor represents and warrants that such Assignor has not conveyed or otherwise encumbered its interest in the Leases since the time that Assignor obtained its interests in the Leases.

Assignor represents and warrants that, as to its interests in the Leases, Assignor has paid all royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, including, but not limited to, the interests assigned hereunder, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period.

Assignor represents and warrants that, as to its interests in the Leases, Assignor shall not, by virtue of this Assignment or otherwise, retain any interest in the Assigned Formations, including, without limitation, any overriding royalty interest or working interest therein or with respect thereto.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors

DFS LAND SERVICES CORP - JESSICA LEHRN
6000 TOWN CENTER BLVD, STE 145
CANDLERBURG PA 15317-5841

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JAN 18 2018

WV Department of
Environmental Protection



TUG HILL

47 05 102005

January 12, 2018

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

RE: Corley N-8HM

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Corley N-8HM well plat.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at amiller@tug-hill.com.

Sincerely,

Amy Miller
Permit Specialist

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Office of Oil and Gas

JAN 18 2018

WV Department of
Environmental Protection

WW-6AC
(1/12)

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

Date of Notice Certification: 01/11/2018

API No. 47-051 - 02005
Operator's Well No. Corley N-8HM
Well Pad Name: Corley

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 Easting:	<u>520,293.04</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,400,366.88</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>Corley, James A. and Jill C.</u>
Watershed:	<u>HUC-10 Fish Creek</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 type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p>RECEIVED Office of Oil and Gas</p> <p>JAN 18 2018</p> <p>RECEIVED WV Department of Environmental Protection</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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Required Attachments:

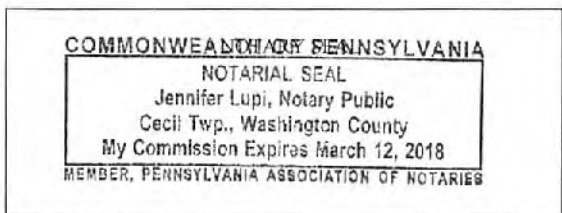
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 11th day of Jan 2018.
Jennifer Lupi Notary Public
 My Commission Expires March 12, 2018

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.

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WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Corley N-8HM
Well Pad Name: Corley

**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: 1/11/2018 **Date Permit Application Filed:** 1/11/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

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

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: James A. and Jill C. Corley (Well Pad)
 Address: 208 Flicksville Road
Bangor, PA 18013

Name: _____
 Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: James A. and Jill C. Corley
 Address: 208 Flicksville Road
Bangor, PA 18013

Name: _____
 Address: _____

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

COAL OWNER OR LESSEE
 Name: James A. and Jill C. Corley
 Address: 208 Flicksville Road
Bangor, PA 18013 *See Attached List

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: _____

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Office of Oil and Gas

JAN 18 2018

WV Department of
Environmental Protection

*Please attach additional forms if necessary

WW-6A
(8-13)

JAN 18 2010
API NO. 47-051 - 02005
OPERATOR WELL NO. Corley N-8HM

WV Department of
Environmental Protection
Well Pad Name: Corley

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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Environmental Protection

WW-6A
(8-13)

API NO. 47-051 - 0 2005
OPERATOR WELL NO. Corley N-6HM
Well Pad Name: Corley

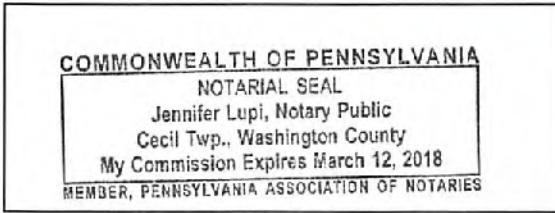
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 11th day of Jan, 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: CORLEY No. N-8HM
 District: Franklin
 County: Marshall
 State: WV

There appears to be seven (7) possible water sources within 2,000 feet of the above referenced well location.

Topo spot #1 (Water Well) TM 17 Par.10.1 James A. & Jill C. Corley 610-588-7929 208 Flicksville Rd. Bangor, PA 18013	Topo spot #2 (Spring) TM 17 Par.11 Kenneth N. & Deborah Corley 304-455-5670(H), 304-455-3844(C) 7069 Rines Ridge Rd. Proctor, WV 26055	Topo Spot #3 (House) TM 17 Par.11.1 Randy W. & Jessica Francis 304-455-5670(H), 304-455-3844(C) 6860 Rines Ridge Rd. Proctor, WV 26055
Topo Spot #4 (House) TM 17 Par.11.1 Randy W. & Jessica Francis 304-455-5670(H), 304-455-3844(C) 6860 Rines Ridge Rd. Proctor, WV 26055	Topo Spot #5 (House) TM 17 Par.9.4 Vicki L. Bowen 304-455-1985(H), 304-830-7846(C), 304-771-0864(C) 6676 Rines Ridge Rd. Proctor, WV 26055	Topo Spot #6 (House) TM 17 Par.9.2 Jeri J. White 304-455-6002 6316 Rines Ridge Rd. Proctor, WV 26055
Topo Spot #7 (House) TM 17 Par.10.2 Sidney & Lillian Pozell, Estates 304-281-1491(C) c/o Kevin Pozell 6198 Rines Ridge Rd. Proctor, WV 26055		

