



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Tuesday, January 02, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
550 BAILEY AVENUE, SUITE 510

FORT WORTH, TX 76107

Re: Permit approval for CORLEY N-6HM
47-051-01971-00-00

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-6HM
Farm Name: JAMES A. & JILL C. CORLEY, ET AL
U.S. WELL NUMBER: 47-051-01971-00-00
Horizontal 6A / New Drill
Date Issued: 1/2/2018

Promoting a healthy environment.

01/05/2018

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.

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

1) Well Operator: Tug Hill Operating, LLC

<u>494510851</u>	<u>Marshall</u>	<u>Franklin</u>	<u>Powhatan Point</u>
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 Operator ID County District Quadrangle

2) Operator's Well Number: Corley N-6HM 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

6) Existing Pad: Yes or No Yes

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

8) Proposed Total Vertical Depth: 6,662'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 14,313'

11) Proposed Horizontal Leg Length: 7,266'

12) Approximate Fresh Water Strata Depths: 865'

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

14) Approximate Saltwater Depths: 2049'

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

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

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

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

Jug 9/20/17

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18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	125'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	54.5#	997'	965'	1020ft^3(CTS)
Coal	13 3/8"	NEW	H40	54.5#	997'	965'	1020ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,647'	2,615'	867ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,313'	14,303'	3658ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,059'	
Liners	N/A						

JW 9/20/17

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	13 3/8"	17 1/2"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	8,000	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners	N/A						

PACKERS

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

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Handwritten signature and date: 9/20/17

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 18,165,000 lb proppant and 280,844 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.70

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

23) Describe centralizer placement for each casing string:

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

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

*See Attached

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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

*Note: Attach additional sheets as needed.

WW-6B Attachment to #24

Conductor, Coal and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

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

Intermediate Casing:

Premium NE-1 + 2% bwoc CaCl₂ + 46.5% Fresh Water

- Premium NE-1 – Class A Portland API spec
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Kick Off Plug:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L + 38% Fresh Water

- Class H – Increased Compressive Strength Cement
- Sodium Metasilicate – Free Water Control; Early Strength Additive
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Production Casing Cement:

Lead: 50:50 (Poz:Premium NE-1) + .2% R-3 + .2% MPA-170 + .75 gal/100sk FP-13L

Tail: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L

- Poz – Fly Ash
- Premium NE-1 – Class A Portland API spec
- R-3 – Cement Retarder
- MPA-170 – Gelling Agent
- FP-13L – Anti-Foaming Agent
- ASA-301 – Free Water Control Agent
- BA-10A – Bonding Agent
- ASCA-1 – Solubility Additive

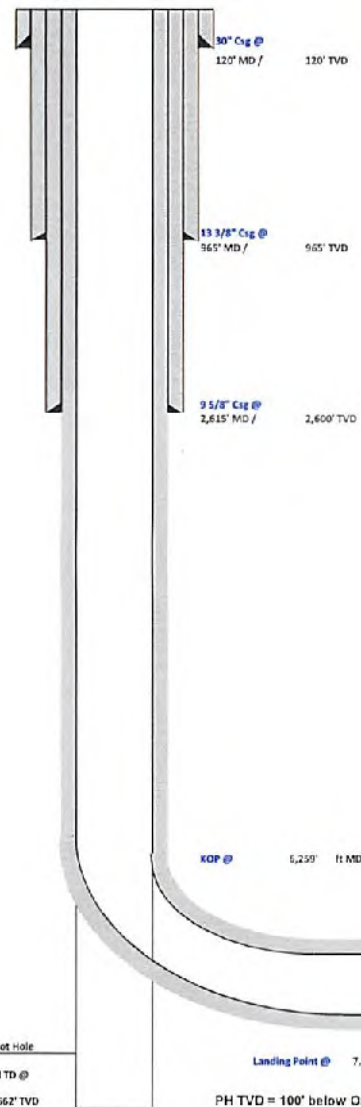
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WELL NAME:	Corley N-6HM		
STATE:	West Virginia	COUNTY:	Marshall
DISTRICT:	Meade		
DF Elev:	1,254'	GL Elev:	1,254'
TD:	14,303'		
TH Latitude:	39.75297084		
TH Longitude:	-80.76320287		
BH Latitude:	39.77293434		
BH Longitude:	-80.76090708		



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	665
Sewickley Coal	766
Pittsburgh Coal	859
Big Lime	2007
Weir	2366
Berea	2545
Gordon	2825
Rhinestreet	5885
Genesee/Berkett	6388
Tully	6415
Hamilton	6451
Marcellus	6509
Landing Depth	6543
Onondaga	6562
Pilot Hole Depth	6662

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	8W	8W	Surface
Surface	17.5	13 3/8	965'	965'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,615'	2,600'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	14,303'	5,416'	20	CYHP-110	Surface

	CEMENT SUMMARY			DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,026	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	851	A	15	Air	1 Centralizer every other jt
Production	3,228	A	14.5	Air / SOBMs	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c

9/20/17

Pilot Hole PH TD @ 6,562' TVD
 Landing Point @ 7,037' MD / 6,543' TVD
 PH TVD = 100' below Onondaga Top
 Lateral TD @ 14,303' ft MD
 6,416' ft TVD

12610-15



TUG HILL
OPERATING

Tug Hill Operating LLC
Well: **Corley N-06HM (slot G)**
Site: **Corey Pad**
Project: **Marshall County, WV**
Design: **rev0**

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1700.00	0.00	0.00	1700.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2"/100' build
3	2491.91	15.84	295.54	2491.86	48.60	-97.29	2.00	295.54	95.19	Begin 15.84° tangent
4	6259.16	15.84	295.54	6106.10	508.07	-1017.08	0.00	0.00	995.12	Begin 10"/100' build/turn
5	7037.44	91.00	330.00	6543.00	965.00	-1361.25	10.00	34.33	1566.65	Begin 91.00° lateral section
6	14303.43	91.00	330.00	6416.00	7256.57	-4953.69	0.00	0.00	8808.79	PBHL/TD 14303.43 MD/6416.00 TVD

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

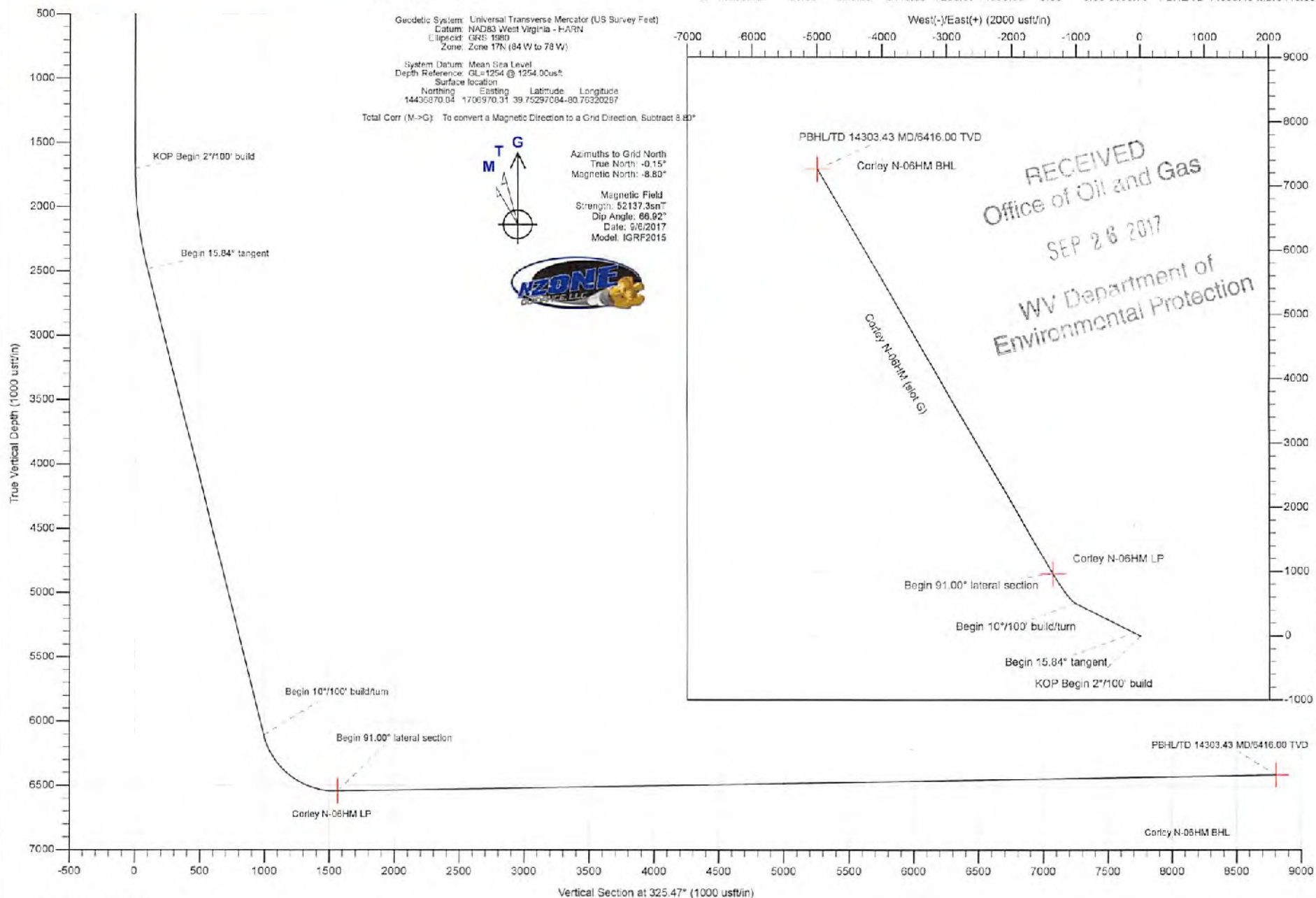
System Datum: Mean Sea Level
Depth Reference: GL=1254 @ 1254.00usft
Surface location
Northing: 14436970.04 Easting: 1706970.31 Latitude: Longitude

