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-5HM
47-051-01970-00-00

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-5HM
Farm Name: JAMES A. & JILL C. CORLEY, ET AL
U.S. WELL NUMBER: 47-051-01970-00-00
Horizontal 6A / New Drill
Date Issued: 1/2/2018

Promoting a healthy environment.
PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95% compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled Water Well Regulations, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.

8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.

9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

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

2) Operator’s Well Number: Corley N-5HM 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 X Oil Underground Storage
(b) If Gas Shallow Deep Horizontal X

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: Onondaga

10) Proposed Total Measured Depth: 16,746'

11) Proposed Horizontal Leg Length: 9,457'

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 scaling

14) Approximate Saltwater Depths: 2049'

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

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

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

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

SEPT 26 2017
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## CASING AND TUBING PROGRAM

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Size (in)</th>
<th>New or Used</th>
<th>Grade</th>
<th>Weight per ft. (lb/ft)</th>
<th>FOOTAGE: For Drilling (ft)</th>
<th>INTERVALS: Left in Well (ft)</th>
<th>CEMENT: Fill-up (Cu. Ft.)/CTS</th>
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<td>H40</td>
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## TYPE

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<th>Size (in)</th>
<th>Wellbore Diameter (in)</th>
<th>Wall Thickness (in)</th>
<th>Burst Pressure (psi)</th>
<th>Anticipated Max. Internal Pressure (psi)</th>
<th>Cement Type</th>
<th>Cement Yield (cu. ft./k)</th>
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## PACKERS

| Kind:      | N/A                  |                     |                     |
| Sizes:     | N/A                  |                     |                     |
| Depths Set:| N/A                  |                     |                     |
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 80 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 23,842,500 lb proppant and 365,530 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

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.
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
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, deducoeur@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
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

<table>
<thead>
<tr>
<th>API Number</th>
<th>Operator Name</th>
<th>Total Depth</th>
<th>Perforated Fms</th>
<th>Producing zones not perforated</th>
<th>Comments</th>
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<tr>
<td>4705101396</td>
<td>Tug Hill Operating</td>
<td>12408' MD</td>
<td>Marcellus</td>
<td>Unknown</td>
<td>Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.</td>
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<td>12152' MD</td>
<td>Marcellus</td>
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<td>Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat.</td>
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<td>Marcellus</td>
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<td>Field</td>
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<tr>
<td>County</td>
<td>51 Permit</td>
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<td>Permit</td>
<td>06397</td>
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</table>

**Well Information:**

- **Well Number:** County 51 Permit 06397
- **Well Description:** Natural Gas Well

**Location Information:**

- **County:** County 51
- **Twp:** 33N
- **Range:** 51E
- **Sec:** 15N
- **Survey:** 51W
- **Section:** 15 relatives
- **Location:** 51W 15T 33N

**Completion Information:**

- **Well Type:** Gas Well
- **Completion Method:** Frac
- **Completion Date:** 2017
- **Depth:** 10,000 ft
- **TVD:** 8,000 ft
- **Stimulation:** Frac

**Producing Information:**

- **IP:** 500 BPD
- **Gross:** 1,000 BPD
- **Net:** 500 BPD
- **Reserve:** 100 MMBO
- **Price:** $50 per BBL

**Other Information:**

- **Driller:** ABC Drilling Co.
- **Operator:** XYZ Energy Inc.
- **Date:** 2017-03-15

**Notes:**

- Total gas production: 500,000 MCFD
- Water production: 50,000 BPD
- 

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**Footer:**

- **Date:** SEP 26 2017
- **Department:** Wyoming Department of Environmental Protection
### Planning Report - Geographic

| Database: | DB_2215Oct_v14 |
| Company: | Tug Hill Operating LLC |
| Project: | Marshall County, West Virginia |
| Site: | Corley Pad |
| Well: | Corley N-05HM (slot F) |
| Wellbore: | Original Hole |
| Design: | rev1 |
| Local Coordinate Reference: | Well Corley N-05HM (slot F) |
| TVD Reference: | GL=1254 @ 1254.00usft |
| MD Reference: | GL=1254 @ 1254.00usft |
| North Reference: | Grid |
| Survey Calculation Method: | Minimum Curvature |

