



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, October 18, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for PENDLETON N-9HU
47-051-02245-00-00

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

A blue ink signature of James A. Martin, Chief, is written over the text.

Operator's Well Number: PENDLETON N-9HU
Farm Name: ALPINE FARM, LLC
U.S. WELL NUMBER: 47-051-02245-00-00
Horizontal 6A New Drill
Date Issued: 10/18/2019

PERMIT CONDITIONS

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

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

September 12, 2019

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

RE: Application for Deep Well Permit – API #47-051-02245

COMPANY: Tug Hill Operating, LLC

FARM: Alpine Farm, LLC Pendleton N-9HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Glen Easton

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

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes; Docket 284-279 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 400 feet from the nearest lease line or unit boundary with the exception of the toe which is 10 feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

** Old Crow N-18HU 47-051-02123; Old Crow N-17HU 47-051-02122; Old Crow N-19HU 47-051-02190, Old Crow N-20HU 47-051-02191; Bryan N-14HU 47-051-02031; Bryan N-13HU 47-051-02030

Sincerely,

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

Susan Rose
Administrator

WW-6B
(04/15)

4705102245

API NO. 47-051
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

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 Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Pendleton N-9HU Well Pad Name: Pendleton

3) Farm Name/Surface Owner: Alpine Farm, LLC Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1,296' Elevation, proposed post-construction: 1,272'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

ju 5/23/19

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,637' - 11,506', thickness of 131' and anticipated pressure of approx. 9,500 psi

8) Proposed Total Vertical Depth: 11,787'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 23,444'

11) Proposed Horizontal Leg Length: 11,437.32'

12) Approximate Fresh Water Strata Depths: 912'

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: 1740'

15) Approximate Coal Seam Depths: Sewickly Coal - 815' and Pittsburgh Coal - 906'

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

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

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

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4705102245

WW-6B
(04/15)API NO. 47- 051 -
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

18)

CASING AND TUBING PROGRAM

| TYPE | Size (in) | New or Used | Grade | Weight per ft. (lb/ft) | FOOTAGE: For Drilling (ft) | INTERVALS: Left in Well (ft) | CEMENT: Fill-up (Cu. Ft.)/CTS |
|--------------|-----------|-------------|--------|------------------------|----------------------------|------------------------------|-------------------------------|
| Conductor | 30" | NEW | BW | BW | 120' | 120' | 259FT^3(CTS) |
| Fresh Water | 20" | NEW | J55 | 94# | 1010' | 1010' | 1,629ft^3(CTS) |
| Coal | 13 3/8" | NEW | J55 | 54.5# | 2,700' | 2,700' | 1,905ft^3(CTS) |
| Intermediate | 9 5/8" | NEW | HPP110 | 47# | 10,372' | 10,372' | 3,382ft^3(CTS) |
| Production | 5 1/2" | NEW | P110 | 23# | 23,444' | 23,444' | 5,547ft^3(CTS) |
| Tubing | 2 7/8" | NEW | P110 | 6.5# | | 11,082' | |
| Liners | | | | | | | |

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5/23/19

| TYPE | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|-----------|------------------------|---------------------|----------------------|--|-------------|--------------------------|
| Conductor | 30" | 36" | 1.0 | 2,333 | 1,866 | CLASS A | 1.2 |
| Fresh Water | 20" | 26" | .5 | 2,410 | 1,928 | SEE #24 | 1.2 |
| Coal | 13 3/8" | 17 1/2" | .38 | 2,740 | 2,192 | SEE#24 | 1.2 |
| Intermediate | 9 5/8" | 12 1/4" | .472 | 10,730 | 6,968 | SEE#24 | 1.99 |
| Production | 5 1/2" | 8 1/2" | .415 | 13,580 | 10,864 | SEE#24 | 1.17/1.19 |
| Tubing | 2 7/8" | | | 14,530 | 11,624 | | |
| Liners | | | | | | | |

PACKERS

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

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WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

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5/23/19

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

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

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

Well to be completed with approximately 28,587,500 lb proppant and 441,984 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 26.11 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.88 acres

23) Describe centralizer placement for each casing string:

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

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

*See Attached

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

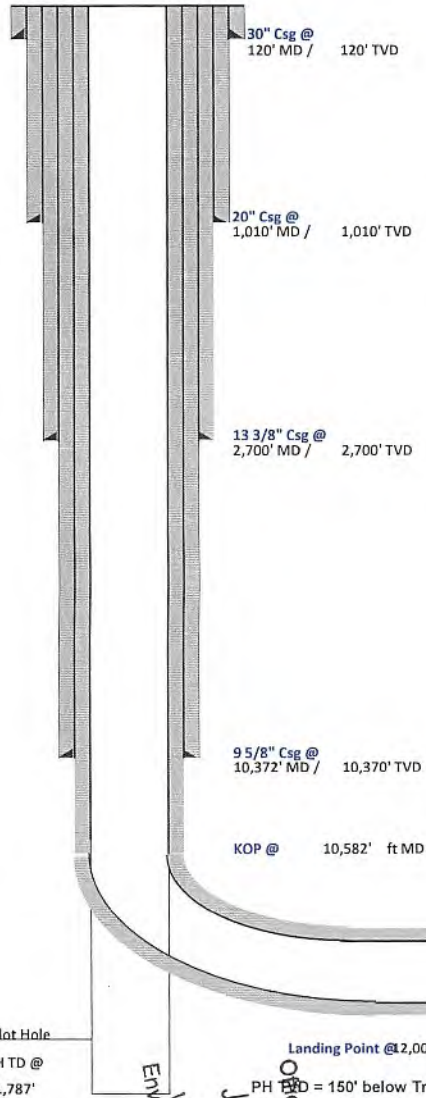


WELL NAME: Pendleton N-9HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,272' GL Elev: 1,272'
 TD: 23,444'
 TH Latitude: 39.75345541
 TH Longitude: -80.73389843
 BH Latitude: 39.78218839
 BH Longitude: 80.75596926

| FORMATION TOPS | |
|---------------------|-----------|
| Formation | Depth TVD |
| Deepest Fresh Water | 912' |
| Sewickley Coal | 815' |
| Pittsburgh Coal | 906' |
| Big Lime | 2,080' |
| Berea | 2,581' |
| Tully | 6,577' |
| Marcellus | 6,681' |
| Onondaga | 6,732' |
| Salina | 7,450' |
| Lockport | 8,500' |
| Utica | 11,242' |
| Point Pleasant | 11,506' |
| Landing Depth | 11,556' |
| Trenton | 11,637' |
| Pilot Hole TD | 11,787' |

| CASING SUMMARY | | | | | | | |
|----------------|----------------|---------------|------------|-------------|----------------|--------|---------------|
| Type | Hole Size (in) | Csg Size (in) | Depth (MD) | Depth (TVD) | Weight (lb/ft) | Grade | Top of Cement |
| Conductor | 36 | 30 | 120' | 120' | BW | BW | Surface |
| Surface | 26 | 20 | 1,010' | 1,010' | 106.5 | J55 | Surface |
| Intermediate 1 | 17 1/2 | 13 3/8 | 2,700' | 2,700' | 54.5 | J55 | Surface |
| Intermediate 2 | 12 1/4 | 9 5/8 | 10,372' | 10,370' | 47 | HPP110 | Surface |
| Production | 8 1/2 | 5 1/2 | 23,444' | 11,357' | 23 | HCP110 | Surface |

| CEMENT SUMMARY | | | | DRILLING DETAILS | |
|----------------|-------|-------|---------|------------------|---|
| | Sacks | Class | Density | Fluid Type | Centralizer Notes |
| Conductor | 338 | A | 15.6 | Air | None |
| Surface | 1,756 | A | 15.6 | Air | 3 Centralizers at equal distance |
| Intermediate 1 | 2,064 | A | 15 | Air | 1 Centralizer every other jt |
| Intermediate 2 | 2,853 | A | 14.5 | Air | 1 Centralizer every other jt |
| Production | 4,917 | A | 15 | Air / SOBM | 1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc |



Handwritten signature and date: 5/25/19

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Pilot Hole
 PH TD @ 11,787'
 Landing Point @ 12,008' MD / 11,556' TVD
 PH TD = 150' below Trenton Top

Lateral TD @ 23,444' ft MD
 11,357' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Pendleton N-9HU

Casing

| | String | Grade | Bit Size | Depth (Measured) | Cement Fill Up |
|----------------|---------|--------|----------|------------------|----------------|
| Conductor | 30" | BW | 36" | 120' | CTS |
| Surface | 20" | J55 | 26" | 1,010' | CTS |
| Intermediate 1 | 13 3/8" | J55 | 17 1/2" | 2,700' | CTS |
| Intermediate 2 | 9 5/8" | HPP110 | 12 1/4" | 10,372' | CTS |
| Production | 5 1/2" | HCP110 | 8 1/2" | 23,444' | CTS |

Cement

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

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

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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 (01/29/2019) 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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Permit well - Pendleton N-9HU
Wells within 500' Buffer

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

| API Number | Operator Name | Total Depth | Perforated Fms | Producing zones not perforated | Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' Is max limit: I would assign to wells that might be within in range of fracture propagation | Comments |
|------------|--------------------|-------------------------|----------------|--------------------------------|--|--|
| 4705101377 | Tug Hill Operating | 6730' TVD 12055' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101434 | Tug Hill Operating | 6730' TVD 12055' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101435 | Tug Hill Operating | 6741' TVD 12769' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101448 | Tug Hill Operating | 6725' TVD 11756' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101449 | Tug Hill Operating | 6720' TVD 12880' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101450 | Tug Hill Operating | 6728' TVD 11956' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101451 | Tug Hill Operating | 6743' TVD 12870' TMD | Marcellus | Unknown | No, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |

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4705 102245

WV Geologic & Economic Survey Well: County = 51 Permit = 01377

Location Information [View Map](#)
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Bottom Hole Location Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Owner Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Completion Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Production Gas Information (Colums in Bbl) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 01010101 | Gasco Substation USA, Inc | 2018 | 227,142 | 82,218 | 43,264 | 45,958 | 42,820 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 178,841 | 42,447 | 57,187 | 57,118 | 45,774 | 39,802 | 31,847 | 27,202 | 14,191 | 7,142 | 20,011 | 44,472 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 200,542 | 29,404 | 23,320 | 27,483 | 21,214 | 24,777 | 23,724 | 20,740 | 12,119 | 10,241 | 16,812 | 14,743 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 17,162 | 11,211 | 10,718 | 17,129 | 17,129 | 15,424 | 11,211 | 11,211 | 11,211 | 11,211 | 11,211 | 11,211 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 200,287 | 42,447 | 17,472 | 10,718 | 17,129 | 15,424 | 11,211 | 11,211 | 11,211 | 11,211 | 11,211 | 11,211 |