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.80°



Azimuths to Grid North
True North: -0.15°
Magnetic North: -8.80°

Magnetic Field
Strength: 52137.3snT
Dip Angle: 66.92°
Date: 9/6/2017
Model: IGRF2015



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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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51-01971

Permit well - Corley N-6HM

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	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore
4705101437	Tug Hill Operating	6632' TVD 12152' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore
4705101397	Tug Hill Operating	6633' TVD 12310' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore
4705101438	Tug Hill Operating	6627' TVD 11388' MD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore

WV Geological & Economic Survey

Well: County = 51 Permit = 01396

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_FS	QUAD_TA	LAT_DD	LONG_DD	UTMR	UTMNN
4705101396	Marshall	1396	Franklin	Franklin	Franklin	39.732652	-80.701187	520287	4400305

Bottom Hole Location Information:

API	SP_FLAG	UTMR	UTMNN	LONG_DD	LAT_DD
4705101396	1	As Proposed	521823.9	4300287.7	82.74727

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AY	COMPLETION	PROP_VD	PROP_TROD_FTM	TFM_EST_FR
4705101396	11/15/2011	Dist Oil/Loc	Completed	James A & Jill G Corley et al	14	Corley	WV16-0016-0017-00082-001	WV16-0016-001	James A & Jill G Corley et al	Gaster Extraction USA, Inc.	R200	Marcellus Sh		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FTM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	O_BEF	G_AFT	O_BEF	G_AFT	NGL_BEF	NGL_AFT	P_REF
4705101396	11/15/2011	11/15/2011	1272	Ground Level	Cameron-Garner	Chandoga Ls	Marcellus Sh	Development Well	Development Well	Oil and Gas	Rotary	Fractured	6825	12408	7400	2665	2433	39	31		

Comment: 11/17/2011 Additional Lease R: WV16-0016-0005; Rock pressure listed as 2500 csg.

WV Geological & Economic Survey

Well: County = 51 Permit = 01437

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_FS	QUAD_TA	LAT_DD	LONG_DD	UTMR	UTMNN
4705101437	Marshall	1437	Franklin	Franklin	Franklin	39.732846	-80.703122	520222.6	4400385.2

Bottom Hole Location Information:

API	SP_FLAG	UTMR	UTMNN	LONG_DD	LAT_DD
4705101437	1	As Proposed	521881.7	4400114.2	-80.745

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AY	COMPLETION	PROP_VD	PROP_TROD_FTM	TFM_EST_FR
4705101437	11/17/2011	Dist Oil/Loc	Completed	James A & Jill G Corley et al	201	Corley	WV16-0016-0017-00082-002	WV16-0016-001	James A & Jill G Corley et al	Gaster Separation USA, Inc.	R200	Marcellus Sh		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FTM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	O_BEF	G_AFT	O_BEF	G_AFT	NGL_BEF	NGL_AFT	P_REF
4705101437	11/17/2011	12/1/2011	1272	Ground Level	Cameron-Garner	Chandoga Ls	Marcellus Sh	Development Well	Development Well	Gas	unknown	Fractured	6922	12192	7183	2020	2413				

Comment: 11/17/2011 Additional Lease: WV16-0016-0007; WV16-0006-0001; 12/20/2011-001

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 Select County: (051) Marshall
 Enter Permit #: 01397
 Select categories: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Stem Hole Log

Well: County = 51 Permit = 01397

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_7E	QUAD_18	LAT_DD	LONG_DD	UTME	UTMN
4725101397	Marshall	1397	Francis	Prethorn Point	Carrollton	38.752811	-80.72021	820285	4450343

Bottom Hole Location Information

API	EP FLAG	UTME	UTMN	LON_DD	LAT_DD
4725101397	1	As Proposed	821470.1	4390760.2	-80.749240

Owner Information

API	CMP_DT	SUPP	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TNGT_FM	FFM_EST_FR
4725101397	11/18/2011	East Dugul Les	Completed	James A & Jill C Conroy et al	04	Carley	1-288282-021	81AUVW18-0218-20	11WV-0228-002	James A & Jill C Conroy et al	Gas	8000	45

Completion Information

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TYD	TMD	NEW_FTO	Q_BEP	Q_AFT	Q_BEP	Q_AFT	NGL_BEP	NGL_AFT	P_BEP	P_AFT	
4725101397	11/18/2011	1-4-2011	1173	Ground Level	Carrollton-Garner	Carrollton-Garner	Development Well	Development Well	Oil and Gas	Unknown	Fractured	8128	12310	7559	2400	45	44						

Comment: 11/18/2011 Additional Lease #: WV18-0018-002; WV18-0051-000; WV18-0015-000; WV18-0055-000


 Select County: (051) Marshall
 Enter Permit #: 01438
 Select categories: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Stem Hole Log

Well: County = 51 Permit = 01438

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_7E	QUAD_18	LAT_DD	LONG_DD	UTME	UTMN
4725101438	Marshall	1438	Francis	Prethorn Point	Carrollton	38.752811	-80.72021	820285	4450343

Bottom Hole Location Information

API	EP FLAG	UTME	UTMN	LON_DD	LAT_DD
4725101438	1	As Proposed	821048.2	4402393	-80.743193

Owner Information

API	CMP_DT	SUPP	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TNGT_FM	FFM_EST_FR
4725101438	11/16/2011	East Dugul Les	Completed	James A & Jill C Conroy et al	04	Carley	1WV-0218-001	11WV-0204-WV18-0018-002	11WV-0228-002	James A & Jill C Conroy et al	Gas	8000	45

Completion Information

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TYD	TMD	NEW_FTO	Q_BEP	Q_AFT	Q_BEP	Q_AFT	NGL_BEP	NGL_AFT	P_BEP	P_AFT	
4725101438	11/16/2011	7/6/2011	1272	Ground Level	Carrollton-Garner	Marcellus Sh	Development Well	Development Well	Oil and Gas	Rotary	Fractured	8127	11308	668	1500	5	23						

Comment: 11/16/2011 Other Lease numbers: 1-255200-001; 1-208003-001

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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-6HM
- ▭ 500 Ft Buffer
- ▭ Counties
- ▭ Districts



Corley N-6HM Franklin District Marshall County, WV



Map Created: September 8, 2017
Map Current As Of: September 8, 2017

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



Planning Report - Geographic



Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-06HM (slot G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-06HM (slot G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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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)		

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Site	Corey Pad				
Site Position:		Northing:	14,436,832.02 usft	Latitude:	39.75288638
From:	Lat/Long	Easting:	1,706,973.98 usft	Longitude:	-80.76319015
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 "

WV Department of Environmental Protection

Well	Corley N-06HM (slot G)					
Well Position	+N/-S	0.00 usft	Northing:	14,436,870.05 usft	Latitude:	39.75297064
	+E/-W	0.00 usft	Easting:	1,706,970.31 usft	Longitude:	-80.76320287
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	68.92	52,137.29891840

Design	rev0				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	325.47	

Plan Survey Tool Program	Date	9/6/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	14,303.43 rev0 (Original Hole)	MWD	MWD - Standard	

Plan Sections											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,491.91	15.84	298.54	2,481.86	48.60	-97.29	2.00	2.00	0.00	296.54		
6,259.16	15.84	298.54	6,108.10	508.07	-1,017.08	0.00	0.00	0.00	0.00		
7,037.44	91.00	330.00	6,543.00	965.00	-1,381.25	10.00	9.66	4.30	34.33	Corley N-06HM LP	
14,303.43	91.00	330.00	6,416.00	7,256.57	-4,993.69	0.00	0.00	0.00	0.00	Corley N-06HM BHL	