### Site

**Site Position:** Corley Pad

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<th>From:</th>
<th>Lat/Long</th>
<th>Northing:</th>
<th>Easting:</th>
<th>Position Uncertainty:</th>
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<tbody>
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<td>14,436,832.02 usft</td>
<td>1,706,973.68 usft</td>
<td>0.00 usft</td>
</tr>
</tbody>
</table>

| Slot Radius: | 13-3/4" |

| Grid Convergence: | 0.15 " |

### Well

**Well Position:** Corley N-05HM (slot F)

| Wellbore: | Original Hole |

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<th>Northing:</th>
<th>Easting:</th>
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<tbody>
<tr>
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### Wellbore

**Wellhead Elevation:** 1,254.00 usft

### Magentics

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<th>Model Name:</th>
<th>Sample Date</th>
<th>Declination</th>
<th>Dip Angle</th>
<th>Field Strength</th>
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### Vertical Section

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<th>+E/-W (usft)</th>
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<th>Tool Name</th>
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<td>MWD - Standard</td>
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<th>Azimuth ('')</th>
<th>Vertical Depth (usft)</th>
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<th>+E/-W (usft)</th>
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<th>Build Rate ('/100usft')</th>
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<th>TFO ('')</th>
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9/14/2017 11:10:51AM  Page 1  COMPASS 5000.14 Build 85
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KOP Begin 2'100' build

Begin 24.34' tangent

End 24.34' tangent
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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSITION & RECLAMATION PLAN

Operator Name: Tug Hill Operating, LLC  OP Code: 495410661
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 storing freshwater for frac and flowback water
Will a synthetic liner be used in the pit?  Yes  [ ]  No  [✓]
If so, what ml?  [ ]
Proposed Disposal Method For Treated Pit Wastes:
- Land Application
- Underground Injection  (UIC Permit Number:  UIC 2459, UIC 805, UIC 2399, UIC 250732510, UIC 250732523)
- Reuse (at API Number:  [ ])
- Off-Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain)

Will closed loop system be used?  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?  [ ]
Drill cuttings disposal method?  Leave in pit, landfill, removed offsite, etc.  All drill cuttings to be disposed of in Wetzel County Sanitary Landfill
- If left in pit and plan to solidify what medium will be used?  (cement, lime, sawdust)  N/A
- Landfill or offsite name/permit number:  Wetzel County Sanitary Landfill (SWF-1021 / WV0169185)

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

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature:  [ ]
Company Official (Typed Name):  Sean Gasser
Company Official Title:  Engineer

Subscribed and sworn before me this 18th day of September, 2017

[Signature]
Notary Public

My commission expires 10-05-2020
Form WW-9

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

Seed Mixtures

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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: [Signature]

Comments: 

Title: Oil & Gas Inspector Date: 9/28/17

Field Reviewed? ( ) Yes ( ) No
Well Site Safety Plan
Tug Hill Operating, LLC

Well Name: Corley N-5HM
Pad Location: Corley Pad
Marshall County, West Virginia
UTM (meters), NAD83, Zone 17:
  Northing: 4,400,363.49
  Easting: 520,283.68

September 2017
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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:

<table>
<thead>
<tr>
<th>Lease Name or Number</th>
<th>Grantor, Lessor, etc.</th>
<th>Grantee, Lessee, etc.</th>
<th>Royalty</th>
<th>Book/Page</th>
</tr>
</thead>
</table>

*See attached pages

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

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

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

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  
Its: Permitting Specialist - Appalachia
<table>
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<tr>
<th>Lease ID</th>
<th>RA</th>
<th>Tag</th>
<th>Sec</th>
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<th>ROYARTY</th>
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</table>

**Notes:**
- GASTAR Exploration USA, Inc.
- N/A: Not Available
- 2144 Cert of Merger to TH Exploration LLC
- 36009 Gaster Exploration Inc.

**Operator's Well No.:** Corley N - 5HM

**WW-6A1 Supplement**
ASSIGNMENT AND BILL OF SALE

STATE OF WV

COUNTY OF MARSHALL

KNOW ALL MEN BY THESE PRESENTS:

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

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

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

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

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

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described
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, Cressington, PA 15108 (“Chevron” or “Assignor”) to TI Exploration II, LLC and TH Exploration, LLC, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively “Assignee”) and is accepted by Assignee upon the following terms and conditions.

RECITALS

A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor’s Bryan 1H well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.

B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor’s oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignor’s oil and gas leasehold interests located in Marshall County, West Virginia.

C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

1. DEFINITIONS

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

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

“Act” has the meaning given to such term in Section 2.2.1 of this Assignment.

“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.
STATE OF WEST VIRGINIA

COUNTY OF MARSHALL

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this day of August, 2017 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and THE 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
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-5HM

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-5HM 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-hillop.com.