Production Oil Information (Colums in Bbl) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 01010101 | Gasco Substation USA, Inc | 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Production Water Information (Colums in Gallons) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 01010101 | Gasco Substation USA, Inc | 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

WV Geologic & Economic Survey Well: County = 51 Permit = 01434

Location Information [View Map](#)
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Bottom Hole Location Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Owner Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Completion Information
 WV COUNTY PERMIT FAX DISTRICT QUAD-TM QUAD-IF LAT-DC LONG-DC UTM- UTMN
 01010101 10000 10000 000000 000000 000000 000000 000000 000000

Production Gas Information (Colums in Bbl) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 01010101 | Gasco Substation USA, Inc | 2018 | 41,453 | 48,475 | 21,462 | 42,132 | 43,264 | 38,422 | 20,241 | 24,242 | 22,221 | 20,221 | 20,221 | 20,221 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 34,423 | 31,360 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 | 20,221 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 | 24,242 |

Production Oil Information (Colums in Bbl) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 01010101 | Gasco Substation USA, Inc | 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Production Water Information (Colums in Gallons) - 2018 data are incomplete at this time

| WV | PRODUCTION_OPERATOR | PRO_YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|----------|---------------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 01010101 | Gasco Substation USA, Inc | 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01010101 | Gasco Substation USA, Inc | 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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4705 102245

Well: County = 51 Permit = 01448

Location Information: View Map

Bottom Hole Location Information

Operator Information

Completion Information

Production Information: Volumes in Bbl

Production Gas Information: Volumes in Mch

Production Oil Information: Volumes in Bbl

Production NGL Information: Volumes in Bbl

Production Water Information: Volumes in Gallons

Well: County = 51 Permit = 01480

Location Information: View Map

Bottom Hole Location Information

Operator Information

Completion Information

Production Information: Volumes in Bbl

Production Gas Information: Volumes in Mch

Production Oil Information: Volumes in Bbl

Production NGL Information: Volumes in Bbl

Production Water Information: Volumes in Gallons

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Well: Pendleton N-09 HU (slot D)
 Site: Pendleton
 Project: Marshall County, West Virginia
 Design: rev1

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

System Datum: Mean Sea Level
 Depth Reference: GL @ 1272.00ft
 Surface location
 Northing Easting Latitude Longitude
 14437069.60 1715206.03 39.75345541 -80.73389843

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.883°



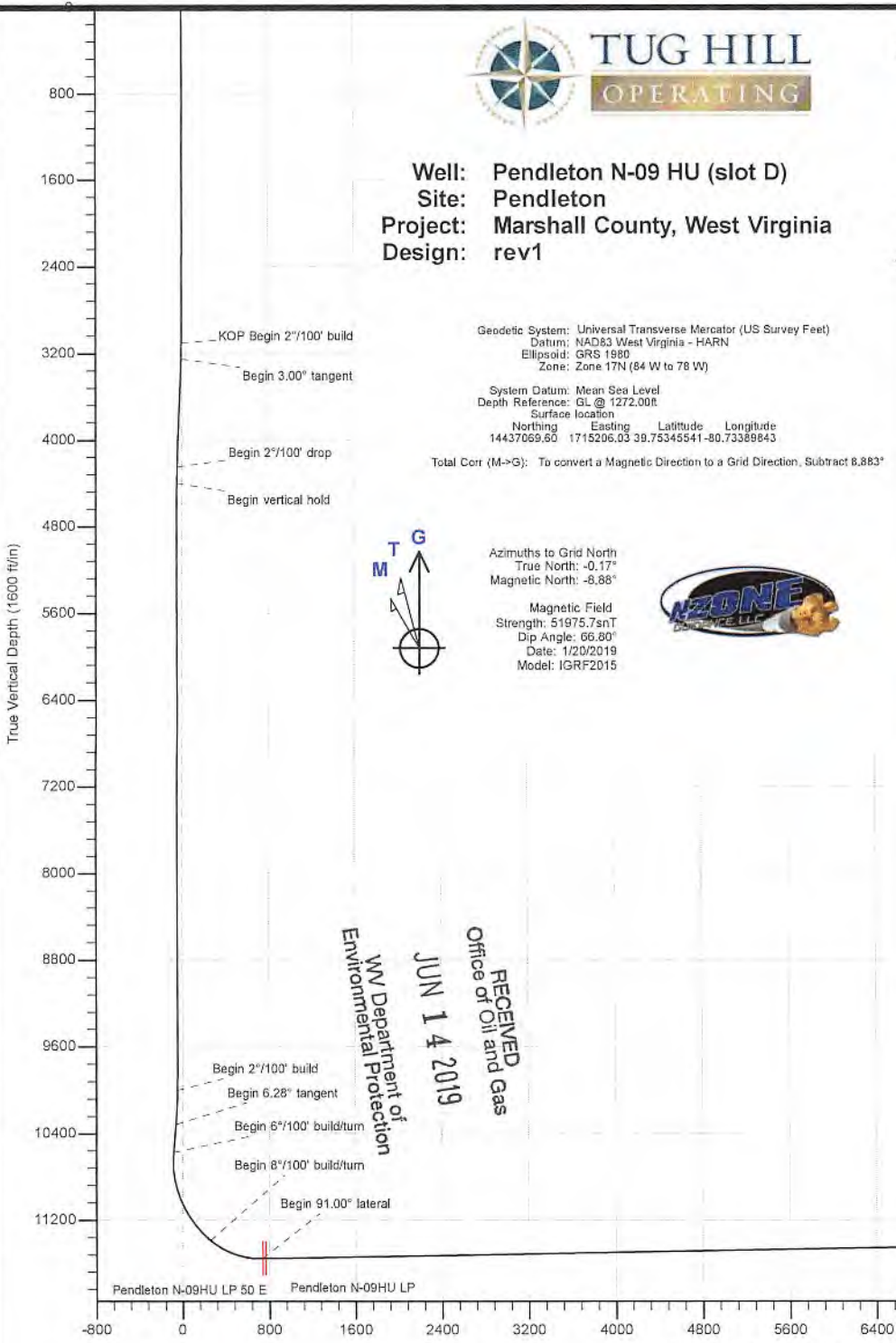
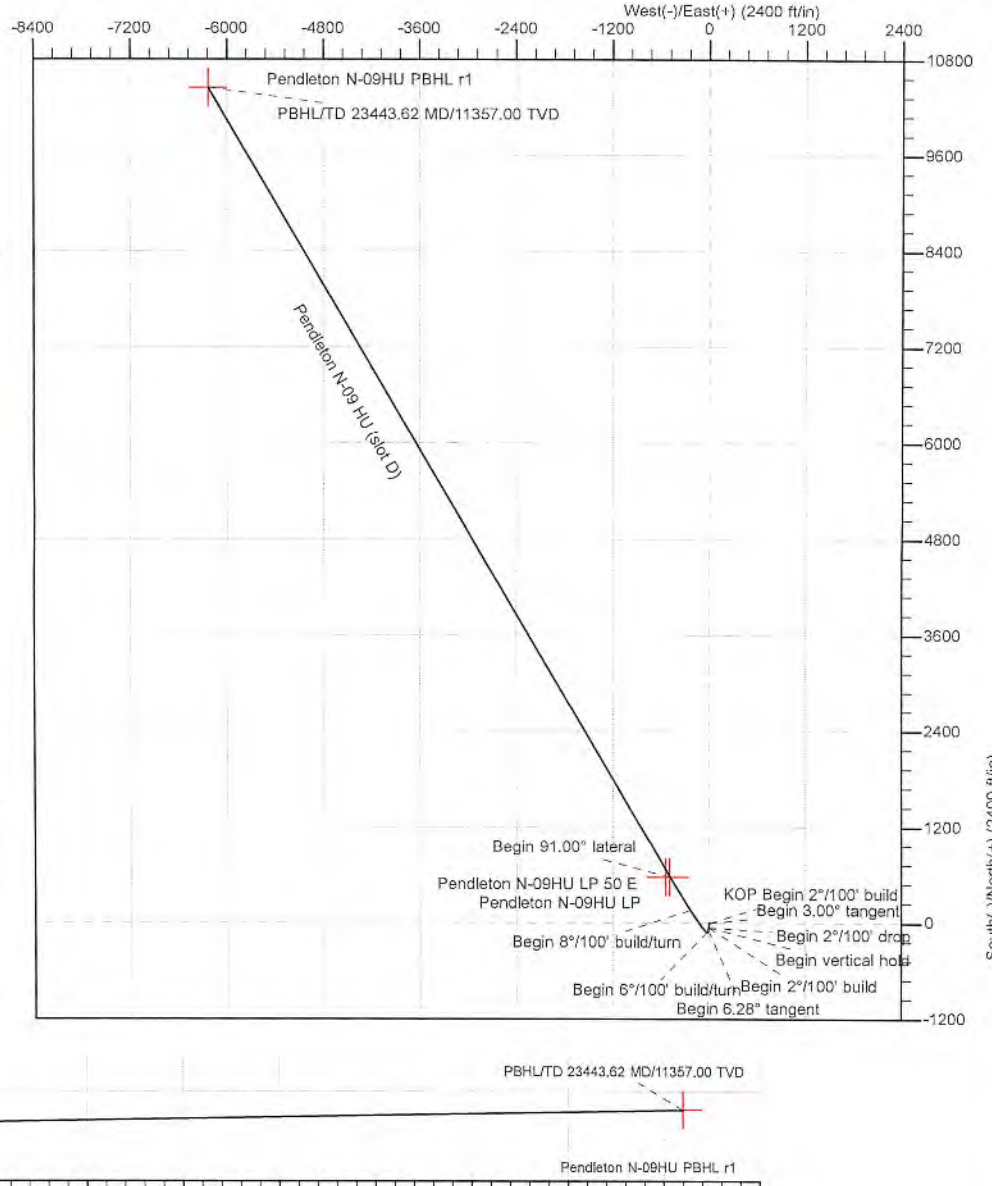
Azimuths to Grid North
 True North: -0.17°
 Magnetic North: -8.88°