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Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-06HM (slot G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-06HM (slot G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
100.00	0.00	0.00	100.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
200.00	0.00	0.00	200.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
300.00	0.00	0.00	300.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
400.00	0.00	0.00	400.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
500.00	0.00	0.00	500.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
600.00	0.00	0.00	600.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
700.00	0.00	0.00	700.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
800.00	0.00	0.00	800.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
900.00	0.00	0.00	900.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,436,870.05	1,706,970.31	39.75297084	-80.76320287	
KOP Begin 2°/100' build										
1,800.00	2.00	296.54	1,799.98	0.78	-1.56	14,436,870.83	1,706,968.75	39.75297299	-80.76320842	
1,900.00	4.00	296.54	1,899.84	3.12	-6.24	14,436,873.17	1,706,984.08	39.75297945	-80.76322505	
2,000.00	6.00	296.54	1,999.45	7.01	-14.04	14,436,877.06	1,706,996.27	39.75299020	-80.76325276	
2,100.00	8.00	296.54	2,098.70	12.46	-24.94	14,436,882.51	1,706,945.37	39.75300524	-80.76329149	
2,200.00	10.00	296.54	2,197.47	19.45	-38.93	14,436,889.50	1,706,931.37	39.75302454	-80.76334122	
2,300.00	12.00	296.54	2,295.62	27.98	-56.00	14,436,898.02	1,706,914.30	39.75304808	-80.76340187	
2,400.00	14.00	296.54	2,393.06	38.03	-76.13	14,436,908.08	1,706,894.18	39.75307583	-80.76347337	
2,491.91	15.84	296.54	2,481.86	48.60	-97.29	14,436,918.65	1,706,873.01	39.75310502	-80.76354858	
Begin 15.84° tangent										
2,500.00	15.84	296.54	2,489.65	49.59	-99.27	14,436,919.64	1,706,871.04	39.75310775	-80.76355560	
2,600.00	15.84	296.54	2,585.85	61.79	-123.68	14,436,931.83	1,706,846.62	39.75314142	-80.76364236	
2,700.00	15.84	296.54	2,682.05	73.98	-148.10	14,436,944.03	1,706,822.21	39.75317509	-80.76372911	
2,800.00	15.84	296.54	2,778.26	86.18	-172.52	14,436,956.23	1,706,797.79	39.75320876	-80.76381576	
2,900.00	15.84	296.54	2,874.46	98.37	-196.93	14,436,968.42	1,706,773.38	39.75324243	-80.76390262	
3,000.00	15.84	296.54	2,970.66	110.57	-221.35	14,436,980.62	1,706,748.96	39.75327610	-80.76398937	
3,100.00	15.84	296.54	3,066.87	122.77	-245.76	14,436,992.81	1,706,724.55	39.75330978	-80.76407613	
3,200.00	15.84	296.54	3,163.07	134.96	-270.18	14,437,005.01	1,706,700.13	39.75334345	-80.76416288	
3,300.00	15.84	296.54	3,259.28	147.16	-294.59	14,437,017.21	1,706,675.72	39.75337712	-80.76424964	
3,400.00	15.84	296.54	3,355.48	159.36	-319.01	14,437,029.40	1,706,651.30	39.75341079	-80.76433639	
3,500.00	15.84	296.54	3,451.68	171.55	-343.42	14,437,041.60	1,706,626.89	39.75344446	-80.76442315	
3,600.00	15.84	296.54	3,547.89	183.75	-367.84	14,437,053.80	1,706,602.47	39.75347813	-80.76450990	
3,700.00	15.84	296.54	3,644.09	195.95	-392.25	14,437,065.99	1,706,578.05	39.75351180	-80.76459666	
3,800.00	15.84	296.54	3,740.29	208.14	-416.67	14,437,078.19	1,706,553.64	39.75354547	-80.76468342	
3,900.00	15.84	296.54	3,836.50	220.34	-441.08	14,437,090.39	1,706,529.22	39.75357914	-80.76477017	
4,000.00	15.84	296.54	3,932.70	232.53	-465.50	14,437,102.58	1,706,504.81	39.75361281	-80.76485693	
4,100.00	15.84	296.54	4,028.90	244.73	-489.91	14,437,114.78	1,706,480.39	39.75364648	-80.76494368	
4,200.00	15.84	296.54	4,125.11	256.93	-514.33	14,437,126.97	1,706,455.98	39.75368018	-80.76503044	
4,300.00	15.84	296.54	4,221.31	269.12	-538.74	14,437,139.17	1,706,431.56	39.75371383	-80.76511719	
4,400.00	15.84	296.54	4,317.52	281.32	-563.16	14,437,151.37	1,706,407.15	39.75374750	-80.76520395	
4,500.00	15.84	296.54	4,413.72	293.52	-587.58	14,437,163.56	1,706,382.73	39.75378117	-80.76529071	
4,600.00	15.84	296.54	4,509.92	305.71	-611.99	14,437,175.76	1,706,358.32	39.75381484	-80.76537746	
4,700.00	15.84	296.54	4,606.13	317.91	-636.41	14,437,187.96	1,706,333.90	39.75384851	-80.76546422	
4,800.00	15.84	296.54	4,702.33	330.11	-660.82	14,437,200.15	1,706,309.49	39.75388218	-80.76555097	
4,900.00	15.84	296.54	4,798.53	342.30	-685.24	14,437,212.35	1,706,285.07	39.75391585	-80.76563773	
5,000.00	15.84	296.54	4,894.74	354.50	-709.65	14,437,224.55	1,706,260.66	39.75394952	-80.76572449	



Planning Report - Geographic



Database: DB_Jul2218dt_v14	Local Co-ordinate Reference: Well Corley N-06HM (slot G)
Company: Tug Hill Operating LLC	TVD Reference: GL=1254 @ 1254.00usft
Project: Marshall County, West Virginia	MD Reference: GL=1254 @ 1254.00usft
Site: Corey Pad	North Reference: Grid
Well: Corley N-06HM (slot G)	Survey Calculation Method: Minimum Curvature
Wellbore: Original Hole	
Design: rev0	