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 WV Department of
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WW-6A NOTICE OF APPLICATION.....CORLEY N-7HM

COAL OWNER OR LESSEE

CNX Land Resources, Inc.
Consol Plaza Tax Level 2
1000 Consol Energy Drive
Canonsburg, PA 15317

/
/

CNX Gas Company, LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

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51-02005

WW-6A

PROPOSED CORLEY N-8HM

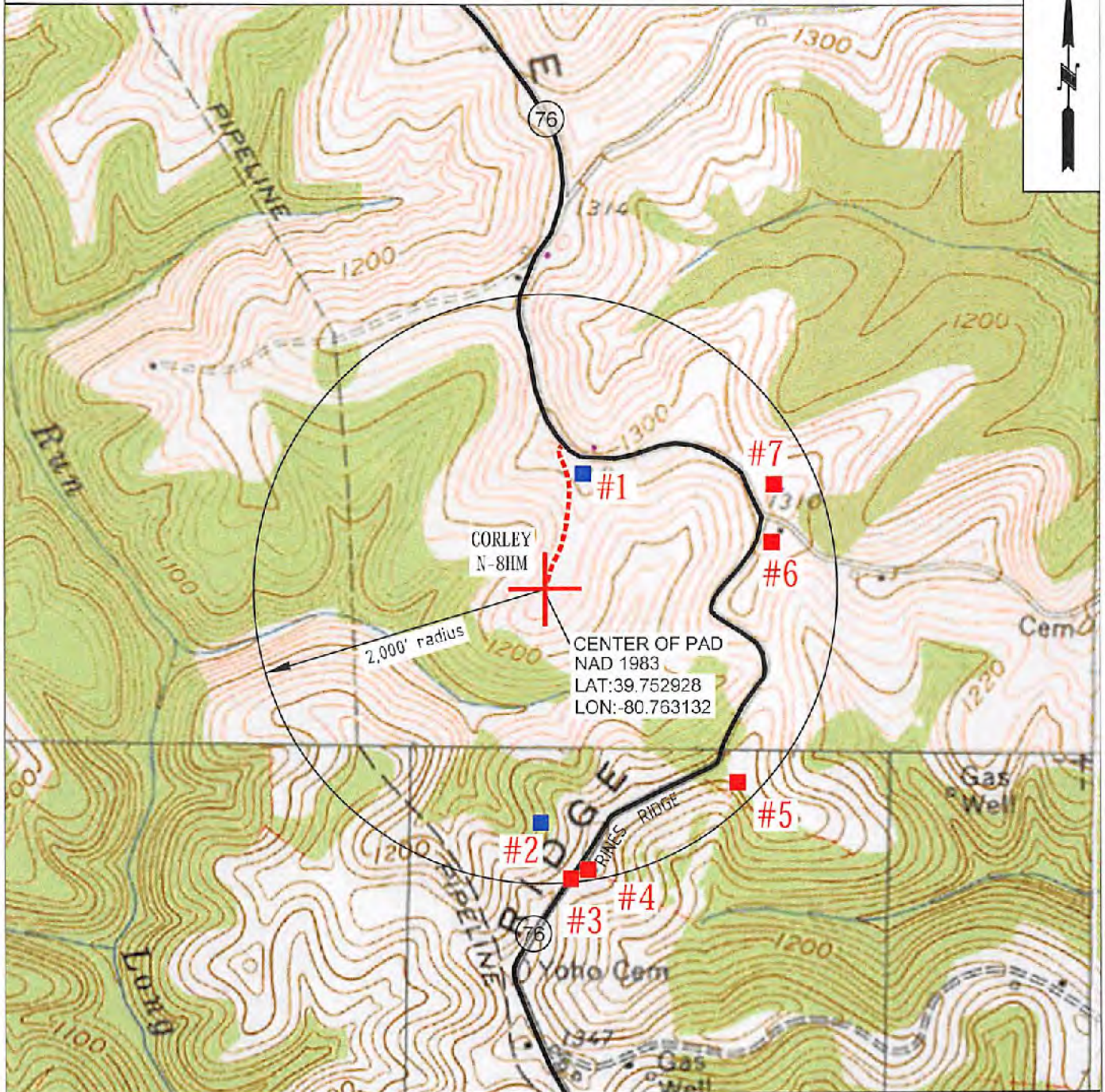
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SUPPLEMENT PG 1

JAN 18 2018

WV Department of
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There appears to be Seven (7) possible water sources within 2,000'.



OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 75'	CORLEY
		SCALE:	DATE:
		1" = 1000'	DATE: 01-10-2018

WW-6A3
(1/12)

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

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

Date of Notice: 8/30/2017 **Date of Planned Entry:** 9/5/2017

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Ruth A. Corley (Access Road) ✓
 Address: 1495 Ackerman Road
Bangor, PA 18013

Name: James A. and Jill C. Corley (Pad and Access Road) ✓
 Address: 208 Flicksville Road
Bangor, PA 18013

Name: Charles W. and Ruth A. Corley (Pad and Access Road) ✓
 Address: 1495 Ackerman Road
Bangor, PA

COAL OWNER OR LESSEE

Name: Ruth A. Corley *See attached list
 Address: 1495 Ackerman Road
Bangor, PA 18013

MINERAL OWNER(s)

Name: Ruth A. Corley *See attached list
 Address: 1495 Ackerman Road
Bangor, PA 18013

*please attach additional forms if necessary

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JAN 18 2018

WV Department of
Environmental Protection

Notice is hereby given:

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

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

Approx. Latitude & Longitude: 39.7527964; -80.7631465
 Public Road Access: Rines Ridge Road (County Route 75)
 Watershed: HUC 10 - Fish Creek
 Generally used farm name: Corely, James A. and Jill C.