Magnetic Field
 Strength: 51875.7snT
 Dip Angle: 66.80°
 Date: 1/20/2019
 Model: IGRF2015



SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation |
|-----|----------|-------|--------|----------|----------|----------|------|---------|---------|----------------------------------|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.00 | |
| 2 | 3100.00 | 0.00 | 0.00 | 3100.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.00 | KOP Begin 2°/100' build |
| 3 | 3250.00 | 3.00 | 189.50 | 3249.93 | -3.87 | -0.65 | 2.00 | 189.500 | -2.99 | Begin 3.00° tangent |
| 4 | 4250.00 | 3.00 | 189.50 | 4248.56 | -55.49 | -9.29 | 0.00 | 0.000 | -42.90 | Begin 2°/100' drop |
| 5 | 4400.00 | 0.00 | 189.50 | 4398.49 | -59.36 | -9.93 | 2.00 | 180.000 | -45.89 | Begin vertical hold |
| 6 | 10001.51 | 0.00 | 189.50 | 10000.00 | -59.36 | -9.93 | 0.00 | 189.500 | -45.89 | Begin 2°/100' build |
| 7 | 10315.73 | 6.28 | 189.49 | 10313.59 | -76.34 | -12.77 | 2.00 | 189.493 | -59.02 | Begin 6.28° tangent |
| 8 | 10582.28 | 6.28 | 189.49 | 10578.54 | -105.12 | -17.59 | 0.00 | 0.000 | -81.26 | Begin 6°/100' build/turn |
| 9 | 11495.16 | 50.00 | 327.28 | 11388.26 | 160.30 | -231.36 | 6.00 | 140.943 | 256.20 | Begin 8°/100' build/turn |
| 10 | 12008.42 | 91.00 | 329.78 | 11555.99 | 564.89 | -477.38 | 8.00 | 3.811 | 729.70 | Begin 91.00° lateral |
| 11 | 23443.63 | 91.00 | 329.78 | 11357.00 | 10444.80 | -6231.66 | 0.00 | 0.000 | 2162.54 | PBHL/TD 23443.62 MD/11357.00 TVD |



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4705102245



| | | | |
|------------------|--------------------------------|-------------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

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

| | | | | | |
|------------------------------|-----------|---------------------|--------------------|--------------------------|--------------|
| Site | Pendleton | | | | |
| Site Position: | | Northing: | 14,437,088.25 usft | Latitude: | 39.75350685 |
| From: | Lat/Long | Easting: | 1,715,175.25 usft | Longitude: | -80.73400776 |
| Position Uncertainty: | 0.00 ft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.170 ° |

| | | | | | | |
|-----------------------------|----------------------------|----------------------------|------------------|----------------------|-------------------|--------------|
| Well | Pendleton N-09 HU (slot D) | | | | | |
| Well Position | +N-S | 0.00 ft | Northing: | 14,437,069.61 usft | Latitude: | 39.75345541 |
| | +E-W | 0.00 ft | Easting: | 1,715,206.03 usft | Longitude: | -80.73389843 |
| Position Uncertainty | 0.00 ft | Wellhead Elevation: | | Ground Level: | 1,272.00 ft | |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Original Hole | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 1/20/2019 | -8.713 | 66.801 | 51,975.68558081 |

| | | | | | |
|--------------------------|------------------------------|------------------|----------------------|----------------------|--|
| Design | rev1 | | | | |
| Audit Notes: | | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.00 | |
| Vertical Section: | Depth From (TVD) (ft) | +N-S (ft) | +E-W (ft) | Direction (°) | |
| | 0.00 | 0.00 | 0.00 | 329.18 | |

| | | | | | |
|---------------------------------|-----------------------|--------------------------------|-----------------------|----------------|--|
| Plan Survey Tool Program | Date 5/14/2019 | | | | |
| Depth From (ft) | Depth To (ft) | Survey (Wellbore) | Tool Name | Remarks | |
| 1 | 0.00 | 23,443.63 rev1 (Original Hole) | MWD MWD - Standard | | |

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|------------------|--------------------------------|-------------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Plan Sections | | | | | | | | | | |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | |
| 3,100.00 | 0.00 | 0.00 | 3,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | |
| 3,250.00 | 3.00 | 189.50 | 3,249.93 | -3.87 | -0.65 | 2.00 | 2.00 | 0.00 | 189.500 | |
| 4,250.00 | 3.00 | 189.50 | 4,248.56 | -55.49 | -9.29 | 0.00 | 0.00 | 0.00 | 0.000 | |
| 4,400.00 | 0.00 | 189.50 | 4,398.49 | -59.36 | -9.93 | 2.00 | -2.00 | 0.00 | 180.000 | |
| 10,001.51 | 0.00 | 189.50 | 10,000.00 | -59.36 | -9.93 | 0.00 | 0.00 | 0.00 | 189.500 | |
| 10,315.73 | 6.28 | 189.49 | 10,313.59 | -76.34 | -12.77 | 2.00 | 2.00 | 0.00 | 189.493 | |
| 10,582.28 | 6.28 | 189.49 | 10,578.54 | -105.12 | -17.59 | 0.00 | 0.00 | 0.00 | 0.000 | |
| 11,495.16 | 50.00 | 327.28 | 11,388.26 | 160.30 | -231.36 | 6.00 | 4.79 | 15.09 | 140.943 | |
| 12,008.42 | 91.00 | 329.78 | 11,555.99 | 564.89 | -477.38 | 8.00 | 7.99 | 0.49 | 3.811 | |
| 23,443.63 | 91.00 | 329.78 | 11,357.00 | 10,444.80 | -6,231.66 | 0.00 | 0.00 | 0.00 | 0.000 | Pendleton N-09HU Pt |

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Planning Report - Geographic

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| | | | |
|-----------|--------------------------------|------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Planned Survey | | | | | | | | | | |
|--------------------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,500.00 | 0.00 | 0.00 | 1,500.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,600.00 | 0.00 | 0.00 | 1,600.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,700.00 | 0.00 | 0.00 | 1,700.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,800.00 | 0.00 | 0.00 | 1,800.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 1,900.00 | 0.00 | 0.00 | 1,900.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,000.00 | 0.00 | 0.00 | 2,000.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,100.00 | 0.00 | 0.00 | 2,100.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,200.00 | 0.00 | 0.00 | 2,200.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,300.00 | 0.00 | 0.00 | 2,300.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,400.00 | 0.00 | 0.00 | 2,400.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,500.00 | 0.00 | 0.00 | 2,500.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,600.00 | 0.00 | 0.00 | 2,600.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,700.00 | 0.00 | 0.00 | 2,700.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,800.00 | 0.00 | 0.00 | 2,800.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 2,900.00 | 0.00 | 0.00 | 2,900.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 3,000.00 | 0.00 | 0.00 | 3,000.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| 3,100.00 | 0.00 | 0.00 | 3,100.00 | 0.00 | 0.00 | 14,437,069.61 | 1,715,206.03 | 39.75345541 | -80.73389843 | |
| KOP Begin 2°/100' build | | | | | | | | | | |
| 3,200.00 | 2.00 | 189.50 | 3,199.98 | -1.72 | -0.29 | 14,437,067.89 | 1,715,205.74 | 39.75345069 | -80.73389947 | |
| 3,250.00 | 3.00 | 189.50 | 3,249.93 | -3.87 | -0.65 | 14,437,065.73 | 1,715,205.38 | 39.75344478 | -80.73390078 | |
| Begin 3.00° tangent | | | | | | | | | | |
| 3,300.00 | 3.00 | 189.50 | 3,299.86 | -6.45 | -1.08 | 14,437,063.15 | 1,715,204.95 | 39.75343770 | -80.73390234 | |
| 3,400.00 | 3.00 | 189.50 | 3,399.73 | -11.61 | -1.94 | 14,437,057.99 | 1,715,204.09 | 39.75342353 | -80.73390547 | |
| 3,500.00 | 3.00 | 189.50 | 3,499.59 | -16.78 | -2.81 | 14,437,052.83 | 1,715,203.22 | 39.75340936 | -80.73390860 | |
| 3,600.00 | 3.00 | 189.50 | 3,599.45 | -21.94 | -3.67 | 14,437,047.67 | 1,715,202.36 | 39.75339519 | -80.73391172 | |
| 3,700.00 | 3.00 | 189.50 | 3,699.31 | -27.10 | -4.54 | 14,437,042.51 | 1,715,201.50 | 39.75338102 | -80.73391485 | |
| 3,800.00 | 3.00 | 189.50 | 3,799.18 | -32.26 | -5.40 | 14,437,037.34 | 1,715,200.63 | 39.75336685 | -80.73391798 | |
| 3,900.00 | 3.00 | 189.50 | 3,899.04 | -37.42 | -6.26 | 14,437,032.18 | 1,715,199.77 | 39.75335269 | -80.73392111 | |
| 4,000.00 | 3.00 | 189.50 | 3,998.90 | -42.59 | -7.13 | 14,437,027.02 | 1,715,198.90 | 39.75333852 | -80.73392424 | |
| 4,100.00 | 3.00 | 189.50 | 4,098.77 | -47.75 | -7.99 | 14,437,021.86 | 1,715,198.04 | 39.75332435 | -80.73392736 | |
| 4,200.00 | 3.00 | 189.50 | 4,198.63 | -52.91 | -8.85 | 14,437,016.70 | 1,715,197.18 | 39.75331018 | -80.73393049 | |
| 4,250.00 | 3.00 | 189.50 | 4,248.56 | -55.49 | -9.29 | 14,437,014.12 | 1,715,196.75 | 39.75330310 | -80.73393206 | |
| Begin 2°/100' drop | | | | | | | | | | |
| 4,300.00 | 2.00 | 189.50 | 4,298.51 | -57.64 | -9.65 | 14,437,011.96 | 1,715,196.39 | 39.75329719 | -80.73393336 | |
| 4,400.00 | 0.00 | 189.50 | 4,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| Begin vertical hold | | | | | | | | | | |
| 4,500.00 | 0.00 | 0.00 | 4,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 4,600.00 | 0.00 | 0.00 | 4,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 4,700.00 | 0.00 | 0.00 | 4,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |