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,100.00	15.84	296.54	4,990.94	366.69	-734.07	14,437,236.74	1,705,236.24	39.75399319	-80.76581124	
5,200.00	15.84	296.54	5,087.14	378.89	-758.48	14,437,248.94	1,706,211.83	39.75401686	-80.76589600	
5,300.00	15.84	296.54	5,183.35	391.09	-782.90	14,437,261.13	1,705,187.41	39.75405053	-80.76598476	
5,400.00	15.84	296.54	5,279.55	403.28	-807.31	14,437,273.33	1,708,162.99	39.75408420	-80.76607151	
5,500.00	15.84	296.54	5,375.76	415.48	-831.73	14,437,285.53	1,705,136.58	39.75411787	-80.76615827	
5,600.00	15.84	296.54	5,471.96	427.68	-856.14	14,437,297.72	1,706,114.16	39.75415154	-80.76624503	
5,700.00	15.84	296.54	5,568.16	439.87	-880.56	14,437,309.92	1,705,089.75	39.75418521	-80.76633178	
5,800.00	15.84	296.54	5,664.37	452.07	-904.97	14,437,322.12	1,705,065.33	39.75421888	-80.76641854	
5,900.00	15.84	296.54	5,760.57	464.27	-929.39	14,437,334.31	1,705,040.92	39.75425255	-80.76650530	
6,000.00	15.84	296.54	5,856.77	476.46	-953.80	14,437,346.51	1,705,016.50	39.75428621	-80.76659206	
6,100.00	15.84	296.54	5,952.98	488.66	-978.22	14,437,358.71	1,705,992.09	39.75431988	-80.76667881	
6,200.00	15.84	296.54	6,049.18	500.85	-1,002.64	14,437,370.90	1,705,967.67	39.75435355	-80.76676557	
6,259.16	15.84	296.54	6,108.10	508.07	-1,017.08	14,437,378.12	1,705,953.23	39.75437347	-80.76681690	
Begin 10°/100' build/turn										
6,300.00	19.34	303.51	6,145.02	514.30	-1,027.71	14,437,384.34	1,705,942.60	39.75439065	-80.76685466	
6,400.00	28.57	313.22	6,236.35	539.88	-1,059.02	14,437,409.92	1,705,911.29	39.75448113	-80.76696583	
6,500.00	38.16	318.41	6,319.79	579.45	-1,097.05	14,437,449.50	1,705,873.26	39.75457009	-80.76710076	
6,600.00	47.90	321.75	6,392.81	631.83	-1,140.63	14,437,501.87	1,705,829.68	39.75471423	-80.76725534	
6,700.00	57.71	324.19	6,453.20	695.40	-1,188.44	14,437,565.45	1,705,781.87	39.75488916	-80.76742488	
6,800.00	67.56	326.16	6,499.12	768.25	-1,239.03	14,437,638.29	1,705,731.27	39.75508957	-80.76760422	
6,900.00	77.42	327.85	6,529.17	848.15	-1,290.87	14,437,718.20	1,705,679.44	39.75530838	-80.76778792	
7,000.00	87.30	329.42	6,542.45	932.66	-1,342.37	14,437,802.73	1,705,627.93	39.75554190	-80.76797039	
7,037.44	91.00	330.00	6,543.00	965.00	-1,361.25	14,437,835.05	1,705,609.06	39.75563079	-80.76803726	
Begin 91.00° lateral section										
7,100.00	91.00	330.00	6,541.91	1,019.17	-1,392.53	14,437,889.22	1,705,577.78	39.75577978	-80.76814804	
7,200.00	91.00	330.00	6,540.16	1,105.76	-1,442.52	14,437,975.81	1,705,527.79	39.75601794	-80.76832512	
7,300.00	91.00	330.00	6,538.41	1,192.35	-1,492.51	14,438,062.40	1,705,477.80	39.75625609	-80.76850221	
7,400.00	91.00	330.00	6,536.66	1,278.94	-1,542.50	14,438,149.99	1,705,427.80	39.75649424	-80.76867929	
7,500.00	91.00	330.00	6,534.92	1,365.53	-1,592.50	14,438,235.58	1,705,377.81	39.75673240	-80.76885638	
7,600.00	91.00	330.00	6,533.17	1,452.12	-1,642.49	14,438,322.17	1,705,327.82	39.75697055	-80.76903346	
7,700.00	91.00	330.00	6,531.42	1,538.71	-1,692.48	14,438,408.76	1,705,277.83	39.75720870	-80.76921055	
7,800.00	91.00	330.00	6,529.67	1,625.30	-1,742.47	14,438,495.34	1,705,227.83	39.75744686	-80.76938764	
7,900.00	91.00	330.00	6,527.92	1,711.89	-1,792.47	14,438,581.93	1,705,177.84	39.75768501	-80.76956473	
8,000.00	91.00	330.00	6,526.18	1,798.48	-1,842.46	14,438,668.52	1,705,127.85	39.75792316	-80.76974182	
8,100.00	91.00	330.00	6,524.43	1,885.07	-1,892.45	14,438,755.11	1,705,077.86	39.75816131	-80.76991891	
8,200.00	91.00	330.00	6,522.68	1,971.65	-1,942.44	14,438,841.70	1,705,027.87	39.75839946	-80.77009600	
8,300.00	91.00	330.00	6,520.93	2,058.24	-1,992.43	14,438,928.29	1,704,977.87	39.75863762	-80.77027310	
8,400.00	91.00	330.00	6,519.18	2,144.83	-2,042.43	14,439,014.88	1,704,927.88	39.75887577	-80.77045020	
8,500.00	91.00	330.00	6,517.44	2,231.42	-2,092.42	14,439,101.47	1,704,877.89	39.75911392	-80.77062729	
8,600.00	91.00	330.00	6,515.69	2,318.01	-2,142.41	14,439,188.06	1,704,827.90	39.75935207	-80.77080439	
8,700.00	91.00	330.00	6,513.94	2,404.60	-2,192.40	14,439,274.65	1,704,777.90	39.75959022	-80.77098149	
8,800.00	91.00	330.00	6,512.19	2,491.19	-2,242.40	14,439,361.24	1,704,727.91	39.75982837	-80.77115859	
8,900.00	91.00	330.00	6,510.45	2,577.78	-2,292.39	14,439,447.83	1,704,677.92	39.76006652	-80.77133569	
9,000.00	91.00	330.00	6,508.70	2,664.37	-2,342.38	14,439,534.42	1,704,627.93	39.76030467	-80.77151280	
9,100.00	91.00	330.00	6,506.95	2,750.96	-2,392.37	14,439,621.01	1,704,577.93	39.76054282	-80.77168990	
9,200.00	91.00	330.00	6,505.20	2,837.55	-2,442.37	14,439,707.60	1,704,527.94	39.76078096	-80.77186701	
9,300.00	91.00	330.00	6,503.45	2,924.14	-2,492.36	14,439,794.18	1,704,477.95	39.76101911	-80.77204411	
9,400.00	91.00	330.00	6,501.71	3,010.73	-2,542.35	14,439,880.77	1,704,427.96	39.76125726	-80.77222122	
9,500.00	91.00	330.00	6,499.96	3,097.32	-2,592.34	14,439,967.36	1,704,377.96	39.76149541	-80.77239833	
9,600.00	91.00	330.00	6,498.21	3,183.91	-2,642.34	14,440,053.95	1,704,327.97	39.76173356	-80.77257544	
9,700.00	91.00	330.00	6,496.46	3,270.49	-2,692.33	14,440,140.54	1,704,277.98	39.76197170	-80.77275255	
9,800.00	91.00	330.00	6,494.71	3,357.08	-2,742.32	14,440,227.13	1,704,227.99	39.76220985	-80.77292967	
9,900.00	91.00	330.00	6,492.97	3,443.67	-2,792.31	14,440,313.72	1,704,178.00	39.76244800	-80.77310678	
10,000.00	91.00	330.00	6,491.22	3,530.26	-2,842.30	14,440,400.31	1,704,128.00	39.76268614	-80.77328390	

WV Department of Environmental Protection

51-01971



Planning Report - Geographic



Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-06HM (slot G)
Company:	Tug Hill Operating LLC	TVD Reference:	CL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	CL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-06HM (slot G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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SEP 26 2017

Planned Survey

WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,100.00	91.00	330.00	6,489.47	3,616.65	-2,892.30	14,440,486.90	1,704,078.01	39.76292429	-80.77346101
10,200.00	91.00	330.00	6,487.72	3,703.44	-2,942.29	14,440,573.49	1,704,028.02	39.76316244	-80.77363813
10,300.00	91.00	330.00	6,485.97	3,790.03	-2,992.28	14,440,660.08	1,703,978.03	39.76340058	-80.77381525
10,400.00	91.00	330.00	6,484.23	3,876.62	-3,042.27	14,440,746.67	1,703,928.03	39.76363873	-80.77399237
10,500.00	91.00	330.00	6,482.48	3,963.21	-3,092.27	14,440,833.26	1,703,878.04	39.76387687	-80.77416949
10,600.00	91.00	330.00	6,480.73	4,049.80	-3,142.26	14,440,919.85	1,703,828.05	39.76411502	-80.77434661
10,700.00	91.00	330.00	6,478.98	4,136.39	-3,192.25	14,441,006.44	1,703,778.06	39.76435316	-80.77452374
10,800.00	91.00	330.00	6,477.24	4,222.98	-3,242.24	14,441,093.02	1,703,728.06	39.76459131	-80.77470086
10,900.00	91.00	330.00	6,475.49	4,309.57	-3,292.24	14,441,179.61	1,703,678.07	39.76482945	-80.77487799
11,000.00	91.00	330.00	6,473.74	4,396.16	-3,342.23	14,441,266.20	1,703,628.08	39.76506759	-80.77505512
11,100.00	91.00	330.00	6,471.99	4,482.75	-3,392.22	14,441,352.79	1,703,578.09	39.76530574	-80.77523225
11,200.00	91.00	330.00	6,470.24	4,569.33	-3,442.21	14,441,439.38	1,703,528.10	39.76554388	-80.77540938
11,300.00	91.00	330.00	6,468.50	4,655.92	-3,492.20	14,441,525.97	1,703,478.10	39.76578202	-80.77558651
11,400.00	91.00	330.00	6,466.75	4,742.51	-3,542.20	14,441,612.56	1,703,428.11	39.76602017	-80.77576364
11,500.00	91.00	330.00	6,465.00	4,829.10	-3,592.19	14,441,699.15	1,703,378.12	39.76625831	-80.77594077
11,600.00	91.00	330.00	6,463.25	4,915.69	-3,642.18	14,441,785.74	1,703,328.13	39.76649645	-80.77611791
11,700.00	91.00	330.00	6,461.50	5,002.28	-3,692.17	14,441,872.33	1,703,278.13	39.76673459	-80.77629504
11,800.00	91.00	330.00	6,459.76	5,088.87	-3,742.17	14,441,958.92	1,703,228.14	39.76697273	-80.77647218
11,900.00	91.00	330.00	6,458.01	5,175.46	-3,792.16	14,442,045.51	1,703,178.15	39.76721088	-80.77664932
12,000.00	91.00	330.00	6,456.26	5,262.05	-3,842.15	14,442,132.10	1,703,128.16	39.76744902	-80.77682646
12,100.00	91.00	330.00	6,454.51	5,348.64	-3,892.14	14,442,218.69	1,703,078.16	39.76768716	-80.77700360
12,200.00	91.00	330.00	6,452.77	5,435.23	-3,942.14	14,442,305.28	1,703,028.17	39.76792530	-80.77718074
12,300.00	91.00	330.00	6,451.02	5,521.82	-3,992.13	14,442,391.86	1,702,978.18	39.76816344	-80.77735789
12,400.00	91.00	330.00	6,449.27	5,608.41	-4,042.12	14,442,478.45	1,702,928.19	39.76840158	-80.77753503
12,500.00	91.00	330.00	6,447.52	5,695.00	-4,092.11	14,442,565.04	1,702,878.19	39.76863972	-80.77771218
12,600.00	91.00	330.00	6,445.77	5,781.58	-4,142.11	14,442,651.63	1,702,828.20	39.76887786	-80.77788932
12,700.00	91.00	330.00	6,444.03	5,868.17	-4,192.10	14,442,738.22	1,702,778.21	39.76911600	-80.77806647
12,800.00	91.00	330.00	6,442.28	5,954.76	-4,242.09	14,442,824.81	1,702,728.22	39.76935414	-80.77824362
12,900.00	91.00	330.00	6,440.53	6,041.35	-4,292.08	14,442,911.40	1,702,678.23	39.76959227	-80.77842077
13,000.00	91.00	330.00	6,438.78	6,127.94	-4,342.07	14,442,997.99	1,702,628.23	39.76983041	-80.77859793
13,100.00	91.00	330.00	6,437.03	6,214.53	-4,392.07	14,443,084.58	1,702,578.24	39.77006855	-80.77877508
13,200.00	91.00	330.00	6,435.29	6,301.12	-4,442.06	14,443,171.17	1,702,528.25	39.77030669	-80.77895223
13,300.00	91.00	330.00	6,433.54	6,387.71	-4,492.05	14,443,257.76	1,702,478.26	39.77054483	-80.77912939
13,400.00	91.00	330.00	6,431.79	6,474.30	-4,542.04	14,443,344.35	1,702,428.26	39.77078296	-80.77930655
13,500.00	91.00	330.00	6,430.04	6,560.89	-4,592.04	14,443,430.94	1,702,378.27	39.77102110	-80.77948370
13,600.00	91.00	330.00	6,428.30	6,647.48	-4,642.03	14,443,517.53	1,702,328.28	39.77125924	-80.77966086
13,700.00	91.00	330.00	6,426.55	6,734.07	-4,692.02	14,443,604.11	1,702,278.29	39.77149737	-80.77983802
13,800.00	91.00	330.00	6,424.80	6,820.66	-4,742.01	14,443,690.70	1,702,228.29	39.77173551	-80.78001519
13,900.00	91.00	330.00	6,423.05	6,907.25	-4,792.01	14,443,777.29	1,702,178.30	39.77197364	-80.78019235
14,000.00	91.00	330.00	6,421.30	6,993.84	-4,842.00	14,443,863.88	1,702,128.31	39.77221178	-80.78036951
14,100.00	91.00	330.00	6,419.56	7,080.42	-4,891.99	14,443,950.47	1,702,078.32	39.77244991	-80.78054668
14,200.00	91.00	330.00	6,417.81	7,167.01	-4,941.98	14,444,037.06	1,702,028.33	39.77268805	-80.78072384
14,300.00	91.00	330.00	6,416.06	7,253.60	-4,991.97	14,444,123.65	1,701,978.33	39.77292618	-80.78090101
14,303.43	91.00	330.00	6,416.00	7,258.57	-4,993.69	14,444,126.62	1,701,978.62	39.77293434	-80.78090708

