



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-9HU
47-051-01983-00-00

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-9HU
Farm Name: JAMES A. & JILL C. CORLEY
U.S. WELL NUMBER: 47-051-01983-00-00
Horizontal 6A New Drill
Date Issued: 4/9/2018

PERMIT CONDITIONS

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

CONDITIONS

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.



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

March 6, 2018

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

RE: Application for Deep Well Permit – API #47-051-01983

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Corley N-9HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point 7 ½'

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

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

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: 47-051-01731
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

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

Susan Rose
Administrator

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

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

2) Operator's Well Number: Corley N9HU Well Pad Name: Corley

3) Farm Name/Surface Owner: Corley, James A. & Jill C. Public Road Access: Rines Ridge Road (CR 76)

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

5) Well Type (a) Gas Oil _____ Underground Storage _____

Other _____

(b) If Gas Shallow _____ Deep

Horizontal

Handwritten signature and date: 11/17/17

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,304' - 11,389' thickness of 85' and anticipated pressure of approx. 9000 psi

8) Proposed Total Vertical Depth: 11,584'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 20,848'

11) Proposed Horizontal Leg Length: 9,050'

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: 2,049'

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

(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	20"	NEW	J55	106.5#	975'	965'	1,561ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,810'	2,800'	1,974ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,326'	10,316'	3,370ft^3(CTS)
Production	5 1/2"	NEW	HCP110	23#	20,848'	20,837'	4,949ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,618'	
Liners							

Handwritten signature and date: 11/17/17

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	13,580	10,864	SEE#24	1.18
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

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WW-6B
(10/14)

API NO. 47-051 - 01983
OPERATOR WELL NO. Corley N9HU
Well Pad Name: Corley

11/17/17

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 14,691,558 lb proppant and 349,799 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 third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

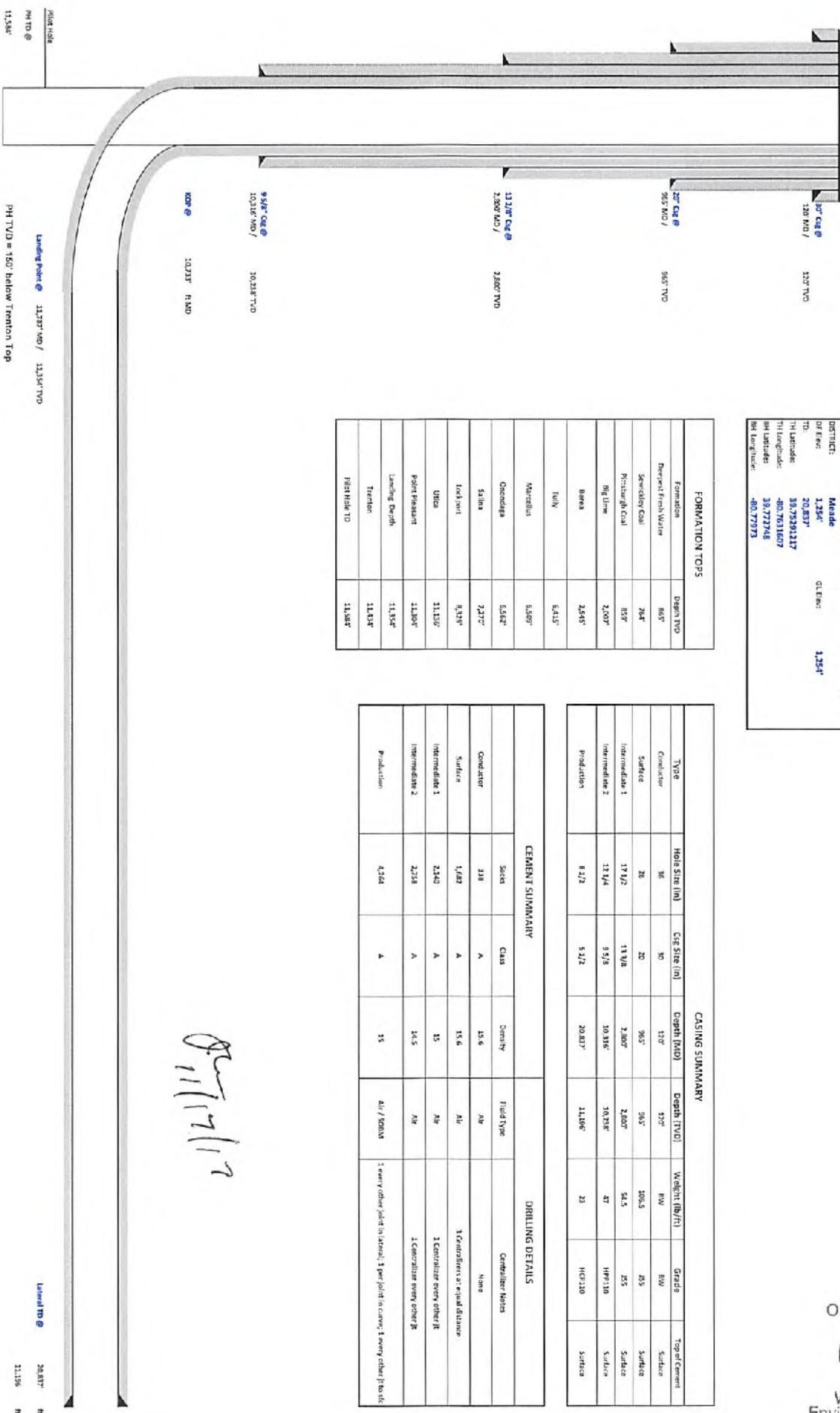
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*Note: Attach additional sheets as needed.

51-01983



WELL NAME:	Conroy N-9HU	COUNTY:	Marshall
STATE:	West Virginia	CLEINC:	1,254'
DISTRICT:	Maclede		
DEEP:	1,234'		
TD:	20,837'		
TH latitude:	38.79291217		
TH longitude:	-80.7631627		
9H latitude:	39.7227948		
9H longitude:	-80.7727973		

FORMATION TOPS	Depth TWD
Formation	857'
Deepwell Fresh Water	744'
Spencerly Coal	857'
Richburg Coal	2,007'
Big Lime	2,549'
Berea	5,415'
Maclure	5,597'
Onondaga	5,542'
Silica	2,212'
Lockport	8,331'
Utica	11,130'
Point Pleasant	11,804'
Landing Depth	11,934'
Traction	11,834'
FRANKLIN TD	11,584'

CASING SUMMARY									
Type	Hole Size (in)	Csg Size (in)	Depth (TWD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement		
Conductor	36	30	130'	130'	8W	8W	Surface		
Surface	26	20	965'	965'	106.5	855	Surface		
Intermediate 1	17 1/2	13 3/8	2,800'	2,600'	64.5	255	Surface		
Intermediate 2	12 1/4	9 5/8	10,316'	10,238'	47	HPF-110	Surface		
Production	8 3/2	5 1/2	20,837'	11,166'	23	HC-110	Surface		

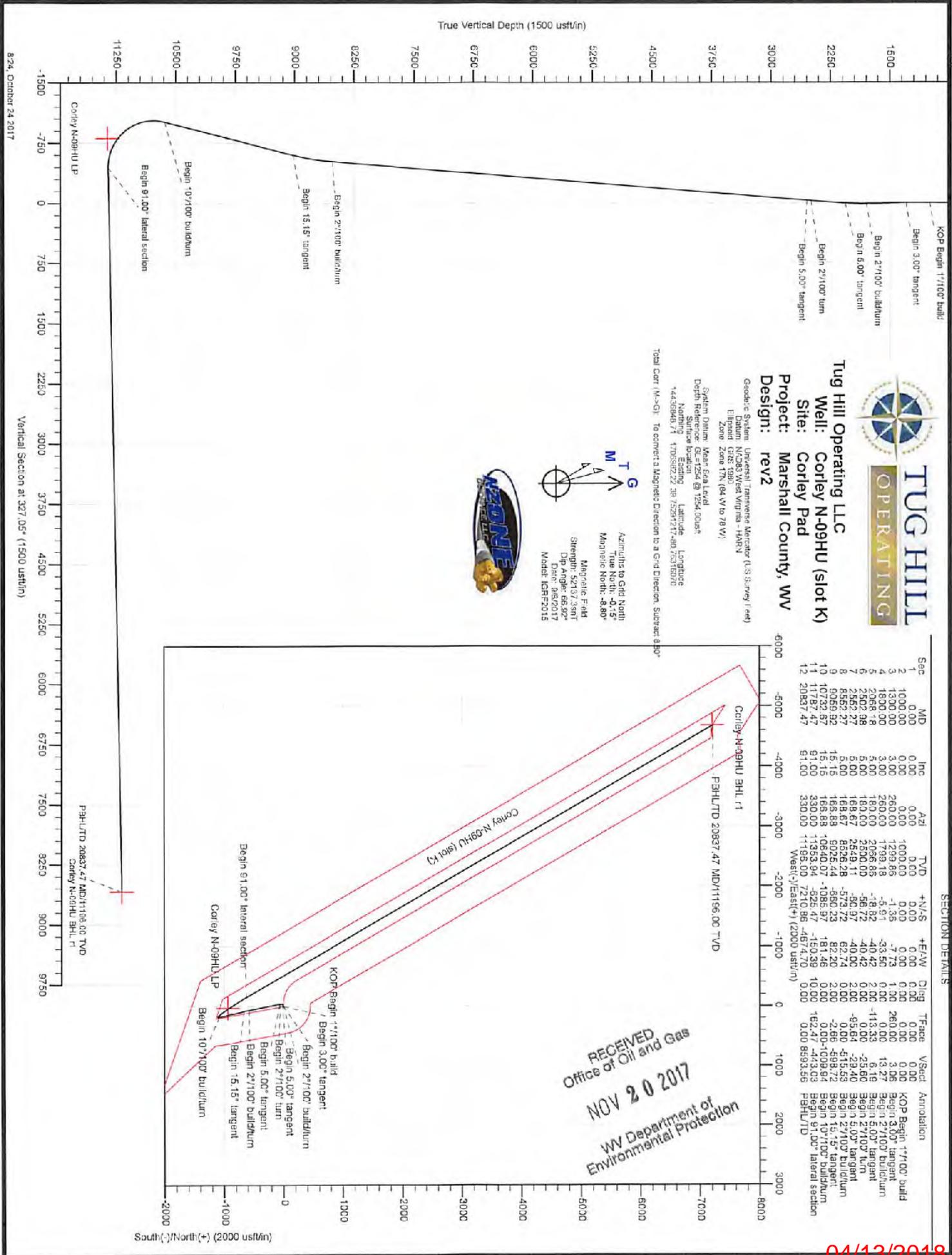
CEMENT SUMMARY					DRILLING DETAILS	
Section	Cas	Cas	Density	Fluid Type	Cementizer Notes	
Conductor	30H	A	15.6	Air	None	
Surface	1,682	A	15.6	Air	3 Conduits at equal distance	
Intermediate 1	2,140	A	15	Air	1 Cementizer every other ft	
Intermediate 2	2,238	A	14.5	Air	1 Cementizer every other ft	
Production	4,216	A	15	ALI / SGRM	1 every other joint in lateral, 1 per joint in curve, 1 every other ft to 4ft	

Handwritten signature and date: 11/17/17

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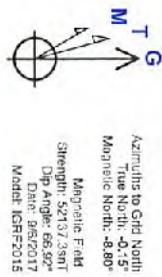
04/13/2018