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

Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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

SI-02005

WW-6A3 NOTICE OF ENTRY FOR PLAT SURVEY.....CORLEY N-8HM

COAL OWNER OR LESSEE

CNX Land Resources, Inc. /
Consol Plaza Tax Level 2 /
1000 Consol Energy Drive
Canonsburg, PA 15317

CNX Gas Company, LLC /
1000 Consol Energy Drive
Canonsburg, PA 15317

MINERAL OWNER

James A. and Jill C. Corley /
208 Flicksville Road
Bangor, PA 18013

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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: 01/12/2018 **Date Permit Application Filed:** 01/12/2018

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: <u>James A. and Jill C. Corley</u>	Name: _____
Address: <u>208 Flicksville Road</u>	Address: _____
<u>Bangor, PA 18013</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>520,293.04</u>	RECEIVED Office of Oil and Gas JAN 18 2018 WV Department of Environmental Protection
County: <u>Marshall</u>		Northing: <u>4,400,366.88</u>	
District: <u>Franklin</u>	Public Road Access: <u>Rines Ridge Road (County Route 70)</u>		
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Corley, James A. and Jill C.</u>		
Watershed: <u>HUC-10 Fish Creek</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-hilltop.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

Jim Justice
 Governor

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

September 20, 2017

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

Subject: DOH Permits for the Corley Well Pad, Marshall County
 Corley N-8HM Well Site

Dear Mr. Martin,

This well site will be accessed from Permit #06-2011-0057 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 76 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

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

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 Office of Oil and Gas
 JAN 18 2018
 WV Department of
 Environmental Protection

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



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Corley N-8HM

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

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Office of Oil and Gas
JAN 18 2018
WV Department of
Environmental Protection

Amy Miller

From: Simmons, Walter G <Walter.G.Simmons@wv.gov>
Sent: Tuesday, October 17, 2017 1:26 PM
To: Jonathan White; Amy Miller
Cc: Brewer, Charles T; Kees, Kelly L; Adkins, Laura L; Nicholson, James I; McCourt, Joseph A
Subject: Tug Hill Operating, Corley Well Site, Franklin District, Marshall County WV
Attachments: 2017-10-17 Approved Corley Well Pad Pages 1 & 9.pdf

ATTENTION -- This message contains an attachment. If you are not expecting this message and/or attachment, please exercise extreme caution before opening the file

Mr. White,

I have reviewed the revised as-built plans for the above referenced well pad as prepared by Kelly Surveying and received by the WVDEP-Office of Oil & Gas on September 26, 2017 and I am accepting these plans. Pages 1 and 9 of these approved plans are to be submitted with additional well work applications for this pad prior to its construction. If you have any questions, please do not hesitate to contact me.

Walter Simmons, PE
W.Va. Department of Environmental Protection
Office of Oil & Gas
601 57th St. S.E.
Charleston, WV 25304
Phone#: 304-926-0499 ext: 1636
Email: Walter.G.Simmons@wv.gov

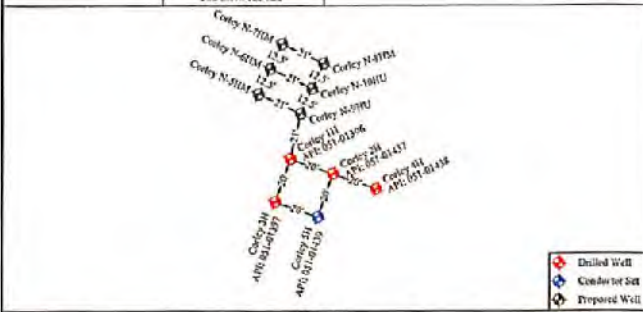
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Office of Oil and Gas
JAN 18 2018
WV Department of
Environmental Protection