PBHL/TD 14303.43 MD/6416.00 TVD



Planning Report - Geographic



Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Corley N-06HM (slot G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1254 @ 1254.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1254 @ 1254.00usft
Site:	Corey Pad	North Reference:	Grid
Well:	Corley N-06HM (slot G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Corley N-06HM BHL - plan hits target center - Point	0.00	0.01	6,416.00	7,256.57	-4,993.69	14,444,126.62	1,701,976.62	39.77293434	-80.78090708
Corley N-06HM LP - plan hits target center - Point	0.00	0.00	6,543.00	965.00	-1,361.25	14,437,835.05	1,705,609.06	39.75563079	-80.76803726

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,700.00	1,700.00	0.00	0.00	KOP Begin 2°/100' build
2,491.91	2,481.86	48.60	-97.29	Begin 15.84° tangent
6,259.16	6,106.10	508.07	-1,017.08	Begin 10°/100' build/turn
7,037.44	6,543.00	965.00	-1,361.25	Begin 91.00° lateral section
14,303.43	6,416.00	7,256.57	-4,993.69	PBHL/TD 14303.43 MD/6416.00 TVD

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WV Department of
Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - 01971

Operator's Well No. Cordley N-6HM

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SEP 26 2017

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

WV Department of
Environmental Protection

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature _____

Company Official (Typed Name) David Patterson

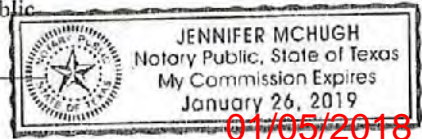
Company Official Title Senior Vice President, Operations

Subscribed and sworn before me this 18th day of Sept, 20 17

Jennifer McHugh

Notary Public

My commission expires 1-24-2019



51-01971

Form WW-9

Operator's Well No. Corley N-6HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 17.78 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

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Environmental Protection

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Rye Grain	140

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jan [Signature]*

Comments: _____

Title: Oil & Gas Inspector

Date: 9/20/17

Field Reviewed?

Yes

No

WW-9

**PROPOSED CORLEY
N-6HM**

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.

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Office of Oil and Gas

SEP 26 2017

WV Department of
Environmental Protection

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

LEGEND

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

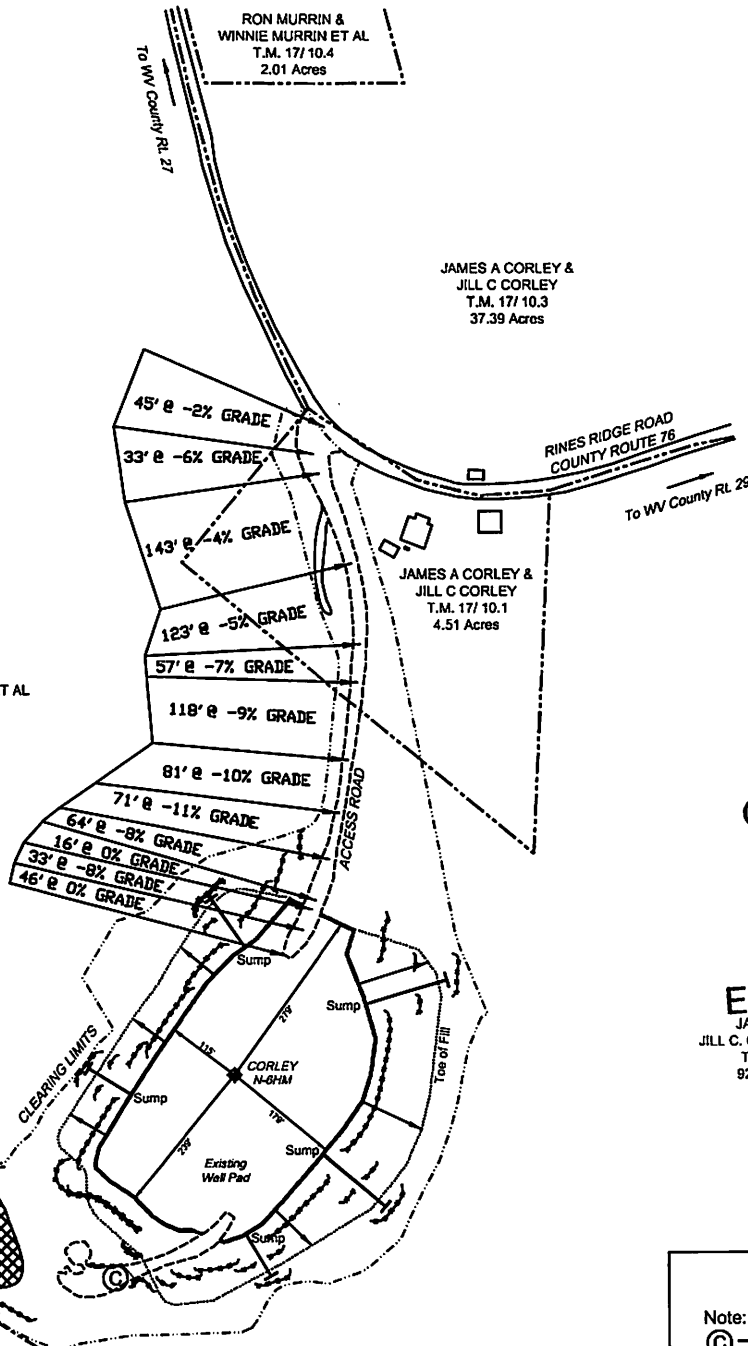
RON MURRIN &
WINNIE MURRIN ET AL
T.M. 17/10.4
2.01 Acres

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

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

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

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



DATE: 09/18/17

PROJECT NO: 494510851

DRAWN BY: J.A.H.

SI-01971



*Jan
9/20/17*

Well Site Safety Plan

Tug Hill Operating, LLC

Well Name: Corley N-6HM

Pad Location: Corley Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,400,366.79