51-01983



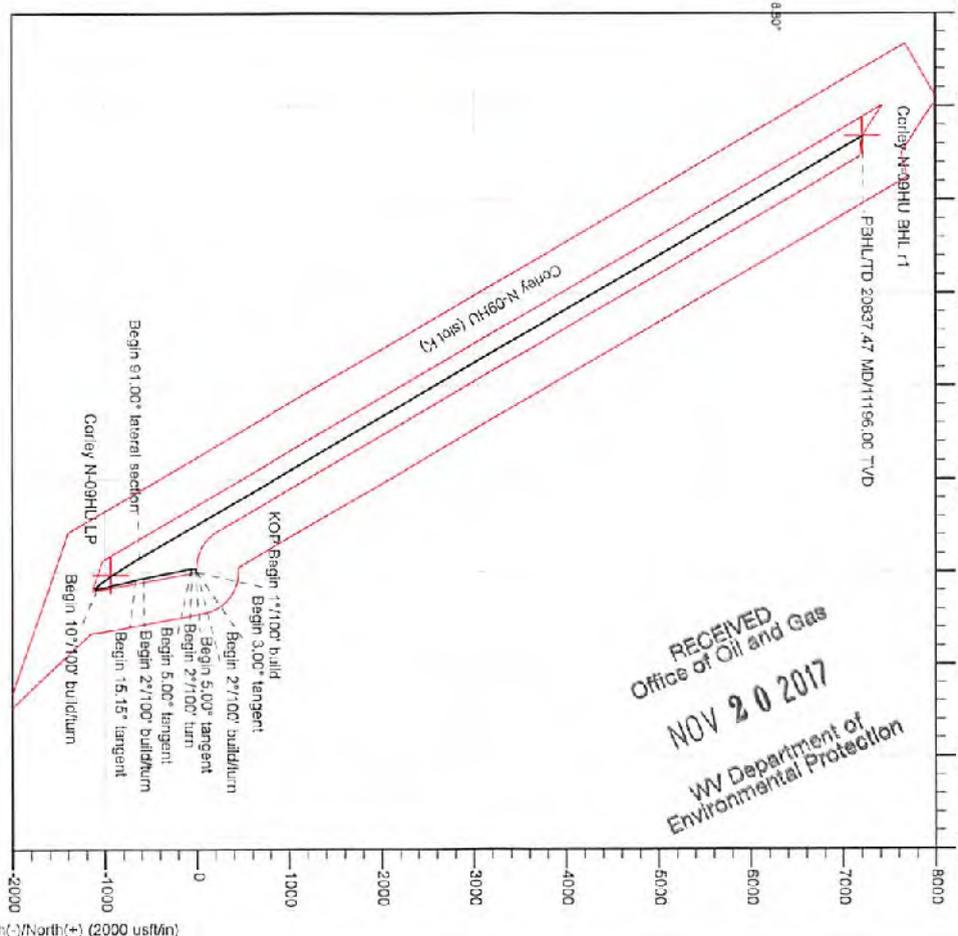
Tug Hill Operating LLC
Well: Corley N-09HU (slot K)
Site: Corley Pad
Project: Marshall County, WV
Design: rev2

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (94.V to 78.V)
 System Datum: Mean Sea Level
 Depth Reference: GL=7254 @ 7254.000ft
 Heighting Method: Surface Elevation
 Northing: 4420840.17
 Easting: 117058222.28
 UTM Zone: 17N
 Longitude: 78.750165070
 Latitude: 39.75291217480750165070
 Total Cor: (M>G) To convert a Magnetic Direction to a Grid Direction, Subtract (80°)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Diag	Trace	Used	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1.7100° build
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	Begin 3.00° tangent
3	1300.00	3.00	260.00	1299.86	-1.58	-7.73	1.00	3.06	0.00	Begin 2.7100° buildup
4	1800.00	5.00	180.00	2056.85	-18.82	-40.42	2.00	13.27	0.00	Begin 5.00° tangent
5	2068.98	5.00	180.00	2506.00	-56.72	-40.42	2.00	6.16	0.00	Begin 2.7100° turn
6	2502.98	5.00	168.67	2849.11	-80.97	-40.00	2.00	-23.60	0.00	Begin 5.00° tangent
7	2552.77	5.00	168.67	8526.28	-573.97	62.74	0.00	-69.64	0.00	Begin 2.7100° buildup
8	8552.77	15.15	168.68	5925.44	-386.33	82.20	2.00	-2.66	-698.72	Begin 15.15° tangent
9	6069.92	15.15	168.68	10640.07	-1085.97	-181.46	0.00	-2.66	-1098.84	Begin 10.7100° buildup
10	10732.92	91.00	330.00	11353.94	7210.86	-4874.70	10.00	162.47	-4153.03	Begin 91.00° lateral section
11	11787.47	91.00	330.00	11193.00	-1193.00	-4874.70	0.00	0.00	8593.56	P#HLTD
12	20837.47	91.00	330.00	11193.00	-1193.00	-4874.70	0.00	0.00	8593.56	P#HLTD



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04/13/2018

8/24, October 24 2017

Vertical Section at 327.05° (1500 usft/in)

P#HLTD 20837.47 MD/11196.00 TVD
 Corley N-09HU BHL #1

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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05101983

Permit well - Corley N-9HU

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

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Comments
4705101396	Tug Hill Operating	6625' TVD 12408' MD	Marcellus	Unknown	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	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	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	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.

WV Geological & Economic Survey

Well: County = 51 Permit = 01396

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTMR	UTMN
4705101396	Marshall	1329	Franklin	Franklin Point	Campston	39.73288	-83.78117	60297	4129341

Bottom Hole Location Information:

API	EP_FLAG	UTMR	UTMN	LONG_DD	LAT_DD	
4705101396	1	As Proposed	621028.6	4326037.7	40.743707	30.742074

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TROT_FM	TBM_EST_FR	
4705101396	18/1/2011		Completed	JAMES A & JILL C CORLEY SR	114		Corley	WV16-0018-001-V1-283082-001	WV-0018-002	JAMES A & JILL C CORLEY SR	Gas	Franklin	8720	Marcellus Sh

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RGS	CMP_MTHD	TVD	TMD	NEW_FTG	Q_BEF	O_AFT	O_BEF	O_AFT	NOL_BEF	NOL_AFT	P_BEF	P_AFT
4705101396	18/1/2011	8/1/2011	1272	Ground Level	Campston	Franklin	Marcellus Sh	Marcellus Sh	Development Well	Development Well	OH AND GAS	Rotary	Fractured	6625	12408	12408	2850	2430	39	34		

Comment: 11/17/2011 Additional Lease #: WV16-0018-000/ Rock pressure listed as 2500 csg.

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WV Geological & Economic Survey

Well: County = 51 Permit = 01437

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTMR	UTMN
4705101437	Marshall	1427	Franklin	Franklin Point	Campston	39.75248	-83.76122	60292.6	4400393.2

Bottom Hole Location Information:

API	EP_FLAG	UTMR	UTMN	LONG_DD	LAT_DD	
4705101437	1	As Proposed	621085.7	4400314.2	40.748	30.750563

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TROT_FM	TBM_EST_FR
4705101437	11/17/2011		Completed	JAMES A & JILL C CORLEY SR	24		Corley	WV16-0018-001-V1-283082-000	James A & Jill C Corley Sr	Gas	Franklin	8720	Marcellus Sh

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RGS	CMP_MTHD	TVD	TMD	NEW_FTG	Q_BEF	O_AFT	O_BEF	O_AFT	NOL_BEF	NOL_AFT	P_BEF	P_AFT
4705101437	11/17/2011	7/21/2011	1272	Ground Level	Campston	Franklin	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Gas	unknown	Fractured	6622	12122	12162	2328	2413				

Comment: 11/17/2011 Additional Lease #: WV16-0018-000/WV16-0060-000/1-283082-001

04/13/2018

05 10 19 8 J

4705101569 4705101568
4705101567 4705101566
4705101565

4705101340
4705101340
4705101340

4705101541 4705101539
4705101538 4705101537
4705101535

MARSHALL FRANKLIN

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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Corley N-9HU
- 500 Ft Buffer
- Counties
- Districts



Corley N-9HU Franklin District Marshall County, WV



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

Map Prepared by:
DPS
04/13/2018
LAND SERVICES

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Corley N-9HU

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^{ment}

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature _____
Company Official (Typed Name) Sean Gasser
Company Official Title Engineer

RECEIVED
Office of Oil and Gas

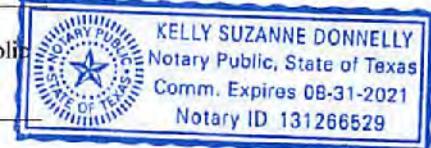
OCT 18 2017

WV Department of
Environmental Protection

Subscribed and sworn before me this 11th day of October, 20 17

[Signature] Notary Public

My commission expires 8-31-21



04/13/2018

Form WW-9

Operator's Well No. Corley N-9HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 17.78 Prevegetation pH 6.0

Line 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by:

Jim Uehler

Comments:

RECEIVED
Office of Oil and Gas

OCT 18 2017

WV Department of
Environmental Protection

Title:

Oil & Gas Inspector

Date:

10/12/17

Field Reviewed?

() Yes

() No

WW-9

**PROPOSED CORLEY
N-9HU**

SUPPLEMENT PG 1

DRAWING NOT
TO SCALE

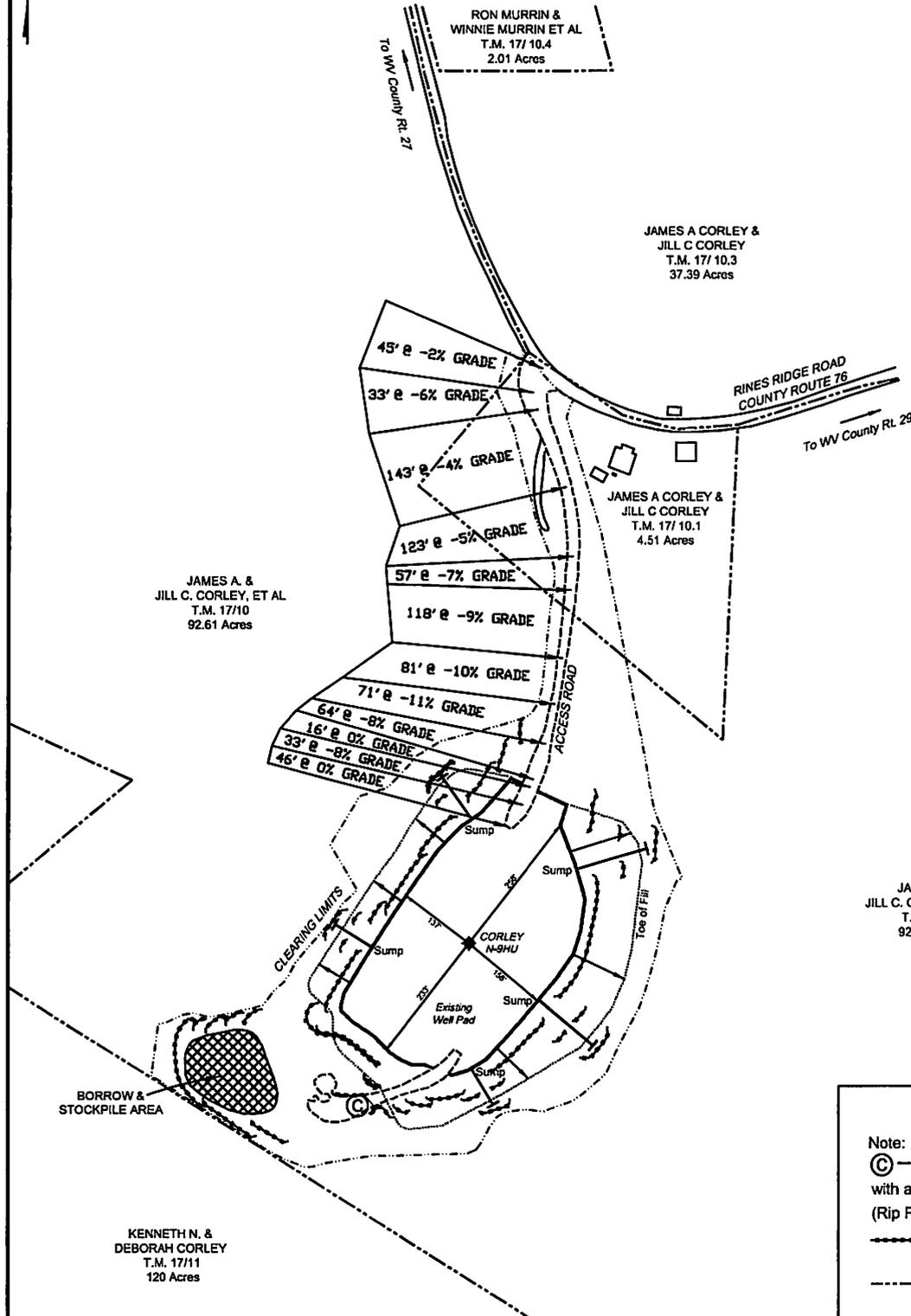
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES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



RON MURRIN &
WINNIE MURRIN ET AL
T.M. 17/10.4
2.01 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

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

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

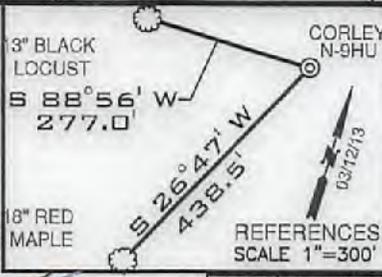
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Office of Oil and Gas
OCT 18 2017
WV Department of
Environmental Protection