WEST VIRGINIA COUNTY MAP

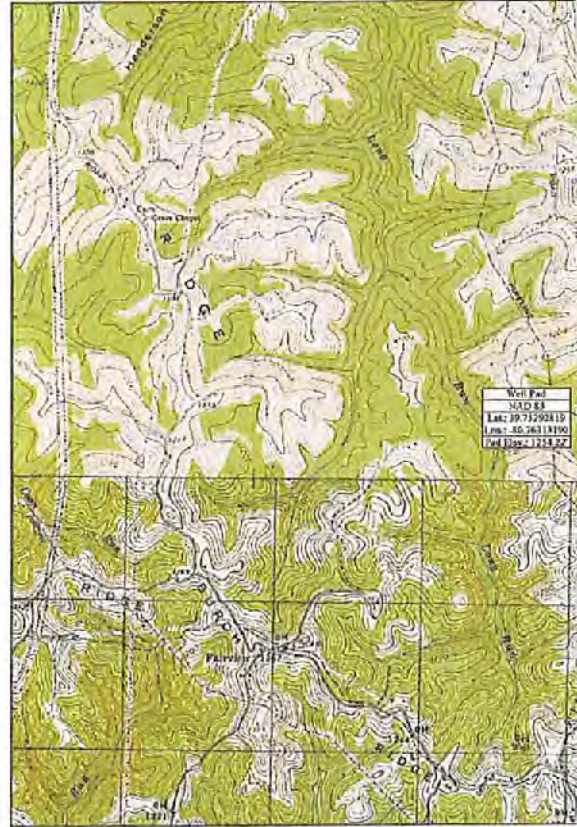


Exhibit A: Final Design

Site Entrance	Central Well Pad
WV-N NAD 83 N: 45981.51 WV-N NAD 83 E: 161319.35 WV-N NAD 27 N: 45989.22 WV-N NAD 27 E: 164392.58 Lat. NAD 83: 39.75561020 Long. NAD 83: -80.76220096 Lat. NAD 27: 39.75578114 Long. NAD 27: -80.76205102 UTM 17 NAD 83 N: 4406664.38 UTM 17 NAD 83 E: 520291.68	WV-N NAD 83 N: 453551.36 WV-N NAD 83 E: 1613376.90 WV-N NAD 27 N: 453611.08 WV-N NAD 27 E: 164384.45 Lat. NAD 83: 39.75292819 Long. NAD 83: -80.76313150 Lat. NAD 27: 39.75281068 Long. NAD 27: -80.76313150 UTM 17 NAD 83 N: 4400662.67 UTM 17 NAD 83 E: 520291.68 Pad Elev: 1254.22



Well Table				
Center 111 WV-N NAD 83 N: 45982.81 WV-N NAD 83 E: 161351.02 WV-N NAD 27 N: 45979.53 WV-N NAD 27 E: 164399.36 Lat. NAD 83: 39.7528747 Long. NAD 83: -80.7618130 Lat. NAD 27: 39.7527996 Long. NAD 27: -80.7632688 UTM 17 NAD 83 (m) N: 4406254.21 UTM 17 NAD 83 (m) E: 520287.21	Center 211 WV-N NAD 83 N: 45899.39 WV-N NAD 83 E: 161358.14 WV-N NAD 27 N: 45875.67 WV-N NAD 27 E: 164381.08 Lat. NAD 83: 39.75282693 Long. NAD 83: -80.76313125 Lat. NAD 27: 39.75276263 Long. NAD 27: -80.76320082 UTM 17 NAD 83 (m) N: 440032.35 UTM 17 NAD 83 (m) E: 520293.14	Center 311 WV-N NAD 83 N: 45892.61 WV-N NAD 83 E: 161339.68 WV-N NAD 27 N: 45878.23 WV-N NAD 27 E: 164403.32 Lat. NAD 83: 39.75282693 Long. NAD 83: -80.76304698 Lat. NAD 27: 39.75274118 Long. NAD 27: -80.76226765 UTM 17 NAD 83 (m) N: 440030.28 UTM 17 NAD 83 (m) E: 520292.82	Center 411 WV-N NAD 83 N: 45897.14 WV-N NAD 83 E: 161339.68 WV-N NAD 27 N: 45878.23 WV-N NAD 27 E: 164429.58 Lat. NAD 83: 39.75280536 Long. NAD 83: -80.76314539 Lat. NAD 27: 39.75272835 Long. NAD 27: -80.76340238 UTM 17 NAD 83 (m) N: 440048.48 UTM 17 NAD 83 (m) E: 520314.64	Center 511 WV-N NAD 83 N: 458100.62 WV-N NAD 83 E: 161374.77 WV-N NAD 27 N: 45876.33 WV-N NAD 27 E: 164481.31 Lat. NAD 83: 39.75278802 Long. NAD 83: -80.76318996 Lat. NAD 27: 39.75271131 Long. NAD 27: -80.76337478 UTM 17 NAD 83 (m) N: 440036.00 UTM 17 NAD 83 (m) E: 520291.29
Center 211M WV-N NAD 83 N: 45856.47 WV-N NAD 83 E: 161330.13 WV-N NAD 27 N: 45820.18 WV-N NAD 27 E: 164398.27 Lat. NAD 83: 39.75291119 Long. NAD 83: -80.76322525 Lat. NAD 27: 39.75280248 Long. NAD 27: -80.76318362 UTM 17 NAD 83 (m) N: 440043.49 UTM 17 NAD 83 (m) E: 520281.66	Center 311M WV-N NAD 83 N: 45867.18 WV-N NAD 83 E: 161337.18 WV-N NAD 27 N: 45870.89 WV-N NAD 27 E: 164398.72 Lat. NAD 83: 39.75290664 Long. NAD 83: -80.76320287 Lat. NAD 27: 39.75280393 Long. NAD 27: -80.76319064 UTM 17 NAD 83 (m) N: 440036.29 UTM 17 NAD 83 (m) E: 520285.59	Center 411M WV-N NAD 83 N: 45877.89 WV-N NAD 83 E: 161336.62 WV-N NAD 27 N: 45874.61 WV-N NAD 27 E: 164380.18 Lat. NAD 83: 39.75290089 Long. NAD 83: -80.76318049 Lat. NAD 27: 39.75282198 Long. NAD 27: -80.76318826 UTM 17 NAD 83 (m) N: 440037.09 UTM 17 NAD 83 (m) E: 520278.50	Center 511M WV-N NAD 83 N: 45863.67 WV-N NAD 83 E: 161338.62 WV-N NAD 27 N: 45870.78 WV-N NAD 27 E: 164419.15 Lat. NAD 83: 39.75290142 Long. NAD 83: -80.76311968 Lat. NAD 27: 39.75280597 Long. NAD 27: -80.76330378 UTM 17 NAD 83 (m) N: 440036.88 UTM 17 NAD 83 (m) E: 520291.64	Center 211M WV-N NAD 83 N: 45867.18 WV-N NAD 83 E: 161337.18 WV-N NAD 27 N: 45870.89 WV-N NAD 27 E: 164398.72 Lat. NAD 83: 39.75291119 Long. NAD 83: -80.76322525 Lat. NAD 27: 39.75280248 Long. NAD 27: -80.76318362 UTM 17 NAD 83 (m) N: 440043.49 UTM 17 NAD 83 (m) E: 520281.66