Planning Report - Geographic

4705102245

| | | | |
|-----------|--------------------------------|------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Planned Survey | | | | | | | | | | |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 4,800.00 | 0.00 | 0.00 | 4,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 4,900.00 | 0.00 | 0.00 | 4,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,000.00 | 0.00 | 189.50 | 4,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,100.00 | 0.00 | 0.00 | 5,098.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,200.00 | 0.00 | 189.50 | 5,198.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,300.00 | 0.00 | 0.00 | 5,298.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,400.00 | 0.00 | 0.00 | 5,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,500.00 | 0.00 | 0.00 | 5,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,600.00 | 0.00 | 0.00 | 5,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,700.00 | 0.00 | 0.00 | 5,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,800.00 | 0.00 | 0.00 | 5,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 5,900.00 | 0.00 | 0.00 | 5,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,000.00 | 0.00 | 189.50 | 5,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,100.00 | 0.00 | 0.00 | 6,098.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,200.00 | 0.00 | 0.00 | 6,198.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,300.00 | 0.00 | 0.00 | 6,298.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,400.00 | 0.00 | 0.00 | 6,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,500.00 | 0.00 | 0.00 | 6,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,600.00 | 0.00 | 0.00 | 6,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,700.00 | 0.00 | 0.00 | 6,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,800.00 | 0.00 | 189.50 | 6,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 6,900.00 | 0.00 | 0.00 | 6,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,000.00 | 0.00 | 189.50 | 6,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,100.00 | 0.00 | 0.00 | 7,098.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,200.00 | 0.00 | 0.00 | 7,198.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,300.00 | 0.00 | 0.00 | 7,298.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,400.00 | 0.00 | 0.00 | 7,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,500.00 | 0.00 | 0.00 | 7,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,600.00 | 0.00 | 0.00 | 7,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,700.00 | 0.00 | 0.00 | 7,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,800.00 | 0.00 | 0.00 | 7,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 7,900.00 | 0.00 | 0.00 | 7,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,000.00 | 0.00 | 0.00 | 7,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,100.00 | 0.00 | 189.50 | 8,098.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,200.00 | 0.00 | 0.00 | 8,198.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,300.00 | 0.00 | 189.50 | 8,298.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,400.00 | 0.00 | 0.00 | 8,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,500.00 | 0.00 | 0.00 | 8,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,600.00 | 0.00 | 0.00 | 8,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,700.00 | 0.00 | 0.00 | 8,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,800.00 | 0.00 | 0.00 | 8,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 8,900.00 | 0.00 | 0.00 | 8,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,000.00 | 0.00 | 0.00 | 8,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,100.00 | 0.00 | 189.50 | 9,098.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,200.00 | 0.00 | 0.00 | 9,198.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,300.00 | 0.00 | 0.00 | 9,298.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,400.00 | 0.00 | 0.00 | 9,398.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,500.00 | 0.00 | 0.00 | 9,498.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,600.00 | 0.00 | 0.00 | 9,598.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,700.00 | 0.00 | 0.00 | 9,698.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,800.00 | 0.00 | 0.00 | 9,798.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 9,900.00 | 0.00 | 189.50 | 9,898.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |
| 10,000.00 | 0.00 | 0.00 | 9,998.49 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 | |

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Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Pendleton
Well: Pendleton N-09 HU (slot D)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Pendleton N-09 HU (slot D)
TVD Reference: GL @ 1272.00ft
MD Reference: GL @ 1272.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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JUN 14 2019
 WV Department of
 Environmental Protection

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---------------------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|
| 10,001.51 | 0.00 | 0.00 | 10,000.00 | -59.36 | -9.93 | 14,437,010.24 | 1,715,196.10 | 39.75329247 | -80.73393440 |
| Begin 2°/100' build | | | | | | | | | |
| 10,100.00 | 1.97 | 189.49 | 10,098.47 | -61.03 | -10.21 | 14,437,008.57 | 1,715,195.82 | 39.75328788 | -80.73393541 |
| 10,200.00 | 3.97 | 189.49 | 10,198.33 | -66.14 | -11.07 | 14,437,003.46 | 1,715,194.96 | 39.75327386 | -80.73393851 |
| 10,300.00 | 5.97 | 189.49 | 10,297.95 | -74.69 | -12.50 | 14,436,994.92 | 1,715,193.53 | 39.75325040 | -80.73394368 |
| 10,315.73 | 6.28 | 189.49 | 10,313.59 | -76.34 | -12.77 | 14,436,993.26 | 1,715,193.26 | 39.75324586 | -80.73394468 |
| Begin 6.28° tangent | | | | | | | | | |
| 10,400.00 | 6.28 | 189.49 | 10,397.36 | -85.44 | -14.29 | 14,436,984.17 | 1,715,191.74 | 39.75322089 | -80.73395019 |
| 10,500.00 | 6.28 | 189.49 | 10,496.76 | -96.24 | -16.10 | 14,436,973.37 | 1,715,189.93 | 39.75319125 | -80.73395673 |
| 10,582.28 | 6.28 | 189.49 | 10,578.54 | -105.12 | -17.59 | 14,436,964.49 | 1,715,188.45 | 39.75316687 | -80.73396211 |
| Begin 6°/100' build/turn | | | | | | | | | |
| 10,600.00 | 5.50 | 196.50 | 10,596.17 | -106.89 | -17.99 | 14,436,962.72 | 1,715,188.04 | 39.75316201 | -80.73396356 |
| 10,700.00 | 4.51 | 269.45 | 10,695.87 | -111.53 | -23.29 | 14,436,958.08 | 1,715,182.74 | 39.75314932 | -80.73398246 |
| 10,800.00 | 9.08 | 304.96 | 10,795.18 | -107.04 | -33.69 | 14,436,962.56 | 1,715,172.34 | 39.75316172 | -80.73401944 |
| 10,900.00 | 14.71 | 315.33 | 10,893.01 | -93.48 | -49.09 | 14,436,976.12 | 1,715,156.94 | 39.75319908 | -80.73407410 |
| 11,000.00 | 20.54 | 319.97 | 10,988.28 | -71.00 | -69.32 | 14,436,998.61 | 1,715,136.71 | 39.75326099 | -80.73414582 |
| 11,100.00 | 26.45 | 322.62 | 11,079.95 | -39.84 | -94.15 | 14,437,029.77 | 1,715,111.88 | 39.75334677 | -80.73423383 |
| 11,200.00 | 32.39 | 324.35 | 11,167.01 | -0.34 | -123.31 | 14,437,069.27 | 1,715,082.72 | 39.75345549 | -80.73433717 |
| 11,300.00 | 38.35 | 325.59 | 11,248.52 | 47.06 | -156.48 | 14,437,116.67 | 1,715,049.55 | 39.75358594 | -80.73445469 |
| 11,400.00 | 44.32 | 326.55 | 11,323.58 | 101.85 | -193.30 | 14,437,171.46 | 1,715,012.73 | 39.75373670 | -80.73458512 |
| 11,495.16 | 50.00 | 327.28 | 11,388.26 | 160.30 | -231.36 | 14,437,229.91 | 1,714,974.67 | 39.75389752 | -80.73471991 |
| Begin 8°/100' build/turn | | | | | | | | | |
| 11,500.00 | 50.39 | 327.31 | 11,391.36 | 163.43 | -233.37 | 14,437,233.03 | 1,714,972.66 | 39.75390613 | -80.73472702 |
| 11,600.00 | 58.37 | 327.93 | 11,449.55 | 232.03 | -276.84 | 14,437,301.64 | 1,714,929.19 | 39.75409489 | -80.73488098 |
| 11,700.00 | 66.36 | 328.45 | 11,495.90 | 307.27 | -323.49 | 14,437,376.87 | 1,714,882.55 | 39.75430188 | -80.73504615 |
| 11,800.00 | 74.35 | 328.91 | 11,529.50 | 387.66 | -372.39 | 14,437,457.27 | 1,714,833.64 | 39.75452307 | -80.73521930 |
| 11,900.00 | 82.33 | 329.34 | 11,549.69 | 471.66 | -422.60 | 14,437,541.26 | 1,714,783.43 | 39.75475414 | -80.73539707 |
| 12,000.00 | 90.32 | 329.75 | 11,556.09 | 557.61 | -473.14 | 14,437,627.22 | 1,714,732.89 | 39.75499061 | -80.73557600 |
| 12,008.42 | 91.00 | 329.78 | 11,555.99 | 564.88 | -477.38 | 14,437,634.49 | 1,714,728.65 | 39.75501062 | -80.73559101 |
| Begin 91.00° lateral | | | | | | | | | |
| 12,100.00 | 91.00 | 329.78 | 11,554.40 | 644.01 | -523.46 | 14,437,713.61 | 1,714,682.57 | 39.75522829 | -80.73575414 |
| 12,200.00 | 91.00 | 329.78 | 11,552.66 | 730.41 | -573.79 | 14,437,800.01 | 1,714,632.25 | 39.75546597 | -80.73593228 |
| 12,300.00 | 91.00 | 329.78 | 11,550.92 | 816.81 | -624.11 | 14,437,886.41 | 1,714,581.93 | 39.75570366 | -80.73611042 |
| 12,400.00 | 91.00 | 329.78 | 11,549.18 | 903.21 | -674.43 | 14,437,972.81 | 1,714,531.61 | 39.75594134 | -80.73628856 |
| 12,500.00 | 91.00 | 329.78 | 11,547.44 | 989.61 | -724.75 | 14,438,059.21 | 1,714,481.29 | 39.75617902 | -80.73646670 |
| 12,600.00 | 91.00 | 329.78 | 11,545.70 | 1,076.00 | -775.07 | 14,438,145.61 | 1,714,430.96 | 39.75641670 | -80.73664485 |
| 12,700.00 | 91.00 | 329.78 | 11,543.96 | 1,162.40 | -825.39 | 14,438,232.01 | 1,714,380.64 | 39.75665439 | -80.73682299 |
| 12,800.00 | 91.00 | 329.78 | 11,542.22 | 1,248.80 | -875.71 | 14,438,318.41 | 1,714,330.32 | 39.75689207 | -80.73700114 |
| 12,900.00 | 91.00 | 329.78 | 11,540.48 | 1,335.20 | -926.03 | 14,438,404.81 | 1,714,280.00 | 39.75712975 | -80.73717928 |
| 13,000.00 | 91.00 | 329.78 | 11,538.74 | 1,421.60 | -976.35 | 14,438,491.20 | 1,714,229.68 | 39.75736743 | -80.73735743 |
| 13,100.00 | 91.00 | 329.78 | 11,537.00 | 1,508.00 | -1,026.67 | 14,438,577.60 | 1,714,179.36 | 39.75760511 | -80.73753558 |
| 13,200.00 | 91.00 | 329.78 | 11,535.26 | 1,594.40 | -1,076.99 | 14,438,664.00 | 1,714,129.04 | 39.75784279 | -80.73771373 |
| 13,300.00 | 91.00 | 329.78 | 11,533.52 | 1,680.80 | -1,127.31 | 14,438,750.40 | 1,714,078.72 | 39.75808047 | -80.73789188 |
| 13,400.00 | 91.00 | 329.78 | 11,531.78 | 1,767.20 | -1,177.63 | 14,438,836.80 | 1,714,028.40 | 39.75831815 | -80.73807003 |
| 13,500.00 | 91.00 | 329.78 | 11,530.04 | 1,853.60 | -1,227.95 | 14,438,923.20 | 1,713,978.08 | 39.75855583 | -80.73824819 |
| 13,600.00 | 91.00 | 329.78 | 11,528.30 | 1,939.99 | -1,278.27 | 14,439,009.60 | 1,713,927.76 | 39.75879351 | -80.73842634 |
| 13,700.00 | 91.00 | 329.78 | 11,526.56 | 2,026.39 | -1,328.60 | 14,439,096.00 | 1,713,877.44 | 39.75903119 | -80.73860450 |
| 13,800.00 | 91.00 | 329.78 | 11,524.82 | 2,112.79 | -1,378.92 | 14,439,182.40 | 1,713,827.12 | 39.75926887 | -80.73878266 |
| 13,900.00 | 91.00 | 329.78 | 11,523.08 | 2,199.19 | -1,429.24 | 14,439,268.79 | 1,713,776.80 | 39.75950654 | -80.73896082 |
| 14,000.00 | 91.00 | 329.78 | 11,521.34 | 2,285.59 | -1,479.56 | 14,439,355.19 | 1,713,726.48 | 39.75974422 | -80.73913898 |
| 14,100.00 | 91.00 | 329.78 | 11,519.60 | 2,371.99 | -1,529.88 | 14,439,441.59 | 1,713,676.16 | 39.75998190 | -80.73931714 |
| 14,200.00 | 91.00 | 329.78 | 11,517.86 | 2,458.39 | -1,580.20 | 14,439,527.99 | 1,713,625.84 | 39.76021958 | -80.73949530 |
| 14,300.00 | 91.00 | 329.78 | 11,516.12 | 2,544.79 | -1,630.52 | 14,439,614.39 | 1,713,575.51 | 39.76045725 | -80.73967346 |
| 14,400.00 | 91.00 | 329.78 | 11,514.38 | 2,631.19 | -1,680.84 | 14,439,700.79 | 1,713,525.19 | 39.76069493 | -80.73985163 |



Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Pendleton
 Well: Pendleton N-09 HU (slot D)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Pendleton N-09 HU (slot D)
 TVD Reference: GL @ 1272.00ft
 MD Reference: GL @ 1272.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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 JUN 14 2019
 WV Department of
 Environmental Protection

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|
| 14,500.00 | 91.00 | 329.78 | 11,512.64 | 2,717.59 | -1,731.16 | 14,439,787.19 | 1,713,474.87 | 39.76093261 | -80.74002979 |
| 14,600.00 | 91.00 | 329.78 | 11,510.90 | 2,803.99 | -1,781.48 | 14,439,873.59 | 1,713,424.55 | 39.76117028 | -80.74020796 |
| 14,700.00 | 91.00 | 329.78 | 11,509.16 | 2,890.38 | -1,831.80 | 14,439,959.99 | 1,713,374.23 | 39.76140796 | -80.74038613 |
| 14,800.00 | 91.00 | 329.78 | 11,507.42 | 2,976.78 | -1,882.12 | 14,440,046.38 | 1,713,323.91 | 39.76164564 | -80.74056430 |
| 14,900.00 | 91.00 | 329.78 | 11,505.68 | 3,063.18 | -1,932.44 | 14,440,132.78 | 1,713,273.59 | 39.76188331 | -80.74074247 |
| 15,000.00 | 91.00 | 329.78 | 11,503.94 | 3,149.58 | -1,982.76 | 14,440,219.18 | 1,713,223.27 | 39.76212099 | -80.74092064 |
| 15,100.00 | 91.00 | 329.78 | 11,502.20 | 3,235.98 | -2,033.09 | 14,440,305.58 | 1,713,172.95 | 39.76235866 | -80.74109882 |
| 15,200.00 | 91.00 | 329.78 | 11,500.45 | 3,322.38 | -2,083.41 | 14,440,391.98 | 1,713,122.63 | 39.76259634 | -80.74127699 |
| 15,300.00 | 91.00 | 329.78 | 11,498.71 | 3,408.78 | -2,133.73 | 14,440,478.38 | 1,713,072.31 | 39.76283401 | -80.74145517 |
| 15,400.00 | 91.00 | 329.78 | 11,496.97 | 3,495.18 | -2,184.05 | 14,440,564.78 | 1,713,021.99 | 39.76307169 | -80.74163335 |
| 15,500.00 | 91.00 | 329.78 | 11,495.23 | 3,581.58 | -2,234.37 | 14,440,651.18 | 1,712,971.67 | 39.76330936 | -80.74181152 |
| 15,600.00 | 91.00 | 329.78 | 11,493.49 | 3,667.98 | -2,284.69 | 14,440,737.58 | 1,712,921.35 | 39.76354703 | -80.74198970 |
| 15,700.00 | 91.00 | 329.78 | 11,491.75 | 3,754.38 | -2,335.01 | 14,440,823.97 | 1,712,871.03 | 39.76378471 | -80.74216788 |
| 15,800.00 | 91.00 | 329.78 | 11,490.01 | 3,840.77 | -2,385.33 | 14,440,910.37 | 1,712,820.71 | 39.76402238 | -80.74234607 |
| 15,900.00 | 91.00 | 329.78 | 11,488.27 | 3,927.17 | -2,435.65 | 14,440,996.77 | 1,712,770.38 | 39.76426005 | -80.74252425 |
| 16,000.00 | 91.00 | 329.78 | 11,486.53 | 4,013.57 | -2,485.97 | 14,441,083.17 | 1,712,720.06 | 39.76449772 | -80.74270243 |
| 16,100.00 | 91.00 | 329.78 | 11,484.79 | 4,099.97 | -2,536.29 | 14,441,169.57 | 1,712,669.74 | 39.76473540 | -80.74288062 |
| 16,200.00 | 91.00 | 329.78 | 11,483.05 | 4,186.37 | -2,586.61 | 14,441,255.97 | 1,712,619.42 | 39.76497307 | -80.74305881 |
| 16,300.00 | 91.00 | 329.78 | 11,481.31 | 4,272.77 | -2,636.93 | 14,441,342.37 | 1,712,569.10 | 39.76521074 | -80.74323700 |
| 16,400.00 | 91.00 | 329.78 | 11,479.57 | 4,359.17 | -2,687.25 | 14,441,428.77 | 1,712,518.78 | 39.76544841 | -80.74341518 |
| 16,500.00 | 91.00 | 329.78 | 11,477.83 | 4,445.57 | -2,737.58 | 14,441,515.17 | 1,712,468.46 | 39.76568608 | -80.74359338 |
| 16,600.00 | 91.00 | 329.78 | 11,476.09 | 4,531.97 | -2,787.90 | 14,441,601.56 | 1,712,418.14 | 39.76592375 | -80.74377157 |
| 16,700.00 | 91.00 | 329.78 | 11,474.35 | 4,618.37 | -2,838.22 | 14,441,687.96 | 1,712,367.82 | 39.76616142 | -80.74394976 |
| 16,800.00 | 91.00 | 329.78 | 11,472.61 | 4,704.77 | -2,888.54 | 14,441,774.36 | 1,712,317.50 | 39.76639909 | -80.74412795 |
| 16,900.00 | 91.00 | 329.78 | 11,470.87 | 4,791.16 | -2,938.86 | 14,441,860.76 | 1,712,267.18 | 39.76663676 | -80.74430615 |
| 17,000.00 | 91.00 | 329.78 | 11,469.13 | 4,877.56 | -2,989.18 | 14,441,947.16 | 1,712,216.86 | 39.76687443 | -80.74448435 |
| 17,100.00 | 91.00 | 329.78 | 11,467.39 | 4,963.96 | -3,039.50 | 14,442,033.56 | 1,712,166.54 | 39.76711210 | -80.74466254 |
| 17,200.00 | 91.00 | 329.78 | 11,465.65 | 5,050.36 | -3,089.82 | 14,442,119.96 | 1,712,116.22 | 39.76734977 | -80.74484074 |
| 17,300.00 | 91.00 | 329.78 | 11,463.91 | 5,136.76 | -3,140.14 | 14,442,206.36 | 1,712,065.90 | 39.76758744 | -80.74501894 |
| 17,400.00 | 91.00 | 329.78 | 11,462.17 | 5,223.16 | -3,190.46 | 14,442,292.76 | 1,712,015.58 | 39.76782511 | -80.74519715 |
| 17,500.00 | 91.00 | 329.78 | 11,460.43 | 5,309.56 | -3,240.78 | 14,442,379.15 | 1,711,965.26 | 39.76806278 | -80.74537535 |
| 17,600.00 | 91.00 | 329.78 | 11,458.69 | 5,395.96 | -3,291.10 | 14,442,465.55 | 1,711,914.93 | 39.76830044 | -80.74555355 |
| 17,700.00 | 91.00 | 329.78 | 11,456.95 | 5,482.36 | -3,341.42 | 14,442,551.95 | 1,711,864.61 | 39.76853811 | -80.74573176 |
| 17,800.00 | 91.00 | 329.78 | 11,455.21 | 5,568.76 | -3,391.74 | 14,442,638.35 | 1,711,814.29 | 39.76877578 | -80.74590996 |
| 17,900.00 | 91.00 | 329.78 | 11,453.47 | 5,655.15 | -3,442.06 | 14,442,724.75 | 1,711,763.97 | 39.76901345 | -80.74608817 |
| 18,000.00 | 91.00 | 329.78 | 11,451.73 | 5,741.55 | -3,492.39 | 14,442,811.15 | 1,711,713.65 | 39.76925111 | -80.74626638 |
| 18,100.00 | 91.00 | 329.78 | 11,449.99 | 5,827.95 | -3,542.71 | 14,442,897.55 | 1,711,663.33 | 39.76948878 | -80.74644459 |
| 18,200.00 | 91.00 | 329.78 | 11,448.25 | 5,914.35 | -3,593.03 | 14,442,983.95 | 1,711,613.01 | 39.76972645 | -80.74662280 |
| 18,300.00 | 91.00 | 329.78 | 11,446.51 | 6,000.75 | -3,643.35 | 14,443,070.35 | 1,711,562.69 | 39.76996411 | -80.74680102 |
| 18,400.00 | 91.00 | 329.78 | 11,444.77 | 6,087.15 | -3,693.67 | 14,443,156.74 | 1,711,512.37 | 39.77020178 | -80.74697923 |
| 18,500.00 | 91.00 | 329.78 | 11,443.03 | 6,173.55 | -3,743.99 | 14,443,243.14 | 1,711,462.05 | 39.77043944 | -80.74715744 |
| 18,600.00 | 91.00 | 329.78 | 11,441.29 | 6,259.95 | -3,794.31 | 14,443,329.54 | 1,711,411.73 | 39.77067711 | -80.74733566 |
| 18,700.00 | 91.00 | 329.78 | 11,439.55 | 6,346.35 | -3,844.63 | 14,443,415.94 | 1,711,361.41 | 39.77091477 | -80.74751388 |
| 18,800.00 | 91.00 | 329.78 | 11,437.81 | 6,432.75 | -3,894.95 | 14,443,502.34 | 1,711,311.09 | 39.77115244 | -80.74769210 |
| 18,900.00 | 91.00 | 329.78 | 11,436.07 | 6,519.15 | -3,945.27 | 14,443,588.74 | 1,711,260.77 | 39.77139010 | -80.74787032 |
| 19,000.00 | 91.00 | 329.78 | 11,434.33 | 6,605.54 | -3,995.59 | 14,443,675.14 | 1,711,210.45 | 39.77162777 | -80.74804854 |
| 19,100.00 | 91.00 | 329.78 | 11,432.59 | 6,691.94 | -4,045.91 | 14,443,761.54 | 1,711,160.13 | 39.77186543 | -80.74822676 |
| 19,200.00 | 91.00 | 329.78 | 11,430.85 | 6,778.34 | -4,096.23 | 14,443,847.94 | 1,711,109.81 | 39.77210309 | -80.74840498 |
| 19,300.00 | 91.00 | 329.78 | 11,429.11 | 6,864.74 | -4,146.55 | 14,443,934.33 | 1,711,059.48 | 39.77234076 | -80.74858321 |
| 19,400.00 | 91.00 | 329.78 | 11,427.37 | 6,951.14 | -4,196.88 | 14,444,020.73 | 1,711,009.16 | 39.77257842 | -80.74876144 |
| 19,500.00 | 91.00 | 329.78 | 11,425.63 | 7,037.54 | -4,247.20 | 14,444,107.13 | 1,710,958.84 | 39.77281608 | -80.74893966 |
| 19,600.00 | 91.00 | 329.78 | 11,423.89 | 7,123.94 | -4,297.52 | 14,444,193.53 | 1,710,908.52 | 39.77305375 | -80.74911789 |
| 19,700.00 | 91.00 | 329.78 | 11,422.15 | 7,210.34 | -4,347.84 | 14,444,279.93 | 1,710,858.20 | 39.77329141 | -80.74929612 |
| 19,800.00 | 91.00 | 329.78 | 11,420.41 | 7,296.74 | -4,398.16 | 14,444,366.33 | 1,710,807.88 | 39.77352907 | -80.74947435 |
| 19,900.00 | 91.00 | 329.78 | 11,418.67 | 7,383.14 | -4,448.48 | 14,444,452.73 | 1,710,757.56 | 39.77376673 | -80.74965258 |