LEGEND

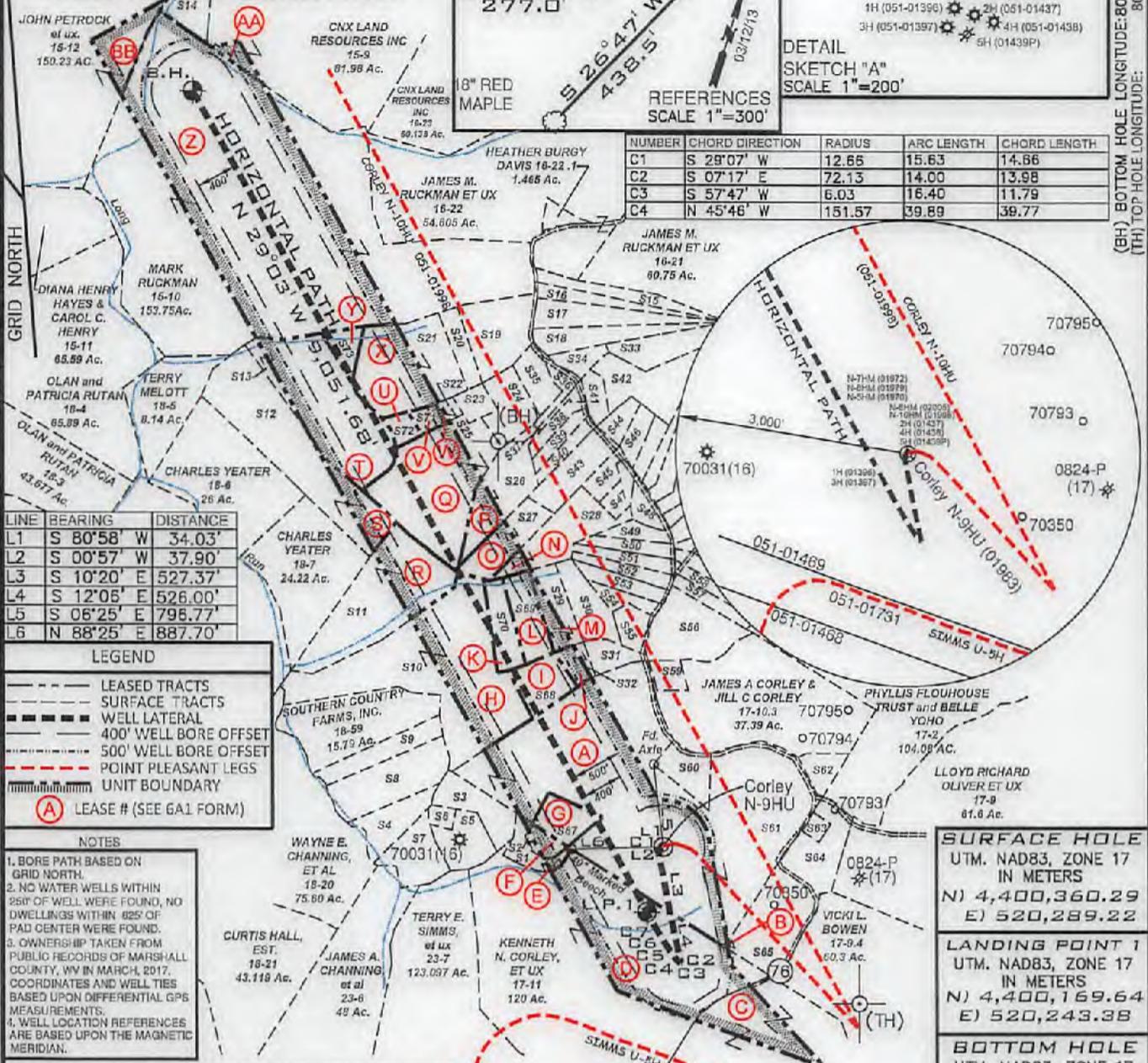
Note:
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 ——— Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary

DATE: 09/22/17 PROJECT NO: 494510851 DRAWN BY: J.A.H.

CORLEY LEASE
UTICA UNIT - 318.831 AC ±
WELL N-9HU 01340
TUG HILL OPERATING



TOP HOLE LATITUDE: 39°47'30"
 BOTTOM HOLE LATITUDE: 39°47'30"
 N-7HM, N-8HM, N-9HM, N-10HU, N-9HU, 1H, 2H, 3H, 4H, 5H



LINE	BEARING	DISTANCE
L1	S 80°58' W	34.03'
L2	S 00°57' W	37.90'
L3	S 10°20' E	527.37'
L4	S 12°05' E	526.00'
L5	S 06°25' E	796.77'
L6	N 88°25' E	887.70'

LEGEND
 - - - LEASE TRACTS
 - - - SURFACE TRACTS
 - - - WELL LATERAL
 - - - 400' WELL BORE OFFSET
 - - - 500' WELL BORE OFFSET
 - - - POINT PLEASANT LEGS
 - - - UNIT BOUNDARY
 (A) LEASE # (SEE GA1 FORM)

NOTES
 1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' 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.

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	S 29°07' W	12.65	15.63	14.66
C2	S 07°17' E	72.13	14.00	13.98
C3	S 57°47' W	6.03	16.40	11.79
C4	N 45°46' W	151.57	39.89	39.77

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C5	N 35°36' W	1243.57	142.43	142.35
C6	N 31°30' W	4951.98	262.83	262.80
C7	N 29°35' W	7196.41	136.48	136.47

SURFACE HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,400,360.29
 E) 520,289.22

LANDING POINT 1
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,400,169.64
 E) 520,243.38

BOTTOM HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,402,558.16
 E) 518,864.37

FILE NUMBER _____
 DRAWING NUMBER CORLEY_WP_N-9HU
 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

David L Jackson



JACKSON SURVEYING INC.
 P.O. Box 1460
 Clarksburg, WV 26302
 304-623-5851

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

DATE: DECEMBER 05, 2017
 REVISED DATE: FEBRUARY 08, 2018
 OPERATORS WELL NO. CORLEY N-9HU
 API WELL NO. 47-051-01983
 STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
 LOCATION ELEVATION 1254.22' WATERSHED (HUC 10) Fish Creek
 DISTRICT Franklin COUNTY Marshall
 QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 ROYALTY OWNERS

SURFACE OWNER James A. & Jill C. Corley, et al ACREAGE 92.61
 OIL & GAS ROYALTY OWNER James A. & Jill C. Corley, et al-See WW-6A1 Royalty Owners LEASE ACREAGE
 PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) ___

TARGET FORMATION Point Pleasant ESTIMATED DEPTH TVD: 11,584' TMD: 20,848'
 WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

04/13/2018

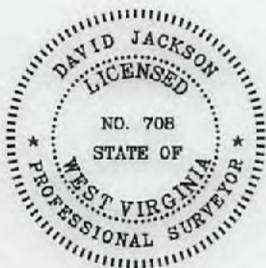
COUNTY NO. 14,133
 PERMIT

form: ww6

**CORLEY LEASE
UTICA UNIT - 318.831 AC±
WELL N-9HU
TUG HILL OPERATING**

GRID NORTH

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	17-12	James A. & Jill C. Corley	3.33
S2	17-12.1	Williams Ohio Valley Midstream LLC	1.67
S3	18-13.8	Lori D. Carpenter	5.545
S4	18-29	Carl G. Berg	5.319
S5	18-32	Kenneth E Rastall	5.335
S6	18-32.1	Lori D. Carpenter	1.165
S7	18-31	Kenneth E Rastall	6.94
S8	18-13.10	Carl Berg	10.88
S9	18-30	John Schmidt et al	5.46
S10	18-13	Southern Country Farm Inc.	24.724
S11	18-16	Charles Yeater	17.768
S12	18-15.3	Charles Yeater	26.44
S13	18-15.4	Edward Lee Burge Jr.	22.34
S14	15-13	CNX Land Resources Inc.	11.0
S15	18-56	William E. O'Hara	3.965
S16	18-55	William E. O'Hara	3.202
S17	18-28	Dotson Harrison et ux	6.36
S18	18-28.1	Carol Diane Helmick	5.696
S19	18-11	Benjamin Robinson	10.883
S20	18-11.2	Edward Lee Burge Jr.	2.0
S21	18-11.1	Edward Lee Burge Jr.	18.0
S22	18-10	David & Nancy Anderson	0.907
S23	18-12	William L. Wayne Et Ux	2.270
S24	18-15.1	Jason Blair	5.948
S25	18-15.5	Darrell Boley & Teresa Boley	23.547
S26	18-13.3	Robert G. Closterman	9.813
S27	18-17	Michael Fincham & Kezia Winters	6.555
S28	18-13.1	Cory A. Holt	9.248
S29	18-13.6	Glenn Eugene Whisler Et Ux	5.384
S30	18-13.7	Victor W. Woods Jr. & Jessica L. Woods	5.255
S31	18-48	Marvin Dean Roberts Et Ux & Brad & Bridget Williams	2.920
S32	18-13.14	Glenn E. & Sandra K. Whisler	2.116
S33	18-13.2	Steven G. Berisford	6.023
S34	18-50	Steven G. Berisford	2.170
S35	18-15.2	Edward L. Burge	4.171
S36	18-36	Ruth Mulligan Est.	2.003
S37	18-13.5	Bryan Wesley	1.023
S38	18-47	Robert Richard Pelley II & Susan Lynn Briggs	2.01
S39	18-46	Dale W. & Patricia Gardner	2.03
S40	18-45	Michael Fincham & Kezia Winters	2.07
S41	18-49	Tanner Butler	2.023
S42	18-13	Southern Country Farms Inc	11.054
S43	18-14	Michael Fincham & Kezia Winters	6.386
S44	18-37	John Wetzel	2.064
S45	18-40	Cory A. Holt	2.237
S46	18-38	Marlon Connor	2.231
S47	18-41	Cory A. Holt	2.308
S48	18-25	Charles & Maria Rayl	2.521
S49	18-44	Renee Straight	2.133
S50	18-43	Roy Butler	2.532
S51	18-51	Roger Hall Jr.	2.505
S52	18-52	Roger Hall Jr.	2.536
S53	18-61	Roger White Jr.	2.984
S54	18-57	Marvin Roberts	2.228
S55	18-18	Linda Coen	3.0
S56	18-19	Roger White Jr.	10.0
S57	18-42	Cory A. Holt	2.308
S58	18-35	Mary Anderson	2.308
S59	17-10.4	Ron & Winnie Murrin, et al	2.01
S60	17-10.1	James & Jill Corley	4.51
S61	17-10	James A. Corley & Jill C. Corley, et al	92.61
S62	17-10.2	Sidney Pozell Et Ux Ests	2.6
S63	17-9.1	Jeri J White	1.0
S64	17-9.2	Jeri J White	7.136
S65	17-9.3	James A. Corley & Jill C. Corley	12.47
S66	17-11.1	Randy W. Francis et ux	67.0
S67	17-10.5	Williams Ohio Valley Midstream LLC	4.24
S68	18-33	Sandra & Glenn Whisler	5.343
S69	18-13.13	Glenn & Sandra Whisler	5.59
S70	18-34	Jodi & Gary Hall	5.002
S71	18-10.2	David Anderson et ux	1.377
S72	18-10.1	David Anderson et ux	1.65
S73	18-15	Edward Lee Burge, Jr.	2.495



P.S. 708

David L Jackson

51-01983 H6A



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Corley N-9HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