Project Contacts

Tug Hill Operating
Jonathan White - Regulatory Analyst
724-485-2000 O/E; 304-489-7676 Cell
Geoff Raftler - V.P. Production
817-633-3200 O/E

Tug Hill Operating, LLC
383 Southpointe Blvd
Southpointe Plaza II, Suite 200
Cranberry, PA 15111

Environmental:
Written Delimitations as provided by Altair Ecology dated September 6, 2017

Topographic Information:
The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Burton, WV

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
West Virginia State Law SECTION 49V, CHAPTER 24-C requires that you call law business days before you dig in the state of West Virginia. IT'S THE LAW

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

Survey and Engineer
Kenneth Kelly
304-338-6915 O/E

John P. Sivo
304-442-0220 O/E

Zachary Summers/Field
304-338-6917 O/E

Geotechnical Engineer
American Geotech, Inc.
14405 Park
304-340-4277 O/E

Well Location Restrictions
All Pad construction complies with the following restrictions:
*250' from an existing well or developed spring used for human or domestic animals.
*625' from an existing dwelling or barn greater than 2,500 SF used for poultry or dairy measured from the center of the pad.
*300' from the edge of disturbance to a naturally reproducing trout stream.
*1,000' of a surface or ground water intake to a public water supply.
(Well Location Restrictions of WV Code 22-6A-12)

Tug Hill Operating will obtain an Encroachment Permit (Form M15-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities

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

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

Site Locations (NAD 27)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.75559314	-80.76294803
Center of Well Pad	39.75281068	-80.76313150

Approach Routes:
From the intersection of WV Rt 2 and OH Rt 7 near New Martinsville, WV. Follow WV Rt 2 North for 13.0 mi. Turn right onto Co Rt 27 (Woodland and Graysville). Follow Co Rt 27 for 1.0 mi. Turn Right onto Co Rt 76 (Rivers Ridge). Follow Co Rt 76 for 5.6 mi. The site entrance will be on the Right (West) side of the road.

Floodplain Conditions

Do use construction activities take place in a floodplain:	NO
Formal review from county floodplain coordinator:	NO
Flood Hazard Zone:	X
FEMA Study completed:	N/A
Floodplain shown on drawing:	N/A
FIRM Map Number(s) for site:	5405142 0145E
Location of construction in floodplain:	N/A

Well Site

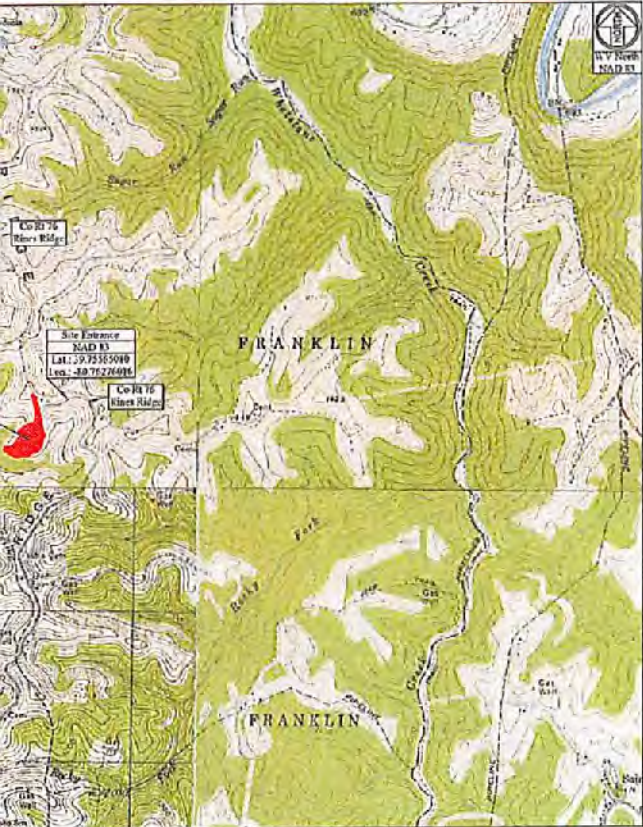
Construction Plan, &
Erosion Control Plans
Well Operating
Marshall County
Franklin District
39.75292819°
-80.76313190°
Lower Fish Creek Watershed

Pertinent Site Information
Corley Well Site
Emergency Number: 304-845-1920
Franklin District, Marshall County, WV
Watershed: Lower Fish Creek Watershed
Tug Hill Contact Number: 1-817-632-3400