Easting: 520,285.59

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SEP 26 2017

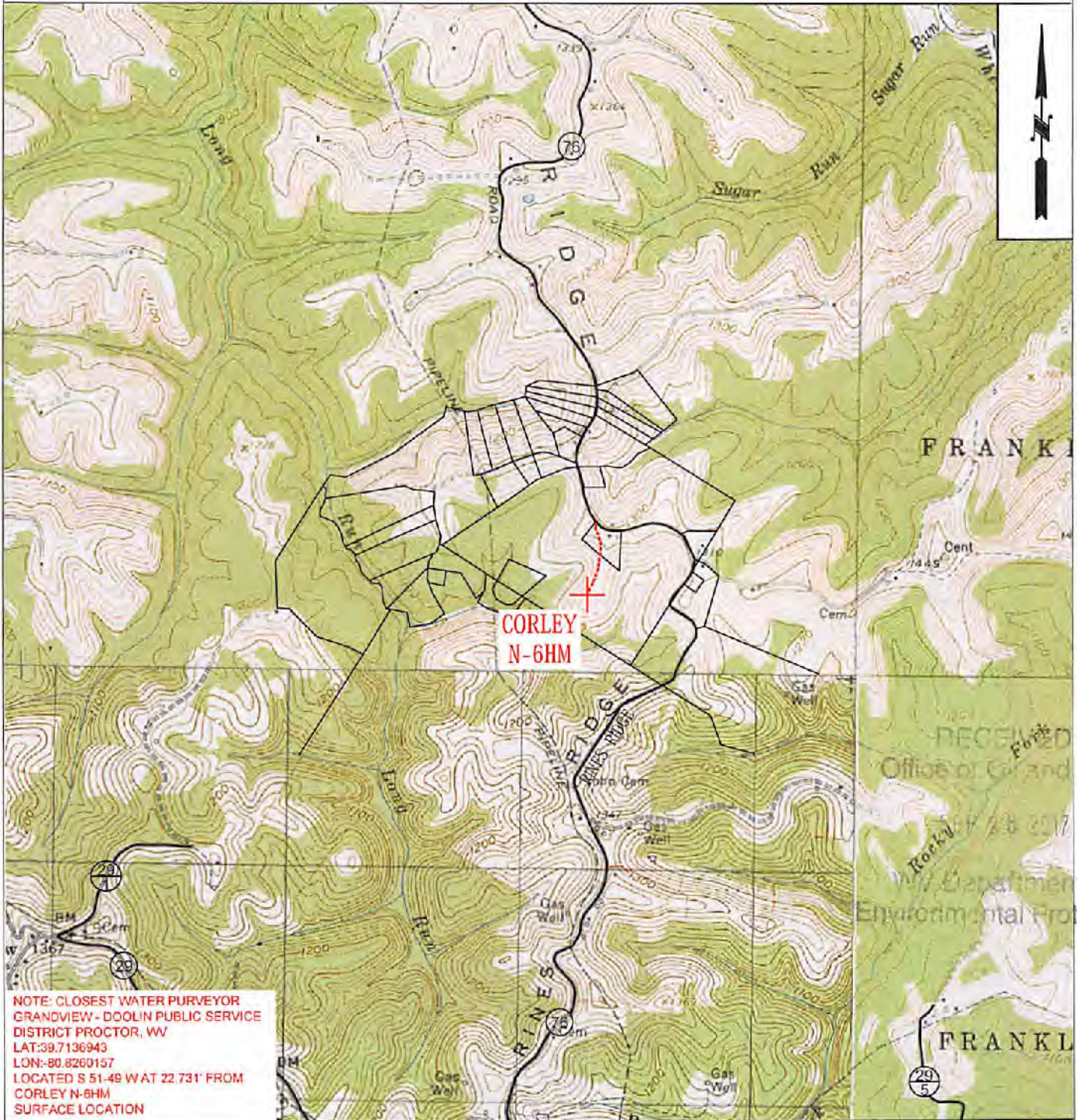
September 2017
WV Department of
Environmental Protection

01/05/2018

WW-9


PROPOSED CORLEY N-6HM

SUPPLEMENT PG 2



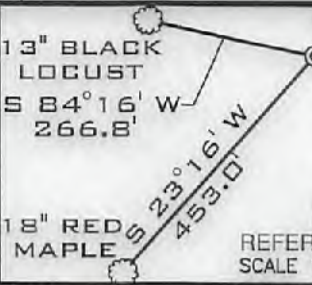
NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE
 DISTRICT PROCTOR, WV
 LAT:39.7136943
 LON:-80.8260157
 LOCATED S 51-49 W AT 22.731' FROM
 CORLEY N-6HM
 SURFACE LOCATION

RECEIVED
 Office of Oil and Gas
 Rocky Mount, VA
 Department of Environmental Protection

 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	CORLEY
			SCALE: 1" = 2000'	DATE: DATE: 09/18/17

CORLEY LEASE WELL N-6HM

351.749 ± ACRES



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

- N-7HM
- N-6HM
- N-5HM
- N-4HM
- N-3HM
- N-2HM
- N-1HM

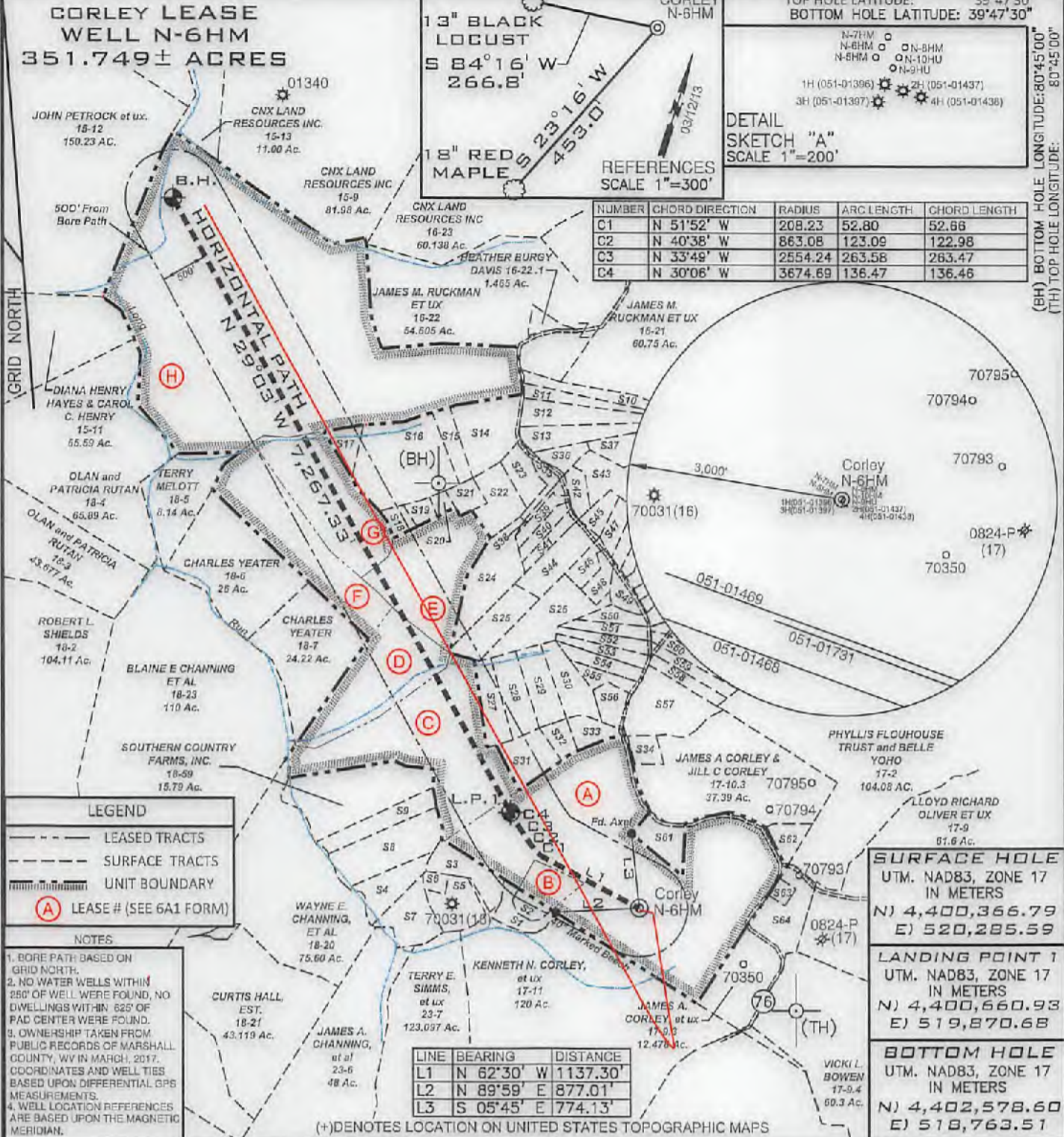
DETAIL SKETCH "A" SCALE 1"=200'

NUMBER	CHORD DIRECTION	RADIUS	ARC LENGTH	CHORD LENGTH
C1	N 51°52' W	208.23	52.80	52.86
C2	N 40°38' W	863.08	123.09	122.98
C3	N 33°49' W	2554.24	263.58	263.47
C4	N 30°06' W	3674.69	136.47	136.46

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

(BH) 6,844'

(TH) 14,111'



LEGEND

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

NOTES

- BORE PATH BASED ON GRID NORTH.
- NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
- OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
- WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

LINE	BEARING	DISTANCE
L1	N 62°30' W	1137.30'
L2	N 89°59' E	877.01'
L3	S 05°45' E	774.13'

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,366.79
E) 520,285.59

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,660.93
E) 519,870.68

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,578.60
E) 518,763.51

FILE NUMBER _____

DRAWING NUMBER CORLEY_WP_N-6HM

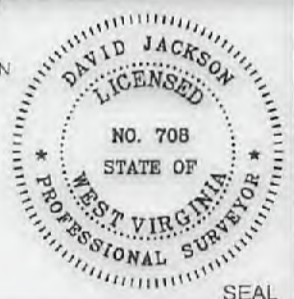
SCALE 1" = 1500'

MINIMUM DEGREE OF ACCURACY 1/200

PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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

P.S. 708
David L Jackson



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

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

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

DATE: SEPTEMBER 19, 2017
REVISED DATE: DECEMBER 20, 2017
OPERATORS WELL NO. CORLEY N-6HM
API WELL NO. 47-051-0197146A
STATE WV COUNTY MARSHALL PERMIT 0197146A

LOCATION ELEVATION 1254.22' WATERSHED (HUC 10) Fish Creek
DISTRICT Franklin COUNTY Marshall
QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE 6A1 Form