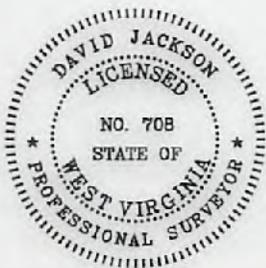
04/13/2018
WELL PLAT
PAGE 2 OF 3
DATE: 12/21/2017
REVISED DATE:
02/08/2018

form wv6

**CORLEY LEASE
 UTICA UNIT - 318.831 AC±
 WELL N-9HU
 TUG HILL OPERATING**

GRID NORTH

NUMBER	LEASE NAME OR NO.	TAG	PARCEL	OIL & GAS ROYALTY OWNER	DEED BOOK	PAGE
1	10*14095	A	5-17-10	JAMES A. CORLEY & JILL C. CORLEY	666	545
2	10*14096	A	5-17-10	RUTH A. CORLEY	666	539
3	10*14095	B	5-17-9.3	JAMES A. CORLEY & JILL C. CORLEY	666	545
4	10*14126	C	5-17-11.1	SHARON MIDCAP	697	152
5	10*14126	D	5-17-11	SHARON MIDCAP	697	152
6	10*14134	E	5-17-12	JAMES A. CORLEY & JILL C. CORLEY	708	130
7	10*14095	F	5-17-12.1	JAMES A. CORLEY & JILL C. CORLEY	666	545
8	10*14096	F	5-17-12.1	RUTH A. CORLEY	666	539
9	10*14134	F	5-17-12.1	JAMES A. CORLEY & JILL C. CORLEY	708	130
10	10*14096	G	5-17-10.5	RUTH A. CORLEY	666	539
11	10*14095	G	5-17-10.5	JAMES A. CORLEY & JILL C. CORLEY	666	545
12	10*14099	H	5-18-13	SOUTHERN COUNTRY FARMS, INC.	666	489
13	10*18896	H	5-18-13	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
14	10*18896	I	5-18-33	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
15	10*14099	J	5-18-13.14	SOUTHERN COUNTRY FARMS, INC.	666	489
16	10*18896	J	5-18-13.14	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
17	10*18896	K	5-18-34	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
18	10*14099	L	5-18-13.13	SOUTHERN COUNTRY FARMS, INC.	666	489
19	10*18896	L	5-18-13.13	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
20	10*14099	M	5-18-13.6	SOUTHERN COUNTRY FARMS, INC.	666	489
21	10*18896	M	5-18-13.6	COLBY ANN FLOUHOUSE HOMER & THE ESTATE OF PHYLLIS J. FLOUHOUSE	940	427
22	10*19341	N	5-18-13.1	FRANKLIN BOYD TAGG ET UX.	936	589
23	10*19342	N	5-18-13.1	SONNY MICHAEL TAGG ET UX.	936	521
24	10*19343	N	5-18-13.1	SUZANNA LYNETT GUSEMAN ET CON.	936	537
25	10*19222	O	5-18-17	CHARLES E. GALLOWAY, SR. & LINDA S. GALLOWAY	737	437
26	10*14099	P	5-18-13.3	SOUTHERN COUNTRY FARMS, INC.	666	489
27	10*14503	Q	5-18-15.5	IMA LEE YOHO	756	85
28	10*19261	Q	5-18-15.5	DARRELL BOLEY ET UX.	897	254
29	10*14503	R	5-18-16	IMA LEE YOHO	756	85
30	10*17222	S	5-18-15.3	JAMES W. & DOLLIE M. FOSTER	940	429
31	10*14923	T	5-18-15.4	EDWARD LEE BURGE, SR.	668	521
32	10*19160	U	5-18-10.1	DAVID V. ANDERSON ET UX.	704	319
33	10*19160	V	5-18-10.2	DAVID V. ANDERSON ET UX.	704	319
34	10*19160	W	5-18-10	DAVID V. ANDERSON ET UX.	704	319
35	10*19218	X	5-18-11.1	BENJAMIN ROBINSON	727	211
36	10*19188	Y	5-18-15	EDWARD LEE BURGE, SR.	668	521
37	10*19339	Z	5-15-10	MARK STANLEY RUCKMAN	664	495
38	10*19295	AA	5-15-9	BRENDA K. BRYAN ET AL.	741	78
39	10*19337	BB	5-15-12	JACK & HATTIE PETROCK	663	498

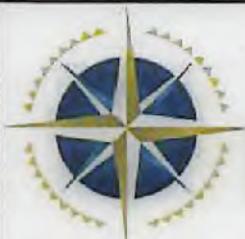


P.S.
708

David L Jackson

51-01983H6A

04/13/2018



**TUG HILL
 OPERATING**

OPERATOR'S
 WELL #: Corley N-9HU
 DISTRICT: Franklin
 COUNTY: Marshall
 STATE: WV

WELL PLAT
 PAGE 3 OF 3
 DATE: 12/21/2017
 REVISED DATE:
 02/08/2018

WW-6A1
(5/13)

Operator's Well No. Corley N-9HU

**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 sheets

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

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

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

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

Well Operator: Tug Hill Operating, LLC

By: Nicole Petrovich, Esq. *Nicole Petrovich*
 Its: Landman - Appalachia RECEIVED
Office of Oil and Gas

NOV 20 2017

RECEIVED
Office of Oil and Gas
Lessor

Lease No.	Tag	Parcel	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14095	A	5-17-10	JAMES A CORLEY AND JILL C CORLEY	1/8+	666	545	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14096	A	5-17-10	RUTH A CORLEY	1/8+	666	539	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14095	B	5-17-9.3	JAMES A CORLEY AND JILL C CORLEY	1/8+	666	545	N/A	N/A	N/A	N/A	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
10*14126	C	5-17-11.1	SHARON MIDCAP	1/8+	697	152	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	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
10*14126	D	5-17-11	SHARON MIDCAP	1/8+	697	152	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	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
10*14134	E	5-17-12	JAMES A CORLEY AND JILL C CORLEY	1/8+	706	130	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14095	F	5-17-12.1	JAMES A CORLEY AND JILL C CORLEY	1/8+	666	545	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14096	F	5-17-12.1	RUTH A CORLEY	1/8+	666	539	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14134	F	5-17-12.1	JAMES A CORLEY AND JILL C CORLEY	1/8+	706	130	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14096	G	5-17-10.5	RUTH A CORLEY	1/8+	666	539	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14095	G	5-17-10.5	JAMES A CORLEY AND JILL C CORLEY	1/8+	666	545	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC

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Lease No.	Tag	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
10*14099	H	5-18-13	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	
10*18898	H	5-18-13	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*18898	I	5-18-33	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J. FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*14099	J	5-18-13.14	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	
10*18898	J	5-18-13.14	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*18898	K	5-18-34	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J. FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*14099	L	5-18-13.13	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	
10*18898	L	5-18-13.13	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*14099	M	5-18-13.6	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC - 50%	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	
10*18898	M	5-18-13.6	COLBY ANN FLOUHOUSE HOMER AND THE ESTATE OF PHYLLIS J FLOUHOUSE	TH EXPLORATION, LLC	1/8+	940	427	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
10*19341	N	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	N/A	
10*19342	N	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	N/A	
10*19343	N	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	N/A	
10*19222	O	5-18-17	CHARLES E. GALLOWAY SR. AND LINDA S. GALLOWAY	CHEVRON U.S.A., INC.	1/8+	737	437	N/A	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	P	5-18-13.3	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	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
10*14503	Q	5-18-15.5	IMA LEE YOHO	GASTAR EXPLORATION USA, INC.	1/8+	756	85	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	
10*19261	Q	5-18-15.5	BOLEY DARRELL ET UX	CHEVRON USA INC	1/8+	897	254	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron U.S.A. Inc. to TH Exploration, LLC	
10*14503	R	5-18-16	IMA LEE YOHO	GASTAR EXPLORATION USA, INC.	1/8+	756	85	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC	

Lease No.	Tag	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*17222	S	5-18-15.3	JAMES W AND DOLLIE M FOSTER	TH EXPLORATION LLC	1/8+	940	429	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14923	T	5-18-15.4	EDWARD LEE BURGE SR	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	521	N/A	N/A	N/A	N/A	N/A	21/288 Central Michigan Exploration LLC to Stone Energy Corporation	31/113 Stone Energy Corporation to Gastar Exploration Inc.	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*19160	U	5-18-10.1	DAVID V. ANDERSON ET UX	GASTAR EXPLORATION USA, INC.	1/8+	704	319	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC -50%	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
10*19160	V	5-18-10.2	DAVID V ANDERSON ET UX	GASTAR EXPLORATION USA, INC.	1/8+	704	319	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC -50%	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
10*19160	W	5-18-10	DAVID V ANDERSON ET UX	GASTAR EXPLORATION USA INC	1/8+	704	319	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA, Inc. to Atinum Marcellus I LLC -50%	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
10*19218	X	5-18-11.1	ROBINSON BENJAMIN	TRIENERGY HOLDINGS, LLC	1/8+	727	211	N/A	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*19188	Y	5-18-15	EDWARD LEE BURGE SR	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	521	N/A	N/A	N/A	N/A	N/A	21/288 Central Michigan Exploration LLC to Stone Energy Corporation	31/113 Stone Energy Corporation to Gastar Exploration Inc.	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*19339	Z	5-15-10	MARK STANLEY RUCKMAN	TRIENERGY INC	1/8+	664	495	N/A	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*19295	AA	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	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19337	BB	5-15-12	JACK AND HATTIE PETROCK	TRIENERGY INC	1/8+	663	498	N/A	N/A	N/A	N/A	N/A	28/356 TriEnergy Inc. & TriEnergy Holdings, LLC to Chevron U.S.A. Inc.	28/356 TriEnergy Inc. & TriEnergy Holdings, LLC to Chevron U.S.A. Inc.	40/57 Chevron U.S.A. Inc. to TH Exploration, LLC

AFFIDAVIT

05101983

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

- 1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

JURAT

Carroll S. Haught
METZEL County 10-29-27 641
Instrument No 212093
Date Recorded 10/20/2016
Document Type AFDI
Pages Recorded 1
Book-Page 119-291
Recording Fee \$5.00
Additional \$6.00

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

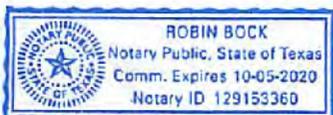
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish.

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

My Commission Expires: 10-05-2020

Signature/Notary Public: Robin Bock

Name/Notary Public (Print): Robin Bock

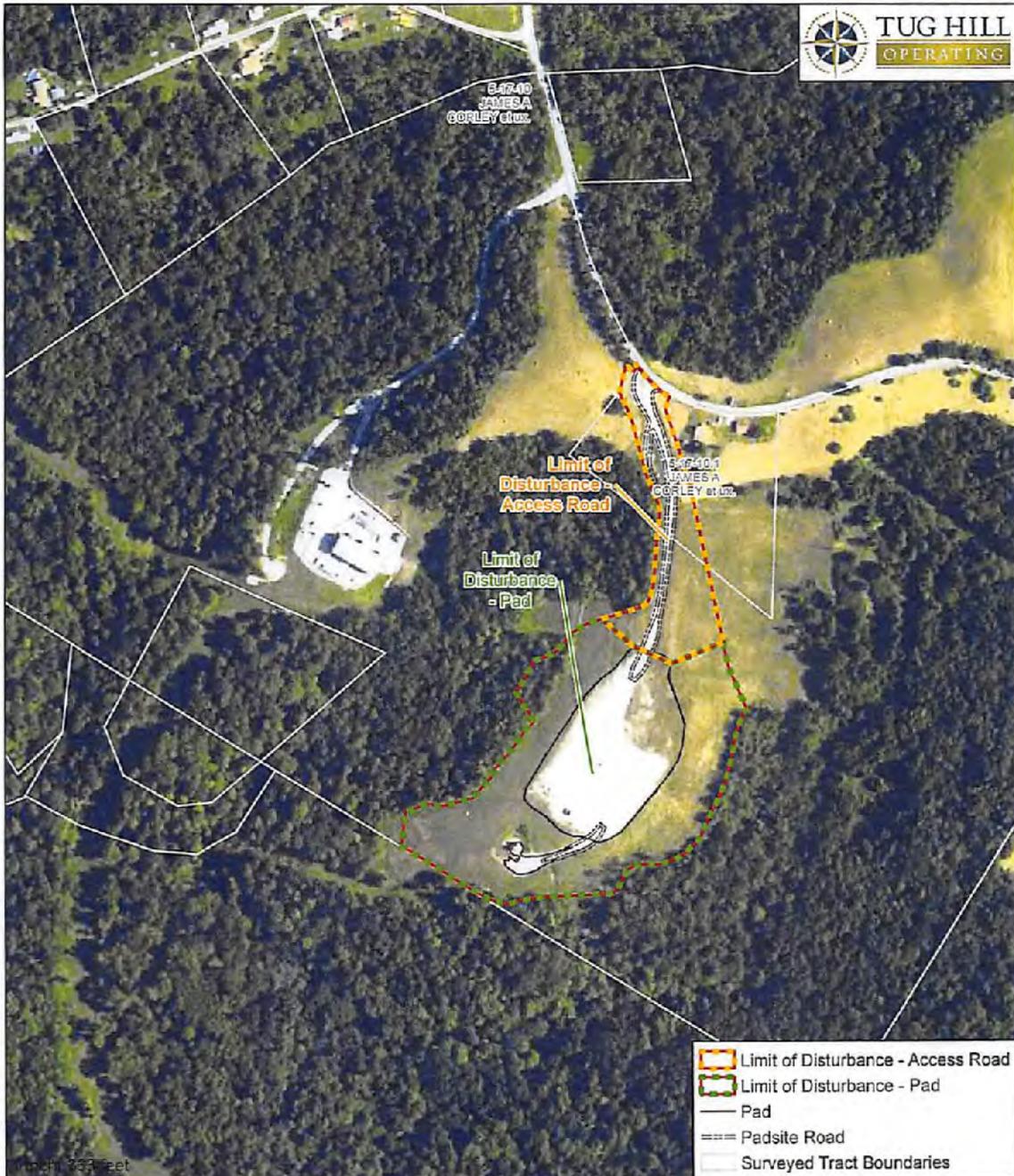


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- Limit of Disturbance - Access Road
- Limit of Disturbance - Pad
- Pad
- Padsite Road
- Surveyed Tract Boundaries

North 393 Feet

0 75 150 300 Feet

N

NOTE: THE APPROXIMATE LOCATION FOR THE SURFACE AND ACCESS ROAD RIGHT OF WAY AND THE BOUNDARIES OF THE PROPERTY ARE BASED ON AERIAL PHOTOGRAPHS AND AERIAL PHOTOGRAPHY. THE ACTUAL PROPERTY LINE AND BOUNDARIES MAY VARY FROM THE LOCATION SHOWN ON THIS MAP. THE LOCATION OF THE SURFACE AND ACCESS ROAD RIGHT OF WAY AND THE BOUNDARIES OF THE PROPERTY ARE BASED ON AERIAL PHOTOGRAPHS AND AERIAL PHOTOGRAPHY.