| | | | |
|-----------|--------------------------------|------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Planned Survey | | | | | | | | | | |
|---|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 20,000.00 | 91.00 | 329.78 | 11,416.93 | 7,469.54 | -4,498.80 | 14,444,539.13 | 1,710,707.24 | 39.77400439 | -80.74983082 | |
| 20,100.00 | 91.00 | 329.78 | 11,415.19 | 7,555.93 | -4,549.12 | 14,444,625.53 | 1,710,656.92 | 39.77424205 | -80.75000905 | |
| 20,200.00 | 91.00 | 329.78 | 11,413.45 | 7,642.33 | -4,599.44 | 14,444,711.92 | 1,710,606.60 | 39.77447971 | -80.75018729 | |
| 20,300.00 | 91.00 | 329.78 | 11,411.71 | 7,728.73 | -4,649.76 | 14,444,798.32 | 1,710,556.28 | 39.77471737 | -80.75036553 | |
| 20,400.00 | 91.00 | 329.78 | 11,409.97 | 7,815.13 | -4,700.08 | 14,444,884.72 | 1,710,505.96 | 39.77495503 | -80.75054376 | |
| 20,500.00 | 91.00 | 329.78 | 11,408.22 | 7,901.53 | -4,750.40 | 14,444,971.12 | 1,710,455.64 | 39.77519269 | -80.75072200 | |
| 20,600.00 | 91.00 | 329.78 | 11,406.48 | 7,987.93 | -4,800.72 | 14,445,057.52 | 1,710,405.32 | 39.77543035 | -80.75090024 | |
| 20,700.00 | 91.00 | 329.78 | 11,404.74 | 8,074.33 | -4,851.04 | 14,445,143.92 | 1,710,355.00 | 39.77566801 | -80.75107849 | |
| 20,800.00 | 91.00 | 329.78 | 11,403.00 | 8,160.73 | -4,901.37 | 14,445,230.32 | 1,710,304.68 | 39.77590567 | -80.75125673 | |
| 20,900.00 | 91.00 | 329.78 | 11,401.26 | 8,247.13 | -4,951.69 | 14,445,316.72 | 1,710,254.35 | 39.77614333 | -80.75143497 | |
| 21,000.00 | 91.00 | 329.78 | 11,399.52 | 8,333.53 | -5,002.01 | 14,445,403.12 | 1,710,204.03 | 39.77638099 | -80.75161322 | |
| 21,100.00 | 91.00 | 329.78 | 11,397.78 | 8,419.93 | -5,052.33 | 14,445,489.51 | 1,710,153.71 | 39.77661865 | -80.75179147 | |
| 21,200.00 | 91.00 | 329.78 | 11,396.04 | 8,506.32 | -5,102.65 | 14,445,575.91 | 1,710,103.39 | 39.77685631 | -80.75196971 | |
| 21,300.00 | 91.00 | 329.78 | 11,394.30 | 8,592.72 | -5,152.97 | 14,445,662.31 | 1,710,053.07 | 39.77709396 | -80.75214796 | |
| 21,400.00 | 91.00 | 329.78 | 11,392.56 | 8,679.12 | -5,203.29 | 14,445,748.71 | 1,710,002.75 | 39.77733162 | -80.75232621 | |
| 21,500.00 | 91.00 | 329.78 | 11,390.82 | 8,765.52 | -5,253.61 | 14,445,835.11 | 1,709,952.43 | 39.77756928 | -80.75250447 | |
| 21,600.00 | 91.00 | 329.78 | 11,389.08 | 8,851.92 | -5,303.93 | 14,445,921.51 | 1,709,902.11 | 39.77780693 | -80.75268272 | |
| 21,700.00 | 91.00 | 329.78 | 11,387.34 | 8,938.32 | -5,354.25 | 14,446,007.91 | 1,709,851.79 | 39.77804459 | -80.75286097 | |
| 21,800.00 | 91.00 | 329.78 | 11,385.60 | 9,024.72 | -5,404.57 | 14,446,094.31 | 1,709,801.47 | 39.77828225 | -80.75303923 | |
| 21,900.00 | 91.00 | 329.78 | 11,383.86 | 9,111.12 | -5,454.89 | 14,446,180.71 | 1,709,751.15 | 39.77851990 | -80.75321749 | |
| 22,000.00 | 91.00 | 329.78 | 11,382.12 | 9,197.52 | -5,505.21 | 14,446,267.10 | 1,709,700.83 | 39.77875756 | -80.75339574 | |
| 22,100.00 | 91.00 | 329.78 | 11,380.38 | 9,283.92 | -5,555.53 | 14,446,353.50 | 1,709,650.51 | 39.77899521 | -80.75357400 | |
| 22,200.00 | 91.00 | 329.78 | 11,378.64 | 9,370.31 | -5,605.86 | 14,446,439.90 | 1,709,600.19 | 39.77923287 | -80.75375226 | |
| 22,300.00 | 91.00 | 329.78 | 11,376.90 | 9,456.71 | -5,656.18 | 14,446,526.30 | 1,709,549.87 | 39.77947052 | -80.75393052 | |
| 22,400.00 | 91.00 | 329.78 | 11,375.16 | 9,543.11 | -5,706.50 | 14,446,612.70 | 1,709,499.55 | 39.77970818 | -80.75410879 | |
| 22,500.00 | 91.00 | 329.78 | 11,373.42 | 9,629.51 | -5,756.82 | 14,446,699.10 | 1,709,449.23 | 39.77994583 | -80.75428705 | |
| 22,600.00 | 91.00 | 329.78 | 11,371.68 | 9,715.91 | -5,807.14 | 14,446,785.50 | 1,709,398.90 | 39.78018349 | -80.75446532 | |
| 22,700.00 | 91.00 | 329.78 | 11,369.94 | 9,802.31 | -5,857.46 | 14,446,871.90 | 1,709,348.58 | 39.78042114 | -80.75464358 | |
| 22,800.00 | 91.00 | 329.78 | 11,368.20 | 9,888.71 | -5,907.78 | 14,446,958.30 | 1,709,298.26 | 39.78065879 | -80.75482185 | |
| 22,900.00 | 91.00 | 329.78 | 11,366.46 | 9,975.11 | -5,958.10 | 14,447,044.69 | 1,709,247.94 | 39.78089645 | -80.75500012 | |
| 23,000.00 | 91.00 | 329.78 | 11,364.72 | 10,061.51 | -6,008.42 | 14,447,131.09 | 1,709,197.62 | 39.78113410 | -80.75517839 | |
| 23,100.00 | 91.00 | 329.78 | 11,362.98 | 10,147.91 | -6,058.74 | 14,447,217.49 | 1,709,147.30 | 39.78137175 | -80.75535666 | |
| 23,200.00 | 91.00 | 329.78 | 11,361.24 | 10,234.31 | -6,109.06 | 14,447,303.89 | 1,709,096.98 | 39.78160940 | -80.75553493 | |
| 23,300.00 | 91.00 | 329.78 | 11,359.50 | 10,320.70 | -6,159.38 | 14,447,390.29 | 1,709,046.66 | 39.78184706 | -80.75571321 | |
| 23,400.00 | 91.00 | 329.78 | 11,357.76 | 10,407.10 | -6,209.70 | 14,447,476.69 | 1,708,996.34 | 39.78208471 | -80.75589148 | |
| 23,443.62 | 91.00 | 329.78 | 11,357.00 | 10,444.79 | -6,231.65 | 14,447,514.38 | 1,708,974.39 | 39.78218837 | -80.75596925 | |
| PBHL/TD 23443.62 MD/11357.00 TVD | | | | | | | | | | |
| 23,443.63 | 91.00 | 329.78 | 11,357.00 | 10,444.80 | -6,231.66 | 14,447,514.38 | 1,708,974.39 | 39.78218839 | -80.75596926 | |