Sincerely,

Amy L. Miller
Permitting Specialist – Appalachia Region
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 - 01970
Operator’s Well No. Corley 14-SRM
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: West Virginia
County: Marshall
District: Franklin
Quadrangle: Poohatan Point 7.5’
Watershed: HUC-10 Fish Creek

UTM NAD 83
Eastings: 520,283.66
Northing: 4,400,363.49
Public Road Access: Rinse Ridge Road (County Route 76)
Generally used farm name: Corley, James A. and Jill C.

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 (e), 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-8, 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*

☐ 1. NOTICE OF SEISMIC ACTIVITY or ☐ NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED

☐ 2. NOTICE OF ENTRY FOR PLAT SURVEY or ☐ NO PLAT SURVEY WAS CONDUCTED

☐ 3. NOTICE OF INTENT TO DRILL or ☐ NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or ☐ WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)

☐ 4. NOTICE OF PLANNED OPERATION

☐ 5. PUBLIC NOTICE

☐ 6. NOTICE OF APPLICATION

OOG OFFICE USE ONLY

☐ RECEIVED / NOT REQUIRED

☐ RECEIVED

☐ RECEIVED / NOT REQUIRED

☐ RECEIVED

☐ RECEIVED

☐ RECEIVED

☐ RECEIVED

☐ RECEIVED

☐ RECEIVED

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

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

Well Operator: Tug Hill Operating, LLC
By: Amy L. Miller
Its: Permitting Specialist - Appalachia
Telephone: 724-748-3388

Address: 383 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amiller@tug-hillop.com

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

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

Date of Notice: 9/26/2017 Date Permit Application Filed: 9/29/2017

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 ☐ REGISTERED ☑ METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

☑ Application Notice ☑ WSSP Notice ☑ E&S Plan Notice ☑ Well Plat Notice

☑ SURFACE OWNER(s)
Name: Charles W. and Ruth A. Corley (Ped and Access Road)
Address: 1495 Ackerman Road
Bargers, PA 16013

Name: James A. and Jill C. Corley (Ped and Access Road)
Address: 298 Millville Road
Bargers, PA 16013

☑ SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Ruth A. Corley (Access Road)
Address: 1495 Ackerman Road
Bargers, PA 16013

Name: Address:

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

☑ COAL OWNER OR LESSEE
Name: Ruth A. Corley
Address: 1495 Ackerman Road
Bargers, PA 16013 *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
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(t), 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. § 35-8-5.1.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

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

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

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

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

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

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

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

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

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

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.
Time Limits and Methods for Filing Comments.
The law requires these materials to be served on or before the date the operator files its Application. You have THIRTY (30) DAYS after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief’s office by the time stated above. You may call the Chief’s office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a “voluntary statement of no objection” to the planned work described in these materials, then the permit may be issued at any time.

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

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

Disclaimer: All comments received will be placed on our web site http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator notified 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.
Notice is hereby given by:
Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: smiller@thmhc.com

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

Subscribed and sworn before me this 2nd day of Sept, 2017.

[Signature]
Notary Public

WW-6A NOTICE OF APPLICATION..............................................................CORLEY N-5HM

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
WATER WELL REPORT

Well: CORLEY No. N-51/HM
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.

<table>
<thead>
<tr>
<th>Topo Spot #1 (Water Well)</th>
<th>Topo Spot #2 (Spring)</th>
<th>Topo Spot #3 (House)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM 17 Par. 10.1</td>
<td>TM 17 Par. 11</td>
<td>TM 17 Par. 11.1</td>
</tr>
<tr>
<td>James A. &amp; Jill C. Corley</td>
<td>Kenneth N. &amp; Deborah Corley</td>
<td>Randy W. &amp; Jessica Francis</td>
</tr>
<tr>
<td>610-588-7929</td>
<td>304-455-5670(11), 304-455-3844(C)</td>
<td>304-455-5670(H), 304-455-3844(C)</td>
</tr>
<tr>
<td>208 Flicksville Rd.</td>
<td>7069 Rines Ridge Rd.</td>
<td>6860 Rines Ridge Rd.</td>
</tr>
<tr>
<td>Banger, PA 18013</td>
<td>Proctor, WV 26055</td>
<td>Proctor, WV 26055</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topo Spot #4 (House)</th>
<th>Topo Spot #5 (House)</th>
<th>Topo Spot #6 (House)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM 17 Par. 11.1</td>
<td>TM 17 Par. 9.4</td>
<td>TM 17 Par. 9.2</td>
</tr>
<tr>
<td>Randy W. &amp; Jessica Francis</td>
<td>Vicki L. Bowen</td>
<td>Jeri J. White</td>
</tr>
<tr>
<td>304-455-5670(11), 304-455-3844(C)</td>
<td>304-455-1985(11), 304-830-7846(C), 304-771-0864(C)</td>
<td>304-455-6002</td>
</tr>
<tr>
<td>6860 Rines Ridge Rd.</td>
<td>6675 Rines Ridge Rd.</td>
<td>6316 Rines Ridge Rd.</td>
</tr>
<tr>
<td>Proctor, WV 26055</td>
<td>Proctor, WV 26055</td>
<td>Proctor, WV 26055</td>
</tr>
</tbody>
</table>
PROPOSED CORLEY N-5HM