Exhibit "A"

JAMES A CORLEY et ux.
Marshall, WV

Date: 10/2/2018

Name: James A Corley

Name: Bill C. Bricker



Date: 8/18/2017
PCS: NAD 1983 UTM Zone 17N Foot US

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OCT 18 2017
WV Department of
Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Corley Pad				
Site Position:		Northing:	14,436,832.02 usft	Latitude:	39.75286638
From:	Lat/Long	Easting:	1,708,973.98 usft	Longitude:	-80.76319015
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well	Corley N-09HU (slot K)					
Well Position	+N/-S	0.00 usft	Northing:	14,436,848.72 usft	Latitude:	39.75281217
	+E/-W	0.00 usft	Easting:	1,708,982.22 usft	Longitude:	-80.76316070
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	52,137.26249469

Design	rev2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	327.05

Plan Survey Tool Program	Date	10/24/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,837.47 rev2 (Original Hole)	MWD	
			MWD - Standard	

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	3.00	260.00	1,299.86	-1.36	-7.73	1.00	1.00	0.00	260.00	
1,800.00	3.00	260.00	1,799.18	-5.91	-33.50	0.00	0.00	0.00	0.00	
2,068.18	5.00	180.00	2,066.86	-18.82	-40.42	2.00	0.75	-29.83	-113.33	
2,502.98	5.00	180.00	2,500.00	-56.72	-40.42	0.00	0.00	0.00	0.00	
2,552.27	5.00	168.67	2,549.11	-60.97	-40.00	2.00	0.00	-22.98	-95.64	
8,552.27	5.00	168.67	8,526.28	-573.72	62.74	0.00	0.00	0.00	0.00	
9,059.92	15.15	168.88	9,025.44	-660.23	82.20	2.00	2.00	-0.35	-2.66	
10,732.67	15.15	168.88	10,840.07	-1,085.97	181.46	0.00	0.00	0.00	0.00	
11,787.47	91.00	330.00	11,353.94	-625.47	-150.39	10.00	7.19	15.47	162.47	
20,837.47	91.00	330.00	11,196.00	7,210.86	-4,674.70	0.00	0.00	0.00	0.00	Corley N-09HU BHL r

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
100.00	0.00	0.00	100.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
200.00	0.00	0.00	200.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
300.00	0.00	0.00	300.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
400.00	0.00	0.00	400.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
500.00	0.00	0.00	500.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
600.00	0.00	0.00	600.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
700.00	0.00	0.00	700.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
800.00	0.00	0.00	800.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
900.00	0.00	0.00	900.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,436,848.72	1,706,982.22	39.75291217	-80.76316070	
KOP Begin 1°/100' build										
1,100.00	1.00	260.00	1,099.99	-0.15	-0.86	14,436,848.56	1,706,981.36	39.75291176	-80.76316376	
1,200.00	2.00	260.00	1,199.96	-0.61	-3.44	14,436,848.11	1,706,976.78	39.75291053	-80.76317294	
1,300.00	3.00	260.00	1,299.86	-1.36	-7.73	14,436,847.35	1,706,974.48	39.75290848	-80.76318823	
Begin 3.00° tangent										
1,400.00	3.00	260.00	1,399.73	-2.27	-12.89	14,436,848.44	1,706,969.33	39.75290602	-80.76320657	
1,500.00	3.00	260.00	1,499.59	-3.18	-18.04	14,436,845.53	1,706,964.18	39.75290357	-80.76322492	
1,600.00	3.00	260.00	1,599.45	-4.09	-23.20	14,436,844.63	1,706,959.02	39.75290111	-80.76324327	
1,700.00	3.00	260.00	1,699.31	-5.00	-28.35	14,436,843.72	1,706,953.87	39.75289865	-80.76326161	
1,800.00	3.00	260.00	1,799.18	-5.91	-33.50	14,436,842.81	1,706,948.71	39.75289619	-80.76327996	
Begin 2°/100' build/turn										
1,900.00	2.87	220.23	1,899.06	-8.27	-37.70	14,436,840.44	1,706,944.52	39.75289472	-80.76329491	
2,000.00	3.93	191.02	1,998.89	-13.55	-39.97	14,436,835.16	1,706,942.24	39.75287524	-80.76330305	
2,068.18	5.00	180.00	2,066.86	-18.82	-40.42	14,436,829.89	1,706,941.80	39.75286077	-80.76330469	
Begin 5.00° tangent										
2,100.00	5.00	180.00	2,098.56	-21.60	-40.42	14,436,827.12	1,706,941.80	39.75285316	-80.76330471	
2,200.00	5.00	180.00	2,198.18	-30.31	-40.42	14,436,818.40	1,706,941.80	39.75282922	-80.76330480	
2,300.00	5.00	180.00	2,297.80	-39.03	-40.42	14,436,809.69	1,706,941.80	39.75280529	-80.76330488	
2,400.00	5.00	180.00	2,397.42	-47.74	-40.42	14,436,800.97	1,706,941.80	39.75278135	-80.76330496	
2,500.00	5.00	180.00	2,497.04	-56.46	-40.42	14,436,792.26	1,706,941.80	39.75275742	-80.76330504	
2,502.98	5.00	180.00	2,500.00	-56.72	-40.42	14,436,792.00	1,706,941.80	39.75275670	-80.76330504	
Begin 2°/100' turn										
2,552.27	5.00	168.67	2,549.11	-60.97	-40.00	14,436,787.74	1,706,942.22	39.75274502	-80.76330358	
Begin 5.00° tangent										
2,600.00	5.00	168.67	2,596.66	-65.05	-39.18	14,436,783.66	1,706,943.04	39.75273381	-80.76330071	
2,700.00	5.00	168.67	2,696.28	-73.60	-37.47	14,436,775.12	1,706,944.75	39.75271033	-80.76329470	
2,800.00	5.00	168.67	2,795.90	-82.14	-35.76	14,436,766.57	1,706,946.46	39.75268685	-80.76328669	
2,900.00	5.00	168.67	2,895.52	-90.69	-34.04	14,436,758.03	1,706,948.17	39.75266336	-80.76328268	
3,000.00	5.00	168.67	2,995.13	-99.23	-32.33	14,436,749.48	1,706,949.89	39.75263988	-80.76327667	
3,100.00	5.00	168.67	3,094.75	-107.78	-30.62	14,436,740.94	1,706,951.60	39.75261640	-80.76327065	
3,200.00	5.00	168.67	3,194.37	-116.32	-28.91	14,436,732.39	1,706,953.31	39.75259292	-80.76326464	
3,300.00	5.00	168.67	3,293.99	-124.87	-27.19	14,436,723.84	1,706,955.02	39.75256944	-80.76325863	
3,400.00	5.00	168.67	3,393.61	-133.42	-25.48	14,436,715.30	1,706,956.73	39.75254596	-80.76325262	
3,500.00	5.00	168.67	3,493.23	-141.96	-23.77	14,436,706.75	1,706,958.45	39.75252248	-80.76324661	
3,600.00	5.00	168.67	3,592.85	-150.51	-22.06	14,436,698.21	1,706,960.16	39.75249899	-80.76324060	
3,700.00	5.00	168.67	3,692.47	-159.05	-20.35	14,436,689.66	1,706,961.87	39.75247551	-80.76323458	
3,800.00	5.00	168.67	3,792.09	-167.60	-18.63	14,436,681.12	1,706,963.58	39.75245203	-80.76322857	
3,900.00	5.00	168.67	3,891.71	-176.15	-16.92	14,436,672.57	1,706,965.30	39.75242855	-80.76322256	
4,000.00	5.00	168.67	3,991.33	-184.69	-15.21	14,436,664.02	1,706,967.01	39.75240507	-80.76321655	
4,100.00	5.00	168.67	4,090.95	-193.24	-13.50	14,436,655.48	1,706,968.72	39.75238159	-80.76321054	
4,200.00	5.00	168.67	4,190.57	-201.78	-11.78	14,436,646.93	1,706,970.43	39.75235811	-80.76320453	
4,300.00	5.00	168.67	4,290.19	-210.33	-10.07	14,436,638.39	1,706,972.14	39.75233462	-80.76319851	
4,400.00	5.00	168.67	4,389.81	-218.87	-8.36	14,436,629.84	1,706,973.86	39.75231114	-80.76319250	

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Planning Report - Geographic

Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,500.00	5.00	168.67	4,489.43	-227.42	-6.65	14,436,621.30	1,706,975.57	39.75228766	-80.76316849	
4,600.00	5.00	168.67	4,589.05	-235.97	-4.94	14,436,612.75	1,706,977.28	39.75228418	-80.76318048	
4,700.00	5.00	168.67	4,688.67	-244.51	-3.22	14,436,604.20	1,706,978.99	39.75224070	-80.76317447	
4,800.00	5.00	168.67	4,788.29	-253.06	-1.51	14,436,595.65	1,706,980.71	39.75221722	-80.76316846	
4,900.00	5.00	168.67	4,887.90	-261.60	0.20	14,436,587.11	1,706,982.42	39.75219374	-80.76316244	
5,000.00	5.00	168.67	4,987.52	-270.15	1.91	14,436,578.57	1,706,984.13	39.75217025	-80.76315843	
5,100.00	5.00	168.67	5,087.14	-278.69	3.63	14,436,570.02	1,706,985.84	39.75214677	-80.76315042	
5,200.00	5.00	168.67	5,186.76	-287.24	5.34	14,436,561.48	1,706,987.55	39.75212329	-80.76314441	
5,300.00	5.00	168.67	5,286.38	-295.79	7.05	14,436,552.93	1,706,989.27	39.75209981	-80.76313840	
5,400.00	5.00	168.67	5,386.00	-304.33	8.76	14,436,544.38	1,706,990.98	39.75207633	-80.76313238	
5,500.00	5.00	168.67	5,485.62	-312.88	10.48	14,436,535.84	1,706,992.69	39.75205285	-80.76312637	
5,600.00	5.00	168.67	5,585.24	-321.42	12.19	14,436,527.29	1,706,994.40	39.75202936	-80.76312036	
5,700.00	5.00	168.67	5,684.86	-329.97	13.90	14,436,518.75	1,706,996.12	39.75200588	-80.76311435	
5,800.00	5.00	168.67	5,784.48	-338.51	15.61	14,436,510.20	1,706,997.83	39.75198240	-80.76310834	
5,900.00	5.00	168.67	5,884.10	-347.06	17.32	14,436,501.65	1,706,999.54	39.75195892	-80.76310233	
6,000.00	5.00	168.67	5,983.72	-355.61	19.04	14,436,493.11	1,707,001.25	39.75193544	-80.76309631	
6,100.00	5.00	168.67	6,083.34	-364.15	20.75	14,436,484.56	1,707,002.97	39.75191196	-80.76309030	
6,200.00	5.00	168.67	6,182.96	-372.70	22.46	14,436,476.02	1,707,004.68	39.75188848	-80.76308429	
6,300.00	5.00	168.67	6,282.58	-381.24	24.17	14,436,467.47	1,707,006.39	39.75186499	-80.76307828	
6,400.00	5.00	168.67	6,382.20	-389.79	25.88	14,436,458.93	1,707,008.10	39.75184151	-80.76307227	
6,500.00	5.00	168.67	6,481.82	-398.33	27.60	14,436,450.38	1,707,009.81	39.75181803	-80.76306626	
6,600.00	5.00	168.67	6,581.44	-406.88	29.31	14,436,441.84	1,707,011.53	39.75179455	-80.76306025	
6,700.00	5.00	168.67	6,681.06	-415.43	31.02	14,436,433.29	1,707,013.24	39.75177107	-80.76305423	
6,800.00	5.00	168.67	6,780.67	-423.97	32.73	14,436,424.74	1,707,014.95	39.75174759	-80.76304822	
6,900.00	5.00	168.67	6,880.29	-432.52	34.45	14,436,416.20	1,707,016.66	39.75172411	-80.76304221	
7,000.00	5.00	168.67	6,979.91	-441.06	36.16	14,436,407.65	1,707,018.38	39.75170062	-80.76303620	
7,100.00	5.00	168.67	7,079.53	-449.61	37.87	14,436,399.11	1,707,020.09	39.75167714	-80.76303019	
7,200.00	5.00	168.67	7,179.15	-458.15	39.58	14,436,390.56	1,707,021.80	39.75165366	-80.76302418	
7,300.00	5.00	168.67	7,278.77	-466.70	41.30	14,436,382.02	1,707,023.51	39.75163018	-80.76301816	
7,400.00	5.00	168.67	7,378.39	-475.25	43.01	14,436,373.47	1,707,025.22	39.75160670	-80.76301215	
7,500.00	5.00	168.67	7,478.01	-483.79	44.72	14,436,364.92	1,707,026.94	39.75158322	-80.76300614	
7,600.00	5.00	168.67	7,577.63	-492.34	46.43	14,436,356.38	1,707,028.65	39.75155974	-80.76300013	
7,700.00	5.00	168.67	7,677.25	-500.88	48.14	14,436,347.83	1,707,030.36	39.75153625	-80.76299412	
7,800.00	5.00	168.67	7,776.87	-509.43	49.86	14,436,339.29	1,707,032.07	39.75151277	-80.76298811	
7,900.00	5.00	168.67	7,876.49	-517.97	51.57	14,436,330.74	1,707,033.79	39.75148929	-80.76298209	
8,000.00	5.00	168.67	7,976.11	-526.52	53.28	14,436,322.20	1,707,035.50	39.75146581	-80.76297608	
8,100.00	5.00	168.67	8,075.73	-535.07	54.99	14,436,313.65	1,707,037.21	39.75144233	-80.76297007	
8,200.00	5.00	168.67	8,175.35	-543.61	56.71	14,436,305.10	1,707,038.92	39.75141885	-80.76296406	
8,300.00	5.00	168.67	8,274.97	-552.16	58.42	14,436,296.56	1,707,040.63	39.75139537	-80.76295805	
8,400.00	5.00	168.67	8,374.59	-560.70	60.13	14,436,288.01	1,707,042.35	39.75137188	-80.76295204	
8,500.00	5.00	168.67	8,474.21	-569.25	61.84	14,436,279.47	1,707,044.06	39.75134840	-80.76294602	
8,552.27	5.00	168.67	8,526.28	-573.72	62.74	14,436,275.00	1,707,044.95	39.75133613	-80.76294288	
Begin 2°/100' build/turn										
8,600.00	5.95	168.24	8,573.79	-578.18	63.65	14,436,270.54	1,707,045.87	39.75132387	-80.76293988	
8,700.00	7.95	167.68	8,673.05	-590.02	66.18	14,436,258.70	1,707,048.40	39.75129134	-80.76293077	
8,800.00	9.95	167.34	8,771.82	-605.21	69.55	14,436,243.51	1,707,051.77	39.75124980	-80.76291893	
8,900.00	11.95	167.11	8,870.00	-623.73	73.76	14,436,224.98	1,707,055.97	39.75119869	-80.76290415	
9,000.00	13.95	166.95	8,967.45	-645.57	78.79	14,436,203.14	1,707,061.00	39.75113867	-80.76288645	
9,059.92	15.15	166.88	9,025.45	-660.23	82.20	14,436,188.48	1,707,064.41	39.75109638	-80.76287446	
Begin 15.15° tangent										
9,100.00	15.15	166.88	9,084.13	-670.43	84.58	14,436,178.28	1,707,066.79	39.75107035	-80.76286610	
9,200.00	15.15	166.88	9,160.66	-695.89	90.51	14,436,152.83	1,707,072.73	39.75100041	-80.76284522	
9,300.00	15.15	166.88	9,257.18	-721.34	96.44	14,436,127.38	1,707,078.65	39.75093047	-80.76282435	
9,400.00	15.15	166.88	9,353.71	-746.79	102.38	14,436,101.93	1,707,084.57	39.75086053	-80.76280348	



Planning Report - Geographic

Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,500.00	15.15	166.88	9,450.23	-772.24	108.31	14,436,076.48	1,707,090.53	39.75079060	-80.76276261	
9,600.00	15.15	166.88	9,546.76	-797.69	114.25	14,436,051.03	1,707,096.46	39.75072066	-80.76276173	
9,700.00	15.15	166.88	9,643.28	-823.14	120.16	14,436,025.57	1,707,102.40	39.75065072	-80.76274086	
9,800.00	15.15	166.88	9,739.81	-848.59	126.11	14,436,000.12	1,707,108.33	39.75058078	-80.76271999	
9,900.00	15.15	166.88	9,836.33	-874.04	132.05	14,435,974.67	1,707,114.26	39.75051084	-80.76269912	
10,000.00	15.15	166.88	9,932.86	-899.49	137.98	14,435,949.22	1,707,120.20	39.75044090	-80.76267824	
10,100.00	15.15	166.88	10,029.38	-924.94	143.92	14,435,923.77	1,707,126.13	39.75037096	-80.76265737	
10,200.00	15.15	166.88	10,125.91	-950.40	149.85	14,435,898.32	1,707,132.07	39.75030102	-80.76263650	
10,300.00	15.15	166.88	10,222.43	-975.85	155.78	14,435,872.87	1,707,138.00	39.75023106	-80.76261563	
10,400.00	15.15	166.88	10,318.96	-1,001.30	161.72	14,435,847.42	1,707,143.93	39.75016115	-80.76259475	
10,500.00	15.15	166.88	10,415.48	-1,028.75	167.65	14,435,821.97	1,707,149.87	39.75009121	-80.76257388	
10,600.00	15.15	166.88	10,512.01	-1,052.20	173.59	14,435,796.52	1,707,155.80	39.75002127	-80.76255301	
10,700.00	15.15	166.88	10,608.53	-1,077.65	179.52	14,435,771.07	1,707,161.74	39.74995133	-80.76253214	
10,732.87	15.15	166.88	10,640.07	-1,085.96	181.46	14,435,762.75	1,707,163.66	39.74992846	-80.76252532	
Begin 10°/100' build/turn										
10,800.00	8.96	179.98	10,705.89	-1,099.79	183.46	14,435,748.93	1,707,165.66	39.74989050	-80.76251833	
10,900.00	5.05	266.51	10,805.34	-1,107.86	179.06	14,435,740.85	1,707,161.28	39.74986836	-80.76253405	
11,000.00	13.05	310.00	10,904.11	-1,100.85	165.99	14,435,747.86	1,707,148.21	39.74988770	-80.76258049	
11,100.00	22.69	319.03	10,999.19	-1,078.98	144.65	14,435,769.74	1,707,126.86	39.74994793	-80.76265622	
11,200.00	32.54	322.81	11,087.70	-1,042.90	115.66	14,435,805.81	1,707,097.89	39.75004722	-80.76275896	
11,300.00	42.45	324.97	11,166.94	-993.72	79.96	14,435,855.00	1,707,062.17	39.75018255	-80.76286557	
11,400.00	52.39	326.43	11,234.52	-932.92	39.58	14,435,915.79	1,707,020.80	39.75034982	-80.76303221	
11,500.00	62.35	327.55	11,288.37	-862.36	-7.20	14,435,986.35	1,706,975.02	39.75054393	-80.76319443	
11,600.00	72.31	328.48	11,326.86	-784.18	-55.99	14,436,064.53	1,706,926.22	39.75075899	-80.76336729	
11,700.00	82.26	329.31	11,346.82	-700.76	-106.32	14,436,147.96	1,706,875.90	39.75098846	-80.76354555	
11,787.47	91.00	330.00	11,353.94	-625.47	-150.39	14,436,223.24	1,706,831.83	39.75119553	-80.76370164	
Begin 91.00° lateral section										
11,800.00	91.00	330.00	11,353.73	-614.62	-156.65	14,436,234.09	1,706,825.56	39.75122538	-80.76372383	
11,900.00	91.00	330.00	11,351.98	-526.03	-206.64	14,436,320.88	1,706,775.57	39.75146354	-80.76390088	
12,000.00	91.00	330.00	11,350.24	-441.44	-256.64	14,436,407.27	1,706,725.58	39.75170170	-80.76407794	
12,100.00	91.00	330.00	11,346.49	-354.65	-306.63	14,436,493.86	1,706,675.59	39.75193986	-80.76425500	
12,200.00	91.00	330.00	11,346.74	-268.27	-356.62	14,436,580.45	1,706,625.60	39.75217802	-80.76443205	
12,300.00	91.00	330.00	11,345.00	-181.68	-406.61	14,436,667.04	1,706,575.60	39.75241618	-80.76460911	
12,400.00	91.00	330.00	11,343.25	-95.09	-456.61	14,436,753.63	1,706,525.61	39.75265434	-80.76478617	
12,500.00	91.00	330.00	11,341.51	-8.50	-506.60	14,436,840.22	1,706,475.62	39.75289250	-80.76496324	
12,600.00	91.00	330.00	11,339.76	78.09	-556.59	14,436,926.81	1,706,425.63	39.75313066	-80.76514030	
12,700.00	91.00	330.00	11,338.02	164.68	-606.58	14,437,013.40	1,706,375.63	39.75336882	-80.76531736	
12,800.00	91.00	330.00	11,336.27	251.27	-656.58	14,437,099.99	1,706,325.64	39.75360698	-80.76549443	
12,900.00	91.00	330.00	11,334.53	337.86	-706.57	14,437,186.56	1,706,275.65	39.75384513	-80.76567150	
13,000.00	91.00	330.00	11,332.78	424.45	-756.56	14,437,273.16	1,706,225.66	39.75408329	-80.76584856	
13,100.00	91.00	330.00	11,331.04	511.04	-806.55	14,437,359.75	1,706,175.66	39.75432145	-80.76602563	
13,200.00	91.00	330.00	11,329.29	597.63	-856.55	14,437,446.34	1,706,125.67	39.75455961	-80.76620270	
13,300.00	91.00	330.00	11,327.55	684.22	-906.54	14,437,532.93	1,706,075.68	39.75479777	-80.76637978	
13,400.00	91.00	330.00	11,325.80	770.81	-956.53	14,437,619.52	1,706,025.69	39.75503592	-80.76655685	
13,500.00	91.00	330.00	11,324.06	857.40	-1,006.52	14,437,706.11	1,705,975.69	39.75527408	-80.76673392	
13,600.00	91.00	330.00	11,322.31	943.99	-1,056.51	14,437,792.70	1,705,925.70	39.75551224	-80.76691100	
13,700.00	91.00	330.00	11,320.57	1,030.57	-1,106.51	14,437,879.29	1,705,875.71	39.75575039	-80.76708807	
13,800.00	91.00	330.00	11,318.82	1,117.16	-1,156.50	14,437,965.88	1,705,825.72	39.75598855	-80.76726515	
13,900.00	91.00	330.00	11,317.08	1,203.75	-1,206.49	14,438,052.47	1,705,775.72	39.75622670	-80.76744223	
14,000.00	91.00	330.00	11,315.33	1,290.34	-1,256.48	14,438,139.06	1,705,725.73	39.75646486	-80.76761931	
14,100.00	91.00	330.00	11,313.59	1,376.93	-1,306.48	14,438,225.65	1,705,675.74	39.75670301	-80.76779639	
14,200.00	91.00	330.00	11,311.84	1,463.52	-1,356.47	14,438,312.24	1,705,625.75	39.75694117	-80.76797348	
14,300.00	91.00	330.00	11,310.09	1,550.11	-1,406.46	14,438,398.83	1,705,575.76	39.75717932	-80.76815058	
14,400.00	91.00	330.00	11,308.35	1,636.70	-1,456.45	14,438,485.42	1,705,525.76	39.75741748	-80.76832764	