Property Owner Information - Corley Well Site

Owner	151 - Parcel	WCU Parcel	Access Road	Topsoil Acres	Add. Clearing	Total Disturbed
James & Jill Corley	17-16-1	0.00	0.51	0.60	0.43	1.85
James Corley et al	17-16	3.34	0.51	0.41	3.74	10.14
Site Totals (Total)	5.34	3.34	0.41	4.21	11.70	

Design: Issue for Permitting



WV State Plane Coordinate System
North Zone, NAD 83
Elevations Based on NAVD83
Established by Survey Grade GPS
and GPCRS Post-Processing

Access Road

Surface Owner	151 - Parcel	Road Length	Type
James & Jill Corley	17-16-1	417.79'	Existing Access Road
James Corley et al	17-16	374.98'	Existing Access Road

Disturbed Area

Existing Well Pad	5.91 Ac
Existing Access Roads	1.14 ac
Topsoil / Erosion Material	0.41 ac
Existing Additional Clearing	4.21 Ac
Total Disturbed Area	11.70 Ac
Additional Information	
Total Wooded Acres Disturbed	0.60 Ac
Total Linear Feet of Access Road	1,016.27'

Notes:
All disturbance will take place within the previously permitted Limit of Disturbance for the Corley Well Site. No additional clearing disturbance will take place outside of the original LOD. Additional erosion and sedimentation controls will be installed within the LOD. All earthwork disturbance shall take place within the originally permitted LOD. The existing access road to the site shall be used and no additional access roads will be necessary for the site modifications.

Corley Well Site Quantities

Description	Cut (CY)	Fill (CY)	Spill (CY)	House (CY)	Max. Slope	Length of Slope
Well Pad Modification	632.33	36.36	376.09	N/A	N/A	N/A
Well Pad Access Road Mod.	20.50	73.36		8% to 11.41%	70.80'	26.18'
Multi-stream Access Road Mod.	1.84	138.24		13% to 25.00%	N/A	N/A
Topsoil / Erosion Material Stockpile	0.00	1,580.70		1,580.70	N/A	N/A
Total	654.67	1,848.16	376.09	1,580.70		
Total Spill (CY)	-1,132.81 (Excess Spill Capacity)					

09/15/2017

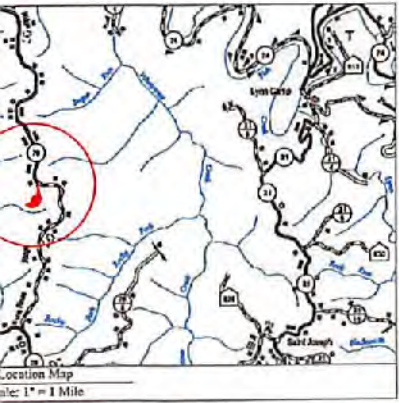
**WVDEP OOG
ACCEPTED AS-BUILT**

WJL 10/17/2017

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Office of Oil and Gas
JAN 18 2018
WV Department of
Environmental Protection

Site Locations (NAD 83)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.75292819	-80.76279218
Center of Well Pad	39.75292819	-80.76313190



Design Certification
The drawings, construction and/or process diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas, MCSR 66.
All Plans, Specifications and/or Reference Documents provided in this design constitute a complete set of plans. A complete set of plans may be necessary for the use in accordance with the design.
Zachary C. Sumnerfield
P.E. 22214
State Surveying License
CWA 03621246
Zachary C. Sumnerfield Date: 09/15/2017

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N3	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6-7	E&S Plan View
8	Toe Key Exhibit
9-10	Plan View
11	Cross Sections - Well Pad
12	Cross Sections - Access Roads
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M2	Production Exhibit
D1-D2	Erosion and Sediment Control Details
R1	Access Road Details
P1	Pad Details