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|------------------|--------------------------------|-------------------------------------|---------------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Pendleton N-09 HU (slot D) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1272.00ft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1272.00ft |
| Site: | Pendleton | North Reference: | Grid |
| Well: | Pendleton N-09 HU (slot D) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Design Targets | | | | | | | | | |
|--|-----------|----------|-----------|-----------|-----------|---------------|--------------|-------------|--------------|
| Target Name | Dip Angle | Dip Dir. | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
| - hit/miss target | (°) | (°) | (ft) | (ft) | (ft) | (usft) | (usft) | | |
| - Shape | | | | | | | | | |
| Pendleton N-09HU PBH - plan hits target center - Point | 0.00 | 0.00 | 11,357.00 | 10,444.80 | -6,231.66 | 14,447,514.38 | 1,708,974.39 | 39.78218839 | -80.75596926 |
| Pendleton N-09HU LP - plan misses target center by 48.80ft at 12044.16ft MD (11555.37 TVD, 595.76 N, -495.36 E) - Point | 0.00 | 0.00 | 11,556.00 | 571.21 | -537.53 | 14,437,640.82 | 1,714,668.50 | 39.75502849 | -80.73580497 |
| Pendleton N-09HU LP 5 - plan misses target center by 5.59ft at 12019.00ft MD (11555.81 TVD, 574.02 N, -482.70 E) - Point | 0.00 | 0.00 | 11,556.00 | 571.21 | -487.53 | 14,437,640.82 | 1,714,718.50 | 39.75502809 | -80.73562705 |

| Plan Annotations | | | | |
|------------------|----------------|-------------------|------------|----------------------------------|
| Measured Depth | Vertical Depth | Local Coordinates | | Comment |
| (ft) | (ft) | +N/-S (ft) | +E/-W (ft) | |
| 3,100.00 | 3,100.00 | 0.00 | 0.00 | KOP Begin 2°/100' build |
| 3,250.00 | 3,249.93 | -3.87 | -0.65 | Begin 3.00° tangent |
| 4,250.00 | 4,248.56 | -55.49 | -9.29 | Begin 2°/100' drop |
| 4,400.00 | 4,398.49 | -59.36 | -9.93 | Begin vertical hold |
| 10,001.51 | 10,000.00 | -59.36 | -9.93 | Begin 2°/100' build |
| 10,315.73 | 10,313.59 | -76.34 | -12.77 | Begin 6.28° tangent |
| 10,582.28 | 10,578.54 | -105.12 | -17.59 | Begin 6°/100' build/turn |
| 11,495.16 | 11,388.26 | 160.30 | -231.36 | Begin 8°/100' build/turn |
| 12,008.42 | 11,555.99 | 564.88 | -477.38 | Begin 91.00° lateral |
| 23,443.62 | 11,357.00 | 10,444.79 | -6,231.65 | PBHL/TD 23443.62 MD/11357.00 TVD |

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Environmental Protection

WW-9
(4/16)

4705102245

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

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 7.5'

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature James A. Pancake

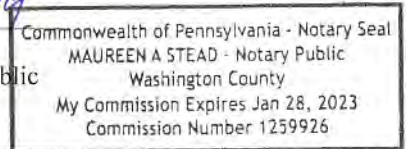
Company Official (Typed Name) Jim Pancake

Company Official Title VP Geosciences

Subscribed and sworn before me this 23 day of MAY, 20 19

Maureen A. Stead

Notary Public



My commission expires 1/28/23

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 26.11 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

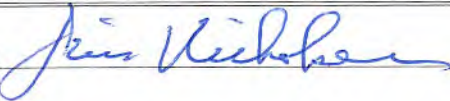
| Temporary | | Permanent | |
|-----------------|----------|---------------|----------|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| Annual Ryegrass | 40 | Orchard Grass | 12 |
| Spring Oats | 96 | Ladino | 3 |
| | | White Clover | 2 |

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:



Comments:

Title: Oil and Gas Inspector

Date:

5/23/19

Field Reviewed?

Yes

No

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JUN 14 2019
WV Department of
Environmental Protection

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.

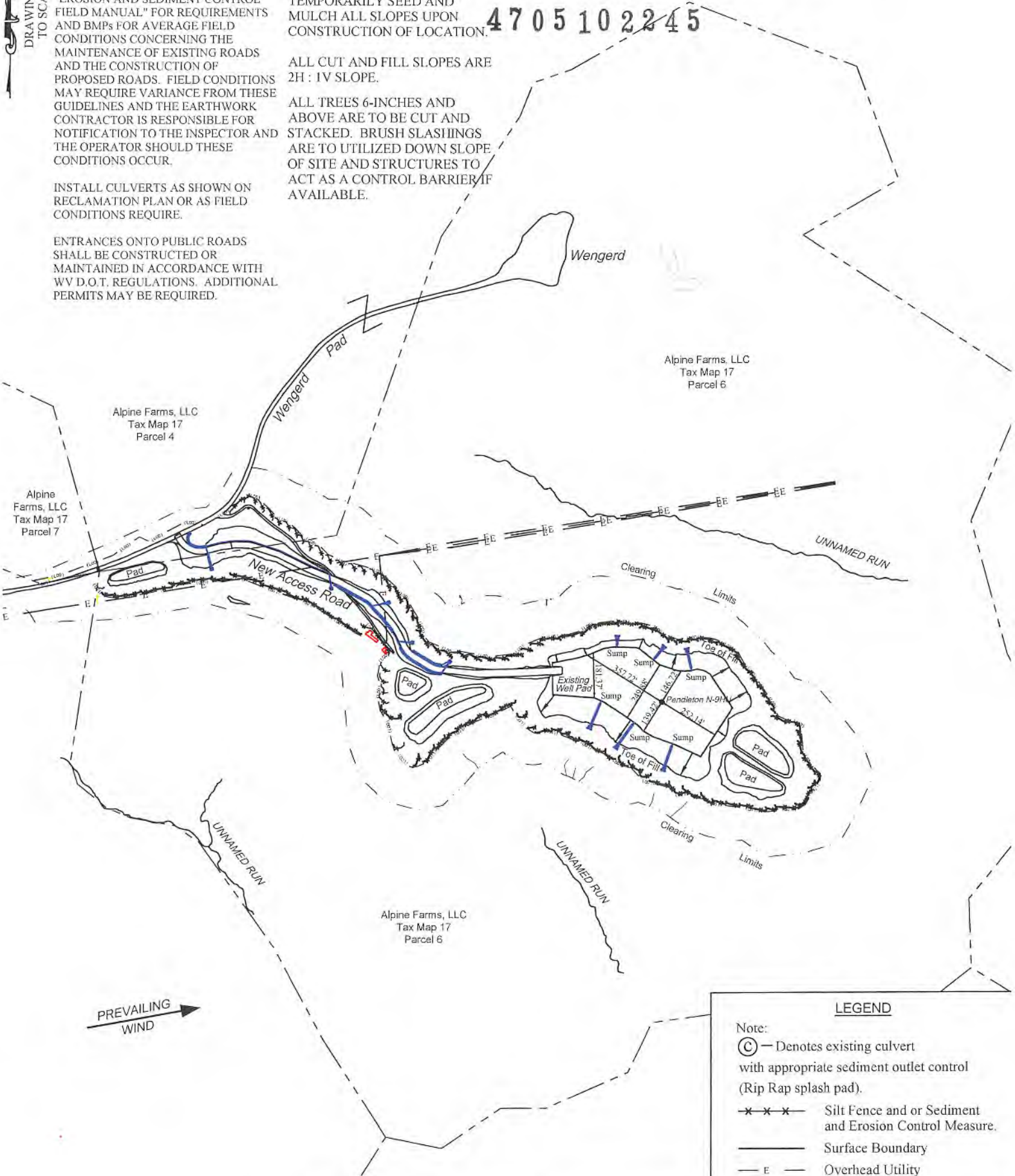
ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.

TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

4705102245

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.



Alpine Farms, LLC
Tax Map 17
Parcel 6

Alpine Farms, LLC
Tax Map 17
Parcel 4

Alpine Farms, LLC
Tax Map 17
Parcel 7

Alpine Farms, LLC
Tax Map 17
Parcel 6

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
 - E — Overhead Utility

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.