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WV Department of Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,500.00	91.00	330.00	11,308.60	1,723.29	-1,506.45	14,438,572.01	1,705,475.77	39.75765563	-80.76850473	
14,600.00	91.00	330.00	11,304.86	1,809.88	-1,556.44	14,438,656.59	1,705,425.78	39.75789379	-80.76868182	
14,700.00	91.00	330.00	11,303.11	1,896.47	-1,606.43	14,438,745.18	1,705,375.79	39.75813194	-80.76885891	
14,800.00	91.00	330.00	11,301.37	1,983.06	-1,656.42	14,438,831.77	1,705,325.79	39.75837009	-80.76903600	
14,900.00	91.00	330.00	11,299.62	2,069.65	-1,706.42	14,438,918.38	1,705,275.80	39.75860825	-80.76921309	
15,000.00	91.00	330.00	11,297.88	2,156.24	-1,756.41	14,439,004.95	1,705,225.81	39.75884640	-80.76939018	
15,100.00	91.00	330.00	11,296.13	2,242.83	-1,806.40	14,439,091.54	1,705,175.82	39.75908455	-80.76956727	
15,200.00	91.00	330.00	11,294.39	2,329.42	-1,856.39	14,439,178.13	1,705,125.82	39.75932270	-80.76974437	
15,300.00	91.00	330.00	11,292.64	2,416.00	-1,906.39	14,439,264.72	1,705,075.83	39.75956085	-80.76992146	
15,400.00	91.00	330.00	11,290.89	2,502.59	-1,956.38	14,439,351.31	1,705,025.84	39.75979901	-80.77009856	
15,500.00	91.00	330.00	11,289.15	2,589.18	-2,006.37	14,439,437.90	1,704,975.85	39.76003718	-80.77027566	
15,600.00	91.00	330.00	11,287.41	2,675.77	-2,056.36	14,439,524.49	1,704,925.85	39.76027531	-80.77045276	
15,700.00	91.00	330.00	11,285.66	2,762.36	-2,106.35	14,439,611.08	1,704,875.86	39.76051346	-80.77062986	
15,800.00	91.00	330.00	11,283.92	2,848.95	-2,156.35	14,439,697.67	1,704,825.87	39.76075161	-80.77080696	
15,900.00	91.00	330.00	11,282.17	2,935.54	-2,206.34	14,439,784.26	1,704,775.88	39.76098976	-80.77098407	
16,000.00	91.00	330.00	11,280.43	3,022.13	-2,256.33	14,439,870.85	1,704,725.88	39.76122791	-80.77116117	
16,100.00	91.00	330.00	11,278.68	3,108.72	-2,306.32	14,439,957.43	1,704,675.89	39.76146606	-80.77133828	
16,200.00	91.00	330.00	11,276.94	3,195.31	-2,356.32	14,440,044.02	1,704,625.90	39.76170421	-80.77151538	
16,300.00	91.00	330.00	11,275.19	3,281.90	-2,406.31	14,440,130.61	1,704,575.91	39.76194236	-80.77169249	
16,400.00	91.00	330.00	11,273.44	3,368.49	-2,456.30	14,440,217.20	1,704,525.92	39.76218051	-80.77186960	
16,500.00	91.00	330.00	11,271.70	3,455.08	-2,506.29	14,440,303.79	1,704,475.92	39.76241865	-80.77204671	
16,600.00	91.00	330.00	11,269.95	3,541.67	-2,556.29	14,440,390.38	1,704,425.93	39.76265680	-80.77222382	
16,700.00	91.00	330.00	11,268.21	3,628.26	-2,606.28	14,440,476.97	1,704,375.94	39.76289495	-80.77240094	
16,800.00	91.00	330.00	11,266.46	3,714.84	-2,656.27	14,440,563.56	1,704,325.95	39.76313310	-80.77257805	
16,900.00	91.00	330.00	11,264.72	3,801.43	-2,706.26	14,440,650.15	1,704,275.95	39.76337125	-80.77275517	
17,000.00	91.00	330.00	11,262.97	3,888.02	-2,756.26	14,440,736.74	1,704,225.96	39.76360939	-80.77293228	
17,100.00	91.00	330.00	11,261.23	3,974.61	-2,806.25	14,440,823.33	1,704,175.97	39.76384754	-80.77310940	
17,200.00	91.00	330.00	11,259.48	4,061.20	-2,856.24	14,440,909.92	1,704,125.98	39.76408569	-80.77328652	
17,300.00	91.00	330.00	11,257.74	4,147.79	-2,906.23	14,440,996.51	1,704,075.98	39.76432383	-80.77346364	
17,400.00	91.00	330.00	11,255.99	4,234.38	-2,956.23	14,441,083.10	1,704,025.99	39.76456198	-80.77364076	
17,500.00	91.00	330.00	11,254.25	4,320.97	-3,006.22	14,441,169.69	1,703,976.00	39.76480012	-80.77381789	
17,600.00	91.00	330.00	11,252.50	4,407.56	-3,056.21	14,441,256.27	1,703,926.01	39.76503827	-80.77399501	
17,700.00	91.00	330.00	11,250.76	4,494.15	-3,106.20	14,441,342.86	1,703,876.01	39.76527641	-80.77417214	
17,800.00	91.00	330.00	11,249.01	4,580.74	-3,156.19	14,441,429.45	1,703,826.02	39.76551456	-80.77434926	
17,900.00	91.00	330.00	11,247.27	4,667.33	-3,206.19	14,441,516.04	1,703,776.03	39.76575270	-80.77452639	
18,000.00	91.00	330.00	11,245.52	4,753.92	-3,256.18	14,441,602.63	1,703,726.04	39.76599085	-80.77470352	
18,100.00	91.00	330.00	11,243.78	4,840.51	-3,306.17	14,441,689.22	1,703,676.04	39.76622899	-80.77488065	
18,200.00	91.00	330.00	11,242.03	4,927.10	-3,356.16	14,441,775.81	1,703,626.05	39.76646714	-80.77505778	
18,300.00	91.00	330.00	11,240.29	5,013.68	-3,406.16	14,441,862.40	1,703,576.06	39.76670528	-80.77523491	
18,400.00	91.00	330.00	11,238.54	5,100.27	-3,456.15	14,441,948.99	1,703,526.07	39.76694342	-80.77541205	
18,500.00	91.00	330.00	11,236.79	5,186.86	-3,506.14	14,442,035.58	1,703,476.07	39.76718157	-80.77558918	
18,600.00	91.00	330.00	11,235.05	5,273.45	-3,556.13	14,442,122.17	1,703,426.08	39.76741971	-80.77576632	
18,700.00	91.00	330.00	11,233.30	5,360.04	-3,606.13	14,442,208.76	1,703,376.09	39.76765785	-80.77594345	
18,800.00	91.00	330.00	11,231.56	5,446.63	-3,656.12	14,442,295.35	1,703,326.10	39.76789599	-80.77612059	
18,900.00	91.00	330.00	11,229.81	5,533.22	-3,706.11	14,442,381.94	1,703,276.11	39.76813414	-80.77629773	
19,000.00	91.00	330.00	11,228.07	5,619.81	-3,756.10	14,442,468.53	1,703,226.11	39.76837228	-80.77647487	
19,100.00	91.00	330.00	11,226.32	5,706.40	-3,806.10	14,442,555.12	1,703,176.12	39.76861042	-80.77665202	
19,200.00	91.00	330.00	11,224.58	5,792.99	-3,856.09	14,442,641.70	1,703,126.13	39.76884856	-80.77682916	
19,300.00	91.00	330.00	11,222.83	5,879.58	-3,906.08	14,442,728.29	1,703,076.14	39.76908670	-80.77700630	
19,400.00	91.00	330.00	11,221.09	5,966.17	-3,956.07	14,442,814.88	1,703,026.14	39.76932484	-80.77718345	
19,500.00	91.00	330.00	11,219.34	6,052.76	-4,006.07	14,442,901.47	1,702,976.15	39.76956298	-80.77736060	
19,600.00	91.00	330.00	11,217.60	6,139.35	-4,056.06	14,442,988.06	1,702,926.16	39.76980112	-80.77753775	
19,700.00	91.00	330.00	11,215.85	6,225.94	-4,106.05	14,443,074.65	1,702,876.17	39.76993926	-80.77771490	
19,800.00	91.00	330.00	11,214.11	6,312.53	-4,156.04	14,443,161.24	1,702,826.17	39.77007740	-80.77789205	
19,900.00	91.00	330.00	11,212.36	6,399.11	-4,206.03	14,443,247.83	1,702,776.18	39.77021554	-80.77806920	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Corley N-09HU (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corley Pad	North Reference:	Grid
Well:	Corley N-09HU (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,000.00	91.00	330.00	11,210.62	6,485.70	-4,256.03	14,443,334.42	1,702,726.19	39.77075368	-80.77824635	
20,100.00	91.00	330.00	11,208.87	6,572.29	-4,306.02	14,443,421.01	1,702,676.20	39.77099182	-80.77842351	
20,200.00	91.00	330.00	11,207.13	6,658.88	-4,356.01	14,443,507.60	1,702,626.20	39.77122995	-80.77860068	
20,300.00	91.00	330.00	11,205.38	6,745.47	-4,406.00	14,443,594.19	1,702,576.21	39.77146809	-80.77877782	
20,400.00	91.00	330.00	11,203.64	6,832.06	-4,456.00	14,443,680.78	1,702,526.22	39.77170623	-80.77895498	
20,500.00	91.00	330.00	11,201.89	6,918.65	-4,505.99	14,443,767.37	1,702,476.23	39.77194437	-80.77913214	
20,600.00	91.00	330.00	11,200.14	7,005.24	-4,555.98	14,443,853.96	1,702,426.23	39.77218250	-80.77930930	
20,700.00	91.00	330.00	11,198.40	7,091.83	-4,605.97	14,443,940.54	1,702,376.24	39.77242064	-80.77948646	
20,800.00	91.00	330.00	11,196.65	7,178.42	-4,655.97	14,444,027.13	1,702,326.25	39.77265878	-80.77966362	
20,837.47	91.00	330.00	11,196.00	7,210.86	-4,674.70	14,444,059.58	1,702,307.52	39.77274800	-80.77973000	
PBHLTD 20837.47 MD/1196.00 TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Corley N-09HU BHL r1 - hit/miss target - Shape - Point	0.00	0.00	11,196.00	7,210.86	-4,674.70	14,444,059.58	1,702,307.52	39.77274800	-80.77973000	
Corley N-09HU LP - plan misses target center by 105.27usft at 11468.04usft MD (11272.76 TVD, -885.85 N, 7.83 E) - Point	0.00	0.00	11,361.00	-938.70	30.23	14,435,910.02	1,707,012.44	39.75033402	-80.76306198	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,000.00	1,000.00	0.00	0.00	KOP Begin 1°/100' build	
1,300.00	1,299.86	-1.36	-7.73	Begin 3.00° tangent	
1,800.00	1,799.18	-5.91	-33.50	Begin 2°/100' build/turn	
2,068.18	2,066.86	-18.82	-40.42	Begin 5.00° tangent	
2,502.98	2,500.00	-56.72	-40.42	Begin 2°/100' turn	
2,552.27	2,549.11	-60.97	-40.00	Begin 5.00° tangent	
8,552.27	8,526.28	-573.72	62.74	Begin 2°/100' build/turn	
9,059.92	9,025.45	-660.23	82.20	Begin 15.15° tangent	
10,732.67	10,840.07	-1,085.96	181.46	Begin 10°/100' build/turn	
11,787.47	11,353.94	-625.47	-150.39	Begin 91.00° lateral section	
20,837.47	11,196.00	7,210.86	-4,674.70	PBHLTD 20837.47 MD/1196.00 TVD	

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WV Department of
Environmental Protection

MICHAEL MORAN
 BRIGHTON RESOURCES
 5851 ELLSWORTH AVENUE, #1
 PITTSBURGH PA 15232-1707

BOOK 0:040 PAGE 0127

STATE OF WEST VIRGINIA §
 §
 COUNTY OF MARSHALL §

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

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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 WV Department of
 Environmental Protection
 04/13/2018



October 16, 2017

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

RE: Corley N-9HU

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-9HU well plat.

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

Sincerely,

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

Amy L. Miller
Permitting Specialist – Appalachia Region

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Office of Oil and Gas
OCT 18 2017
WV Department of
Environmental Protection

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

Date of Notice Certification: 09/22/2017

API No. 47- 051 - 01983
 Operator's Well No. Corley N-5HM
 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>520,289.22</u>
County:	<u>Marshall</u>		Northing:	<u>4,400,360.29</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><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.