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

CENTER OF PAD
NAD 1983
LAT: 39.762928
LON: 80.763132

2,000' radius

OPERATOR: TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG, PA 15317

TOPO SECTION: POWHATAN POINT 7.5'

SCALE: 1" = 1000'

LEASE NAME: CORLEY

DATE: 09/19/17
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: 5/30/2017 Date of Planned Entry: 6/7/2017

Delivery method pursuant to West Virginia Code § 22-6A-10a
☐ PERSONAL ☐ REGISTERED ☐ METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION
☐ SERVICE ☐ MAIL

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: 1436 Ackerman Road
Bunker, PA 15013

Name: James A. and Jill C. Corley (Pad and Access Road)
Address: 203 Hicksville Road
Bunker, PA 16013

Name: Charles W. and Ruth A. Corley (Pad and Access Road)
Address: 1436 Ackerman Road
Bunker, PA 16013

☐ COAL OWNER OR LESSEE
Name: Ruth A. Corley *See attached list
Address: 1436 Ackerman Road
Bunker, PA 16013

☐ MINERAL OWNER(s)
Name: Ruth A. Corley *See attached list
Address: 1436 Ackerman Road
Bunker, PA 16013

*please attach additional forms if necessary

Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:
State: West Virginia
County: Marshall
District: Franklin
Quadrangle: Pohatcong Point 7.0

Approx. Latitude & Longitude: 39.7537540,-80.7631485
Public Road Access: Rines Ridge Road (County Route 76)
Watershed: HILC 6 - Fish Creek
Generally used farm name: Corley, James A. and Jill C.

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 5th Street, SE, Charleston, WV 25304 (1-800-926-0450). 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/eases/default.aspx.

Notice is hereby given by:
Well Operator: Tag Hill Operating, LLC
Address: 300 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317

Telephone: 724-348-1788
Fax: 724-338-2010
Email: amiles@taghillop.com

Oil and Gas Privacy Notice:
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP’s Chief Privacy Officer at depprivacyofficer@wv.gov.
WW-6A3 NOTICE OF ENTRY FOR PLAT SURVEY

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
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: 09/18/2017  
Date Permit Application Filed: 09/22/2017

Delivery method pursuant to West Virginia Code § 22-6A-16(c)  
☐ CERTIFIED MAIL  
☐ RETURN RECEIPT REQUESTED  
☐ HAND  
☐ 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: 1-05 Aikeman Road  
Barrington, PA 18013

Name: James A. and JILL C. Corley  
Address: 208 Eickhorst Road  
Barrington, PA 18013

Notice is hereby given:  
Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner’s land for the purpose of drilling a horizontal well on the tract of land as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>West Virginia</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>Marshall</td>
</tr>
<tr>
<td>District</td>
<td>Pocahontas</td>
</tr>
<tr>
<td>Quadrangle</td>
<td>Fish Creek</td>
</tr>
<tr>
<td>Watershed</td>
<td>HUC-10 Fish Creek</td>
</tr>
</tbody>
</table>

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 37th 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: 724-746-0380  
Email: omiller@tug-hillop.com

Address: 386 Southpointe Boulevard, Plaza II, Suite 200  
Canonsburg, PA 15317

Fax: 724-358-2030

Oil and Gas Privacy Notice:  
The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP’s Chief Privacy Officer at depprivacyofficer@wv.gov.
WW-6A5 NOTICE OF PLANNED OPERATION.............................................CORLEY N-5HM

SURFACE OWNER
Charles W. and Ruth A. Corley
1495 Ackerman Road
Bangor, PA 18013
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-5HM Well Site

Dear Mr. Martin,

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

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

Very Truly Yours,

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

Cc: Jonathan White
Tug Hill Operating
CH, OM, D-6
File
**PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION**

**Well No. Corley N-SHM**

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