Revision
09-15-2017

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

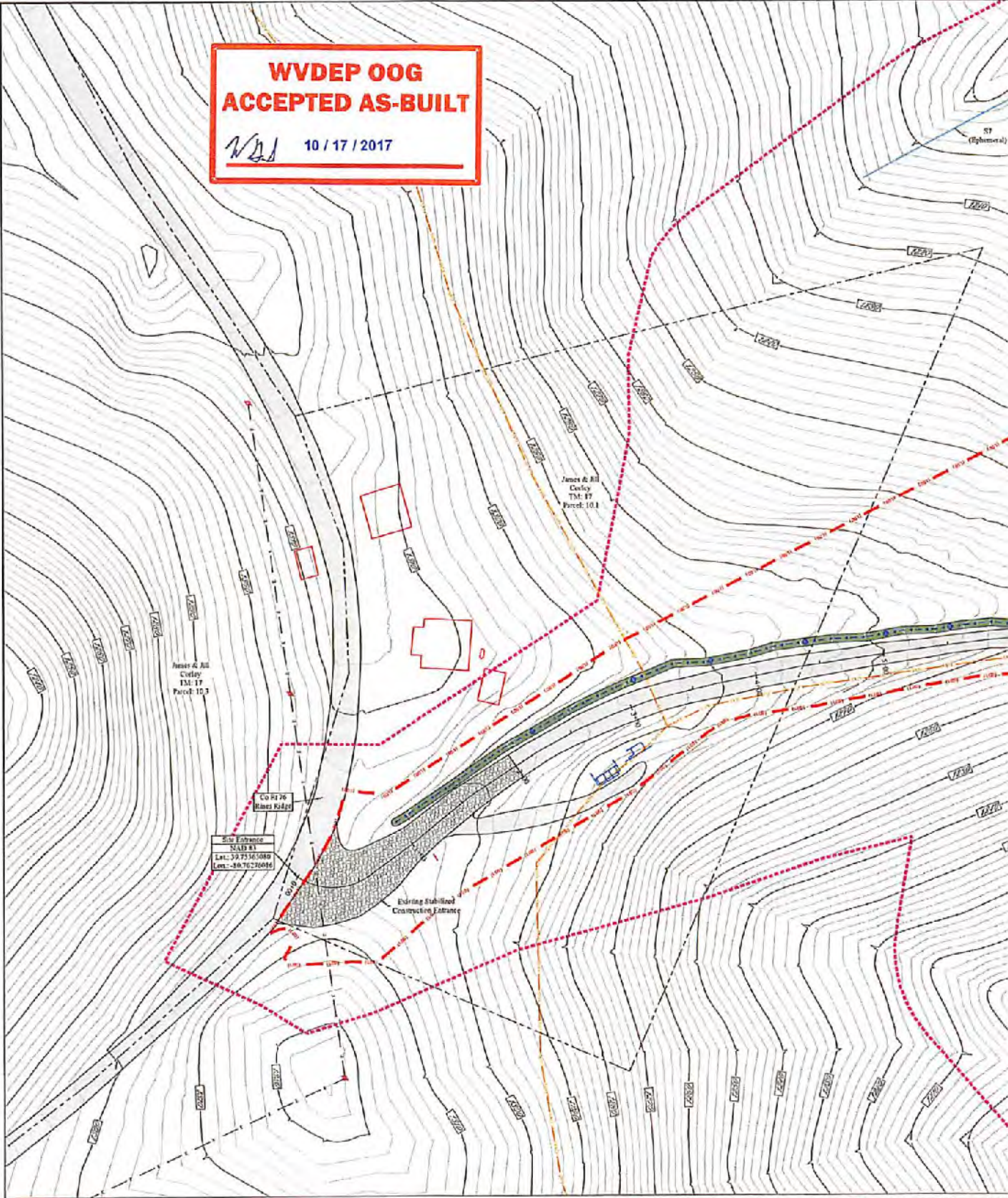
Kelly Surviving
REGISTERED PROFESSIONAL ENGINEER
STATE OF WEST VIRGINIA
0003621246