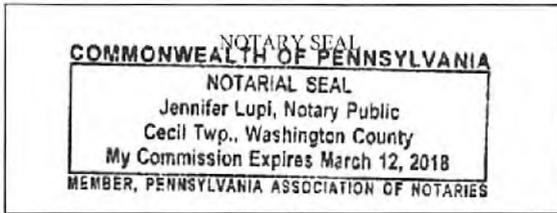
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Certification of Notice is hereby given:

THEREFORE, I Amy L. Miller amylmiller, 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 16th day of October, 2017.
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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**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: 10/13/2017 **Date Permit Application Filed:** 10/13/2017

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: Charles W. and Ruth A. Corley (Pad and 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

SURFACE OWNER(s) (Road and/or Other Disturbance)

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

Name: _____
 Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
 Address: _____

COAL OWNER OR LESSEE

Name: Ruth A. Corley ✓
 Address: 1495 Ackerman 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: _____

*Please attach additional forms if necessary

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WV Department of
Environmental Protection
API NO. 47- 051 - 01983
OPERATOR WELL NO. Corley N-9HU
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

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

Chief, Office of Oil and Gas
Department of Environmental Protection
601 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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API NO. 47-051 - 01983
OPERATOR WELL NO. Corley N-9HU
Well Pad Name: Corley

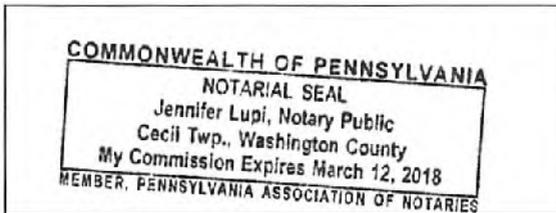
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 13th day of Oct., 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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WW-6A NOTICE OF APPLICATION.....CORLEY N-9HU

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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Environmental Protection

WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: CORLEY No. N-9HU
 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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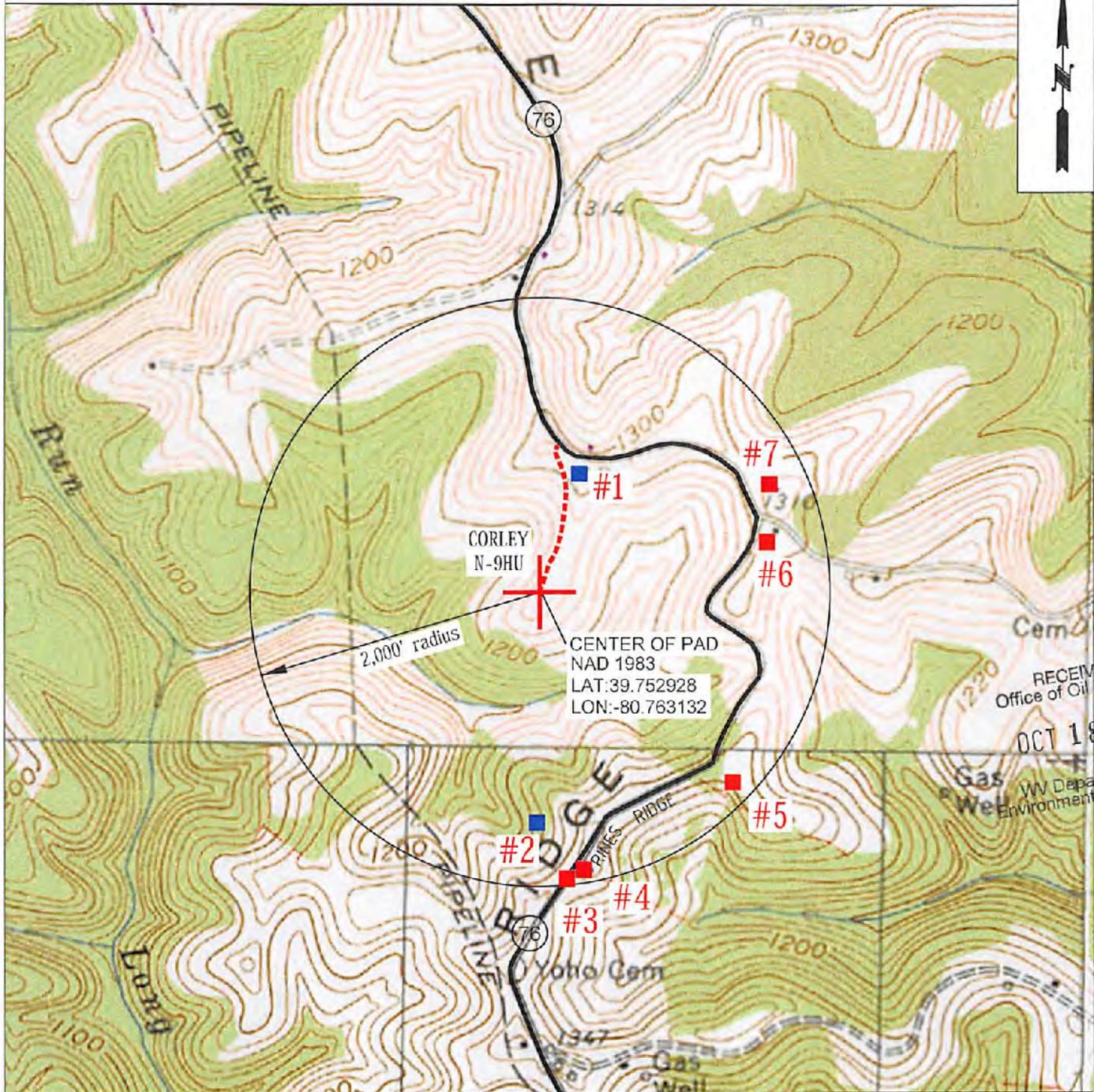
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PROPOSED CORLEY N-9HU

SUPPLEMENT PG 1

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



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OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	CORLEY
		SCALE:	DATE:
		1" = 1000'	DATE: 09/22/17

04/13/2018

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:** 9/6/2017

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

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
 Quadrange: Powhatan Point 7.5'

Approx. Latitude & Longitude: 39.7527964; -80.7631465
 Public Road Access: Rines Ridge Road (County Route 76)
 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.

PROCESSED
Office of Oil and Gas
OCT 18 2017
WV Department of
Environmental Protection

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.

WW-6A3 NOTICE OF ENTRY FOR PLAT SURVEY.....CORLEY N-9HU

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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WW-6A5
(1/12)

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

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

Date of Notice: 10/09/2017 **Date Permit Application Filed:** 10/13/2017

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: Ruth A. Corley
Address: 1495 Ackerman Road
Bangor, PA 18013

Name: James A. and Jill C. Corley
Address: 208 Flicksville Road
Bangor, PA 18013

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>520,289.22</u>
County:	<u>Marshall</u>		Northing:	<u>4,400,360.29</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>			

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

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

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OCT 18 2017
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Environmental Protection

Oil and Gas Privacy Notice:

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

WW-6A5 NOTICE OF PLANNED OPERATION.....CORLEY N-9HU

SURFACE OWNER

Charles W. and Ruth A. Corley
1495 Ackerman Road
Bangor, PA 18013

/

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
 Governor

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

September 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-9HU 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
 OCT 18 2017
 WV Department of
 Environmental Protection

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

04/13/2018



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Corley N-9HU

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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OCT 18 2017
WV Department of
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WEST VIRGINIA COUNTY MAP



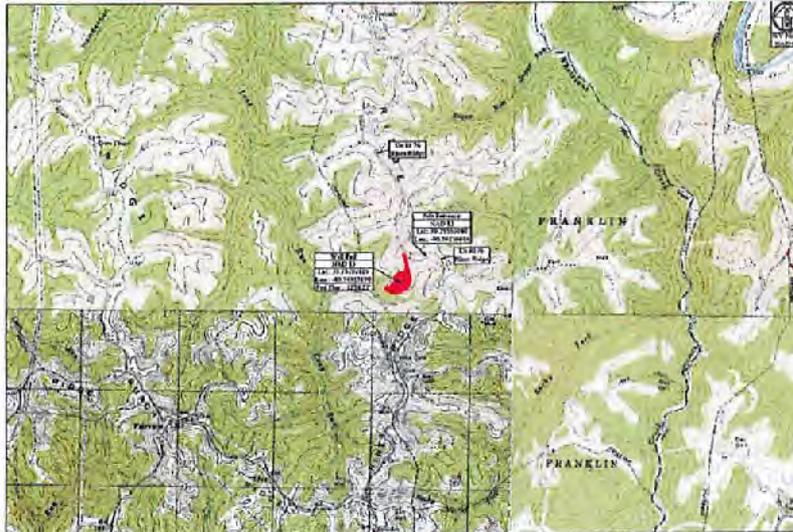
Corley Well Site
 Site Design, Construction Plan, &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Franklin District
 Latitude 39.75292819°
 Longitude -80.76313190°
 Lower Fish Creek Watershed

Pertinent Site Information
 Corley Well Site
 Emergency Number: 304-845-1970
 Franklin District, Marshall County, WV
 Watershed: Lower Fish Creek Watershed
 Tug Hill Contact Number: 1-817-652-3400

Project 13 Order Submittal - Corley Well Site

Order #	Order Date	Order Status	Order Amount	Order Type	Order Description
13-001	08/14/17	Open	1,110.00	Construction	Construction of Well Pad
13-002	08/14/17	Open	9,410.00	Construction	Construction of Access Road
13-003	08/14/17	Open	420.00	Construction	Construction of Erosion Control
13-004	08/14/17	Open	1,130.00	Construction	Construction of Well Pad

Exhibit A: Final Design: Issue for Permitting



WV State Road Construction Program
 North Lane, Road 12
 Lower Fish Creek Watershed
 Franklin District, Marshall County
 WV 26030

Access Road

Station	Stationing	Stationing	Stationing
Station	1+00	2+00	3+00
Stationing	1+00	2+00	3+00
Stationing	1+00	2+00	3+00

Estimated Area

Area	Area
Well Pad Area	1,110 sq ft
Access Road Area	9,410 sq ft
Erosion Control Area	420 sq ft
Well Pad Area	1,130 sq ft

Note: All dimensions and data shown on this plan are based on the ground surface. The Corley Well Site is located on the north side of the road. The well pad is located on the north side of the road. The access road is located on the north side of the road. The erosion control is located on the north side of the road.

Corley Well Site Quantities

Item	Quantity	Unit
Well Pad Area	1,110	sq ft
Access Road Area	9,410	sq ft
Erosion Control Area	420	sq ft
Well Pad Area	1,130	sq ft

09/20/17

WVDEP OOG
ACCEPTED AS-BUILT
WJL 10 / 17 / 2017

Site Coordinates

Point	Easting	Northing
1	111,111.11	1,111,111.11
2	111,111.11	1,111,111.11
3	111,111.11	1,111,111.11
4	111,111.11	1,111,111.11
5	111,111.11	1,111,111.11
6	111,111.11	1,111,111.11
7	111,111.11	1,111,111.11
8	111,111.11	1,111,111.11
9	111,111.11	1,111,111.11
10	111,111.11	1,111,111.11



Site Locations (NAD 83)

Point	Easting	Northing
1	111,111.11	1,111,111.11
2	111,111.11	1,111,111.11
3	111,111.11	1,111,111.11
4	111,111.11	1,111,111.11
5	111,111.11	1,111,111.11
6	111,111.11	1,111,111.11
7	111,111.11	1,111,111.11
8	111,111.11	1,111,111.11
9	111,111.11	1,111,111.11
10	111,111.11	1,111,111.11

Project Contacts

Client: Tug Hill Operating, LLC
 11140 12th St
 Charleston, WV 25301

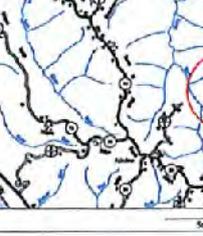
Designer: MIDDLETOWN OF WEST VIRGINIA
 1000 12th St
 Charleston, WV 25301

Site Location: The intersection of WV Rt 2 and OH Rt 100, near the intersection of WV Rt 2 and OH Rt 100, near the intersection of WV Rt 2 and OH Rt 100.

Site Location: The intersection of WV Rt 2 and OH Rt 100, near the intersection of WV Rt 2 and OH Rt 100.

Site Locations (NAD 83)

Point	Easting	Northing
1	111,111.11	1,111,111.11
2	111,111.11	1,111,111.11
3	111,111.11	1,111,111.11
4	111,111.11	1,111,111.11
5	111,111.11	1,111,111.11
6	111,111.11	1,111,111.11
7	111,111.11	1,111,111.11
8	111,111.11	1,111,111.11
9	111,111.11	1,111,111.11
10	111,111.11	1,111,111.11



Notes:

- All dimensions and data shown on this plan are based on the ground surface.
- The well pad is located on the north side of the road.
- The access road is located on the north side of the road.
- The erosion control is located on the north side of the road.



I, the undersigned, being a duly licensed Professional Engineer in the State of West Virginia, do hereby certify that the above is a true and correct copy of the plans as shown to me by the applicant.

[Signature]

MIDDLETOWN OF WEST VIRGINIA
 1000 12th St
 Charleston, WV 25301

Site Location: The intersection of WV Rt 2 and OH Rt 100, near the intersection of WV Rt 2 and OH Rt 100.

Site Location: The intersection of WV Rt 2 and OH Rt 100, near the intersection of WV Rt 2 and OH Rt 100.

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Corley Well Site
 Franklin District
 Marshall County, WV

Sheet: 1 of 1

Date: 10/17/2017

Scale: As Shown

Design: 20-25

File No:

Drawn: [Name]