SURFACE OWNER James A. & Jill C. Corley, et al ACREAGE 92.61
OIL & GAS ROYALTY OWNER James A. & Jill C. Corley, et al LEASE ACREAGE 92.61
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION Marcellus ESTIMATED DEPTH TVD: 6,662' TMD: 14,313'
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

01/05/2018

COUNTY NAME
PERMIT

**CORLEY LEASE
WELL N-6HM
351.749± ACRES**

GRID NORTH

Number	TAX MAP -PARCEL	ADJOINER 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	18-56	William E. O'Hara	3.965
S11	18-55	William E. O'Hara	3.202
S12	18-28	Dotsen Harrison et ux	6.36
S13	18-28.1	Carol Diane Helmick	5.696
S14	18-11	Benjamin Robinson	10.883
S15	18-11.2	Edward Lee Burge Jr.	2.0
S16	18-11.1	Edward Lee Burge Jr.	18.0
S17	18-15	Edward Lee Burge Jr.	2.495
S18	18-10.1	David V Anderson Et Ux	1.65
S19	18-10.2	David V Anderson Et Ux	1.377
S20	18-10	David & Nancy Anderson	.907
S21	18-12	William L Wayne Et Ux	2.270
S22	18-15.1	Jason Blair	5.948
S23	18-15.2	Edward L. Burge	4.171
S24	18-13.3	Robert G Closterman	9.813
S25	18-17	Michael Fincham & Kezia Winters	6.555
S26	18-13.1	Cory A Holt	9.248
S27	18-34	Jodi A & Gary A Hall	5.002
S28	18-13.13	Glenn E & Sandra K Whisler	5.59
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	18-33	Sandra K & Glenn E Whisler	5.343
S32	18-13.14	Glenn E & Sandra K Whisler	2.116
S33	18-48	Marvin Dean Roberts Et Ux & Brad & Bridget Williams	2.920
S34	17-10.4	Ron & Winnie Murrin et al	2.01
S35	18-36	Ruth Mulligan Est.	2.003
S36	18-50	Steven G. Berisford	2.170
S37	18-13.2	Steven G. Berisford	6.023
S38	18-13.5	Bryan Wesley	1.023
S39	18-47	Robert Richard Pelley II & Susan Lynn Briggs	2.01
S40	18-46	Dale W. & Patricia Gardner	2.03
S41	18-45	Michael Fincham & Kezia Winters	2.07
S42	18-49	Tanner Butler	2.023
S43	18-13	Southern Country Farms Inc	11.054
S44	18-14	Michael Fincham & Kezia Winters	6.386
S45	18-37	John Wetzel	2.064
S46	18-40	Cory A Holt	2.237
S47	18-38	Marion Connor	2.231
S48	18-41	Cory A Holt	2.308
S49	18-25	Charles & Marra Reyl	2.521
S50	18-44	Renee Streight	2.133
S51	18-43	Roy Butler	2.532
S52	18-51	Roger Hall Jr.	2.505
S53	18-52	Roger Hall Jr.	2.536
S54	18-61	Roger White Jr.	2.984
S55	18-57	Marvin Roberts	2.228
S56	18-18	Linda Coen	3.0
S57	18-19	Roger White Jr.	10
S58	18-41	Cory A Holt	2.308
S59	18-35	Mary Anderson	2.308
S60	18-58	Kevin Roberts	2.635
S61	17-10.1	James & Jill Corley	4.51
S62	17-10.2	Sidney Pozell Et Ux Ests	2.6
S63	17-9.1	Jeri J White	1
S64	17-9.2	Jeri J White	7.136

51-0197111A

01/05/2018



TUG HILL
OPERATING

OPERATOR'S

WELL #: Corley N-6HM

DISTRICT:

Franklin

COUNTY:

MarshallSTATE: WV

WELL PLAT

PAGE 2 OF 2

DATE: 09/18/2017

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

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

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

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

*See attached pages

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

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

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

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

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

51-01971

LM_ID	TAG	SEC	LESSOR	LESSEE	ROYALTY	BOOK	PG	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT
10*14095	A	5-17-10	JAMES A CORLEY AND JILL C CORLEY	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	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	GASTAR EXPLORATION USA, INC.	1/8+	666	539	N/A	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	B	5-17-10.5	RUTH A CORLEY	GASTAR EXPLORATION USA, INC.	1/8+	666	539	N/A	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	5-17-10.5	JAMES A CORLEY AND JILL C CORLEY	GASTAR EXPLORATION USA, INC.	1/8+	666	545	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14099	C	5-18-13	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA, INC.	1/8+	666	489	N/A	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	C	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
10*14503	D	5-18-16	IMA LEE YOHO	GASTAR EXPLORATION USA, INC.	1/8+	756	85	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	36/009 Gastar Exploration Inc to TH Exploration II, LLC
10*14503	E	5-18-15.5	IMA LEE YOHO	GASTAR EXPLORATION USA, INC.	1/8+	756	85	N/A	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	E	5-18-15.5	DARRELL BOLEY ET UX	CHEVRON U.S.A. INC	1/8+	897	254	N/A	N/A	40/127 Chevron U.S.A. Inc. to TH Exploration, LLC
10*17222	F	5-18-15.3	JAMES W AND DOLLIE M FOSTER	TH EXPLORATION LLC	1/8+	940	429	N/A	N/A	N/A
10*14923	G	5-18-15.4	EDWARD LEE BURGE SR	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	521	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

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WW-6A1 Supplement

Operator's Well No. Corley - 6HM

51-01971

LM_ID	TAG	SEC	LESSOR	LESSEE	ROYALTY	BOOK	PG	ASSIGNMENT	ASSIGNMENT	ASSIGNMENT
10*19339	H	5-15-10	MARK STANLEY RUCKMAN	TRIENERGY INC	1/8+	664	495	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

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SI-01971

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

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

Execution Version

ASSIGNMENT AND BILL OF SALE

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

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

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

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

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

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

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

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51-01971

COPY

Marshall County
Jan Pest, Clerk
Instrument 1427814
09/03/2017 @ 03:36:24 PM
ASSIGNMENTS
Book 40 @ Page 57
Pages Recorded 39
Recording Cost \$ 47.00

STATE OF WEST VIRGINIA §
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

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

RECITALS

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

1. DEFINITIONS

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

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

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

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

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

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

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

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

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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September 22, 2017

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

RE: Corley N-6HM

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-6HM 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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WV Department of
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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 - 01971
 Operator's Well No. Corley N-6HM
 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>520,285.59</u>
County: <u>Marshall</u>		Northing: <u>4,400,366.79</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.

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: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <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 <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION	OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED
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Required Attachments:

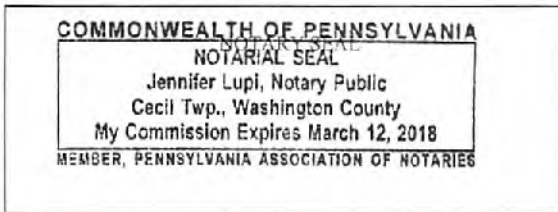
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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, 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 22nd day of Sept 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 depprivacyofficer@wv.gov.

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 WV 01/05/2018 of
 Environmental Protection

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: 9/22/2017 Date Permit Application Filed: 9/22/2017

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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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

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.**

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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-051 - 01971
OPERATOR WELL NO. Corley N-6HM
Well Pad Name: Corley

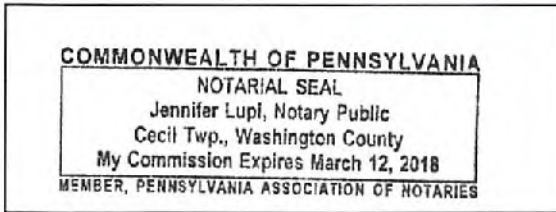
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8398
Email: amiller@tug-hillcp.com Amy Miller

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 of your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.