Cover Sheet
Corley Well Site
Franklin District
Marshall County, WV

Date: 09/15/2017
Scale: As Shown
Designed by: ZS
File No.
Sheet 1 of 12

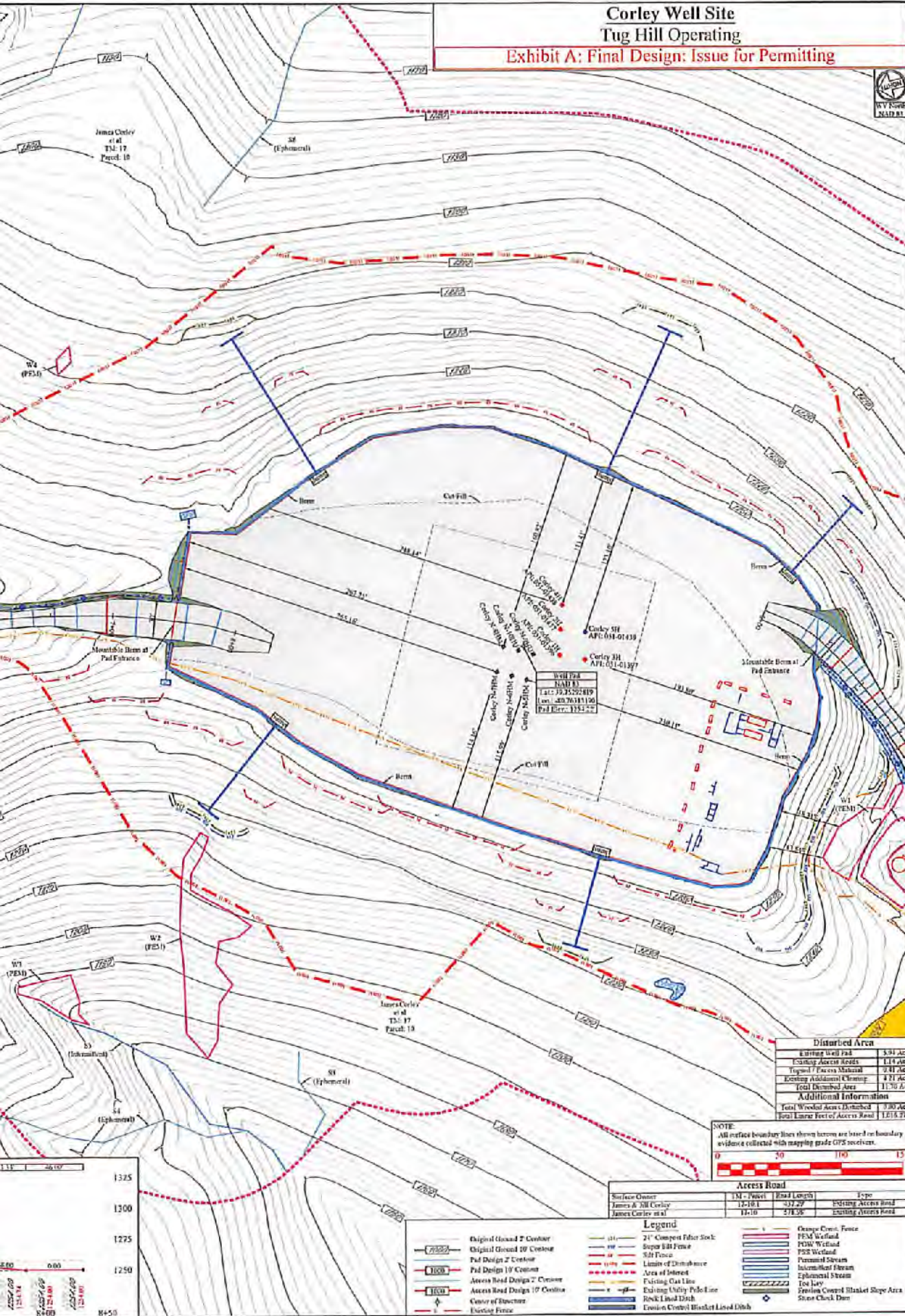
**WVDEP OOG
ACCEPTED AS-BUILT**

WJL 10 / 17 / 2017



1325	-48.97	32.73	131.31	172.66	57.57	117.56	81.00	20.20	53.20	115.03
1300	-2.21	-6.11	-2.77	-4.70	-6.95	-8.50	-9.77	-11.41	-12.27	-6.00
1275										
1250										
0+00	1327.00	1326.45	1326.10	1325.75	1325.40	1325.05	1324.70	1324.35	1324.00	1323.65
0+10	1323.30	1323.00	1322.70	1322.40	1322.10	1321.80	1321.50	1321.20	1320.90	1320.60
0+20	1320.30	1320.00	1319.70	1319.40	1319.10	1318.80	1318.50	1318.20	1317.90	1317.60
0+30	1317.60	1317.30	1317.00	1316.70	1316.40	1316.10	1315.80	1315.50	1315.20	1314.90
0+40	1314.90	1314.60	1314.30	1314.00	1313.70	1313.40	1313.10	1312.80	1312.50	1312.20
0+50	1312.20	1311.90	1311.60	1311.30	1311.00	1310.70	1310.40	1310.10	1309.80	1309.50
0+60	1309.50	1309.20	1308.90	1308.60	1308.30	1308.00	1307.70	1307.40	1307.10	1306.80
0+70	1306.80	1306.50	1306.20	1305.90	1305.60	1305.30	1305.00	1304.70	1304.40	1304.10
0+80	1304.10	1303.80	1303.50	1303.20	1302.90	1302.60	1302.30	1302.00	1301.70	1301.40
0+90	1301.40	1301.10	1300.80	1300.50	1300.20	1299.90	1299.60	1299.30	1299.00	1298.70
1+00	1298.70	1298.40	1298.10	1297.80	1297.50	1297.20	1296.90	1296.60	1296.30	1296.00

Corley Well Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting



Revision: Design
 Date: 09-15-2017

RECEIVED
 Office of Oil and Gas
 JAN 18 2018
 WV Department of
 Environmental Protection

TUG HILL
OPERATING



THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING

Kelly Surveying
 204 S. 10th St.
 Martinsburg, WV 26150
 304.261.1111

Handwritten signature and date:
 9/20/17

Site Plan
Corley Well Site
 Franklin District
 Marshall County, WV

Disturbed Area	
Existing Well Pad	5.94 AC
Existing Access Roads	1.14 AC
Proposed 7' Access Material	2.41 AC
Existing Abandoned Churnpits	4.21 AC
Total Disturbed Area	11.70 AC
Additional Information	
Total Wooded Acres Disturbed	7.00 AC
Total Linear Feet of Access Road	1,215.77'

NOTE: All surface boundary lines shown herein are based on boundary evidence collected with mapping grade GPS receivers.



Surface Owner	1M - Parcel	Road Length	Type
James & Jill Corley	14-18-1	427.27'	EXISTING Access Road
James Corley et al.	14-10	278.26'	EXISTING Access Road

- Legend**
- Original Ground 7' Contour
—— Original Ground 10' Contour
—— Pad Design 2' Contour
—— Pad Design 10' Contour
—— Access Road Design 2' Contour
—— Access Road Design 10' Contour
● Center of Structure
—— Exercise Fence
 - 21" Compact Fiber Stock
—— Super EMI Fence
—— Split Fence
—— Limits of Disturbance
—— Area of Interest
—— Existing Gas Line
—— Existing Utility Pole Line
—— Rock Lined Ditch
—— Erosion Control Basket Lined Ditch
 - Orange Chain Fence
—— PEM Wetland
—— PSD Wetland
—— Perennial Stream
—— Intermittent Stream
—— Ephemeral Stream
—— 100 Year
—— Erosion Control Blanket Slope Area
—— Stone Check Dam

Date: 09/15/2017
 Scale: As Shown
 Designed By: ZS
 File No:
 Sheet 9 of 12