Subscribed and sworn before me this 2nd day of Sept 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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51-01971

WW-6A NOTICE OF APPLICATION.....CORLEY N-6HM

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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WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: CORLEY No. N-6HM
 District: Franklin
 County: Marshall
 State: WV

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

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

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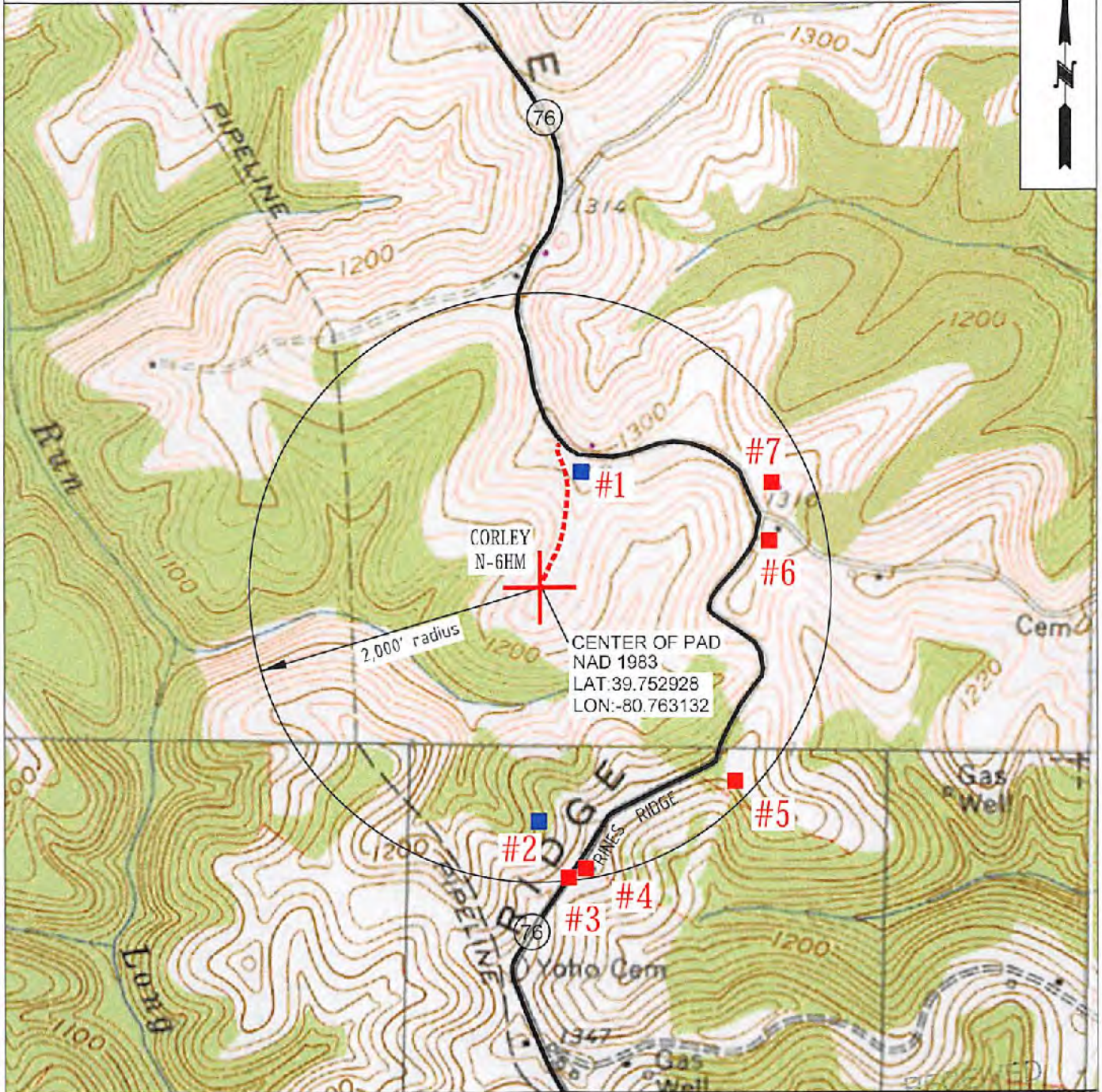
WV Department of
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 01/05/2018

WW-6A

PROPOSED CORLEY N-6HM

SUPPLEMENT PG 1

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



OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	CORLEY
		SCALE:	DATE: SEP 26 2017
		1" = 1000'	DATE- 09/19/17

Department of Environmental Protection
01/05/2018

51-01971

WW-6A3
(1/12)

Operator Well No. Corley N-6HM

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: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.7527964; -80.7631465</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
District: <u>Franklin</u>	Watershed: <u>HUC 10 - Fish Creek</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Corely, James A. and Jill C.</u>

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

Notice is hereby given by:

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

Oil and Gas Privacy Notice:

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

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

COAL OWNER OR LESSEE

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



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

MINERAL OWNER

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



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

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

Date of Notice: 09/21/2017 **Date Permit Application Filed:** 09/22/2017

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 Ackeman Road
Bangor, PA 16013

Name: James A. and Jill C. Corley ✓
Address: 208 Flicksville Road
Bangor, PA 16013

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>520,265.59</u>
County:	<u>Marshall</u>		Northing:	<u>4,400,366.79</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-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.

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WV Department of
Environmental Protection

SI-01971

WW-6A5 NOTICE OF PLANNED OPERATION.....CORLEY N-6HM

SURFACE OWNER

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

RECEIVED
Office of Oil and Gas

SEP 26 2017

WV Department of
Environmental Protection
01/05/2018

51-01971



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-6HM Well Site

47-051-01971

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,

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

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

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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Corley N-6HM

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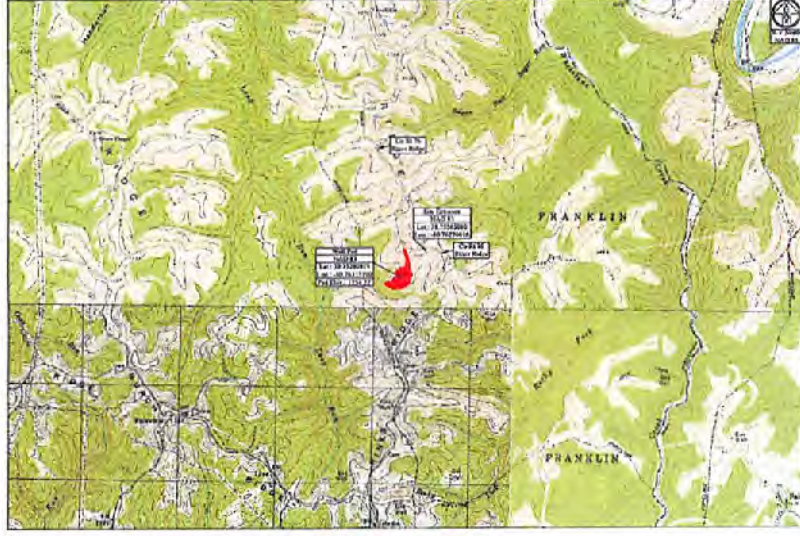
Corley Well Site
 Site Design, Construction Plan, &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Franklin District
 Latitude 39.75292819°
 Longitude -80.76313190°
 Lower Fish Creek Watershed

Pertinent Site Information
Corley Well Site
 Emergency Number: 304-845-1920
 Franklin District, Marshall County, WV
 Watershed: Lower Fish Creek Watershed
 Tug Hill Contact Number: 1-811-632-3400

Parcel	Ownership		Acres	County	District	Watershed	Watershed ID
	Owner	Address					
10000000	10000000	10000000	0.15	Marshall	Franklin	Lower Fish Creek	000000



Exhibit A: Final Design: Issue for Permitting



WV State Plane Coordinate System
 NAD83 Zone 18
 Easting: 488484.68
 Northing: 4278575.18
 UTM Zone 18
 Easting: 488484.68
 Northing: 4278575.18
 UTM Zone 18
 Easting: 488484.68
 Northing: 4278575.18

Sheet	Size	Scale	Date
01-01	11x17	1"=50'	12/15/2017

Category	Value
Planting	100.00
Erosion Control	100.00
Sediment Control	100.00
Clearing	100.00
Construction	100.00
Total	500.00

All structures will be placed within the property boundaries. Land Use Districts for the Corley Well Site. No additional structures are permitted. All structures will be placed within the property boundaries. Land Use Districts for the Corley Well Site. No additional structures are permitted. All structures will be placed within the property boundaries.

Location	Length (ft)	Width (ft)	Area (sq ft)
Well Pad	100	100	10000
Driveway	100	50	5000
Total	200	150	15000

09/20/17



Point ID	Easting	Northing
10000000	488484.68	4278575.18
10000001	488484.68	4278575.18
10000002	488484.68	4278575.18



USGS 7.5 Quadrangle Projection Point Watershed: Lower Fish Creek

Point ID	Easting	Northing
10000000	488484.68	4278575.18
10000001	488484.68	4278575.18

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

Project Contacts
 Tug Hill Operating
 10000000
 Tug Hill Operating, LLC
 10000000
 Tug Hill Operating, LLC
 10000000

Approach Road:
 From the intersection of WV 2, 2 and 211, 7 feet from
 the right side of the road, follow WV 211 North for 10.0 feet. Turn
 right onto CR 211. Follow CR 211 for 1.0 mile. Turn right onto CR 211
 for 1.0 mile. Turn right onto CR 211 (Lower Ridge). Follow
 CR 211 for 5.5 miles. 2.0 mile distance will be on the right
 (West) side of the road.



Sheet	Description
01	Cover Sheet
02	Site Plan
03	Site Plan
04	Site Plan
05	Site Plan
06	Site Plan
07	Site Plan
08	Site Plan
09	Site Plan
10	Site Plan
11	Site Plan
12	Site Plan
13	Site Plan
14	Site Plan
15	Site Plan
16	Site Plan
17	Site Plan
18	Site Plan
19	Site Plan
20	Site Plan
21	Site Plan
22	Site Plan
23	Site Plan
24	Site Plan
25	Site Plan

MISS UILITY OF WEST VIRGINIA
 1-800-243-4348
 www.wvutility.com
 Service Area: West Virginia
 Call before you dig.

TUG HILL OPERATING
 THIS DOCUMENT PREPARED FOR TUG HILL OPERATING
 K+S SURVEYING
 Cover Sheet
 Corley Well Site
 Franklin District
 Marshall County, WV
 Date: 10/17/2017
 Scale: AS SHOWN
 Drawn By: PE
 Title Block: 10/17