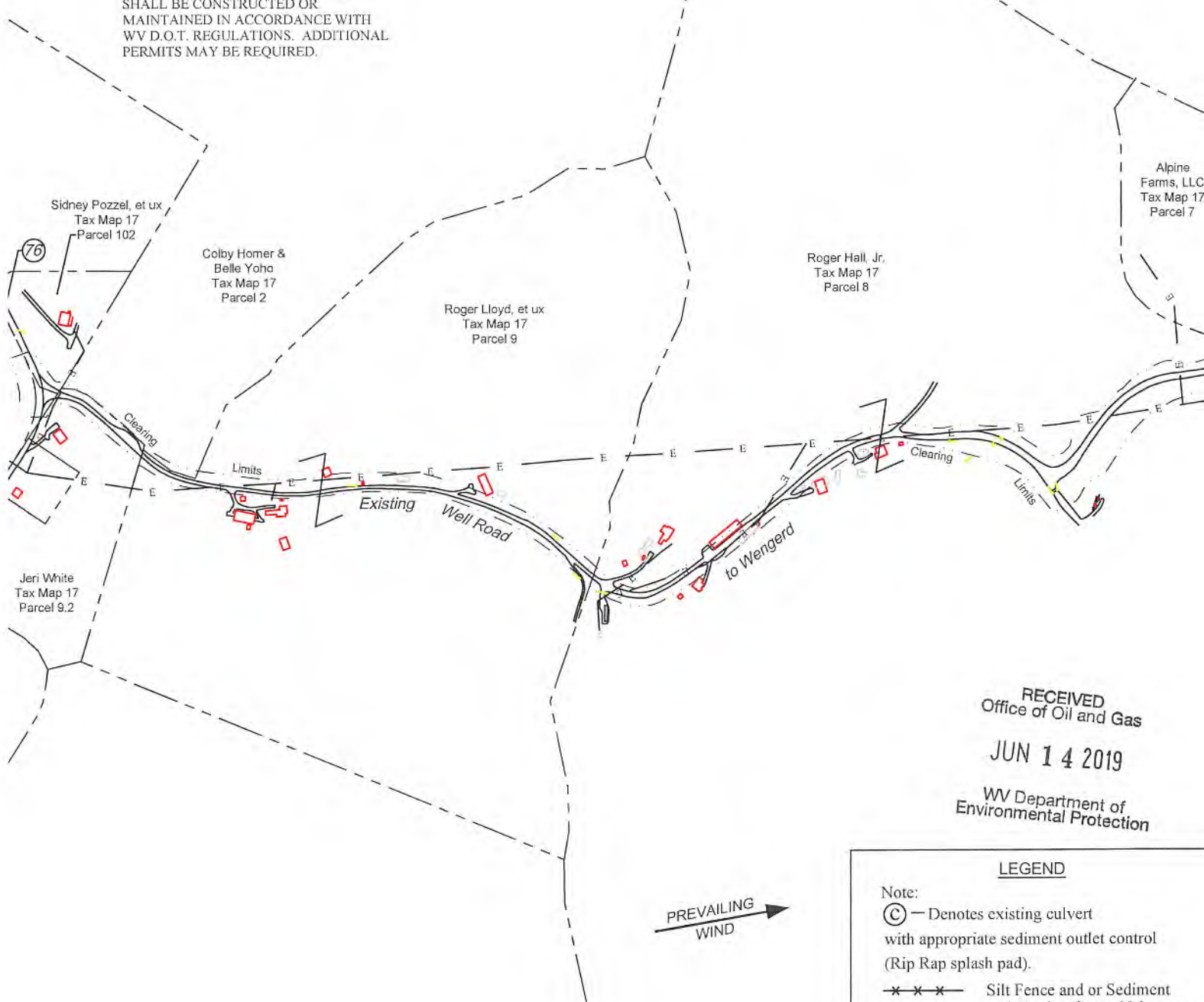
ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.

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4705102245



Alpine Farms, LLC
Tax Map 17
Parcel 7

Roger Hall, Jr.
Tax Map 17
Parcel 8

Roger Lloyd, et ux
Tax Map 17
Parcel 9

Colby Homer &
Belle Yoho
Tax Map 17
Parcel 2

Sidney Pozzel, et ux
Tax Map 17
Parcel 102

Jeri White
Tax Map 17
Parcel 9.2

RECEIVED
Office of Oil and Gas
JUN 14 2019
WV Department of
Environmental Protection

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
- E — Overhead Utility

4705102245



Well Site Safety Plan

Tug Hill Operating, LLC

juw
5/23/19

Well Name: Pendleton N-9HU

Pad Location: Pendleton
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING - 4,405,427.62

EASTING - 522,795.84

May 2019

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

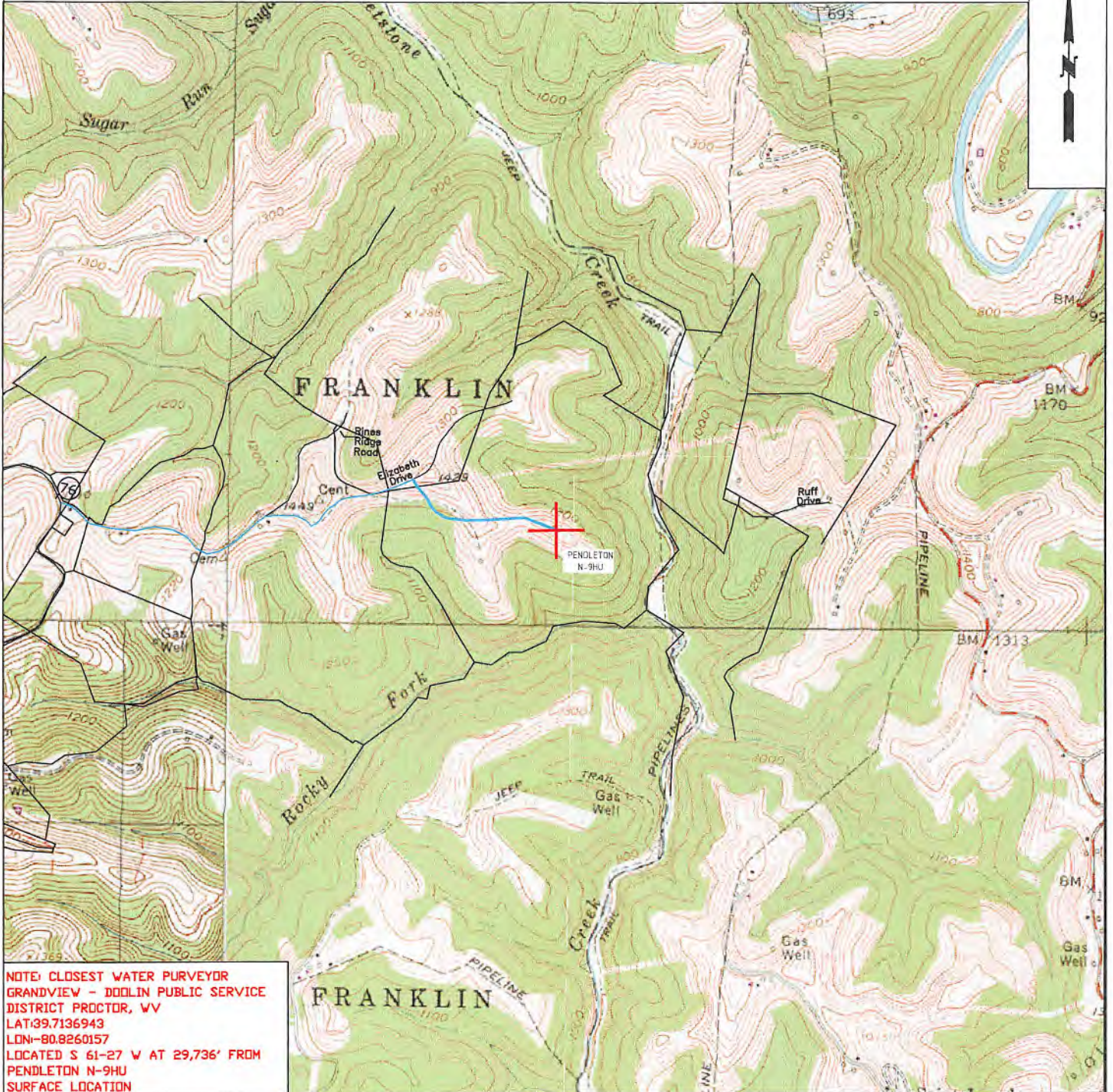
4705 102245

WW-9


SUPPLEMENT PG 2

PROPOSED PENDLETON N-9HU

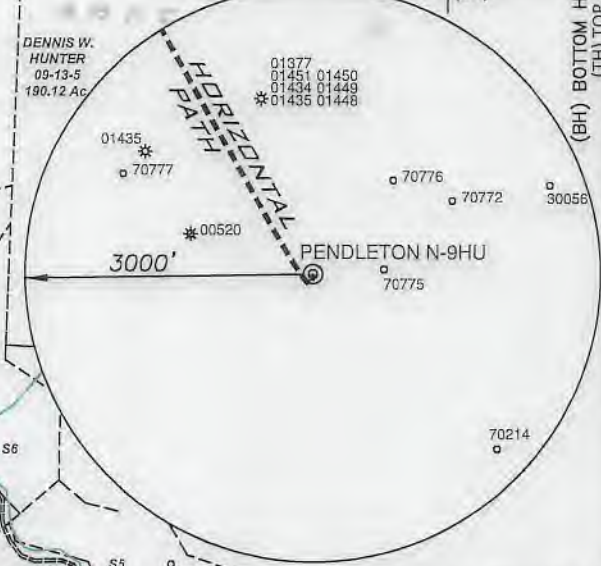
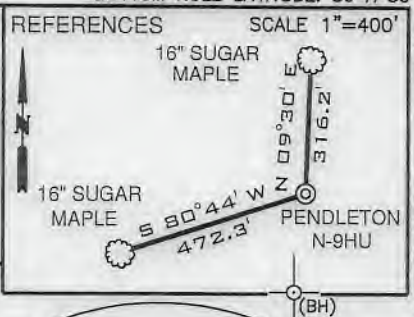
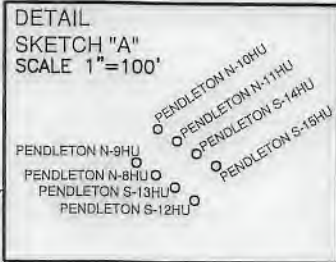
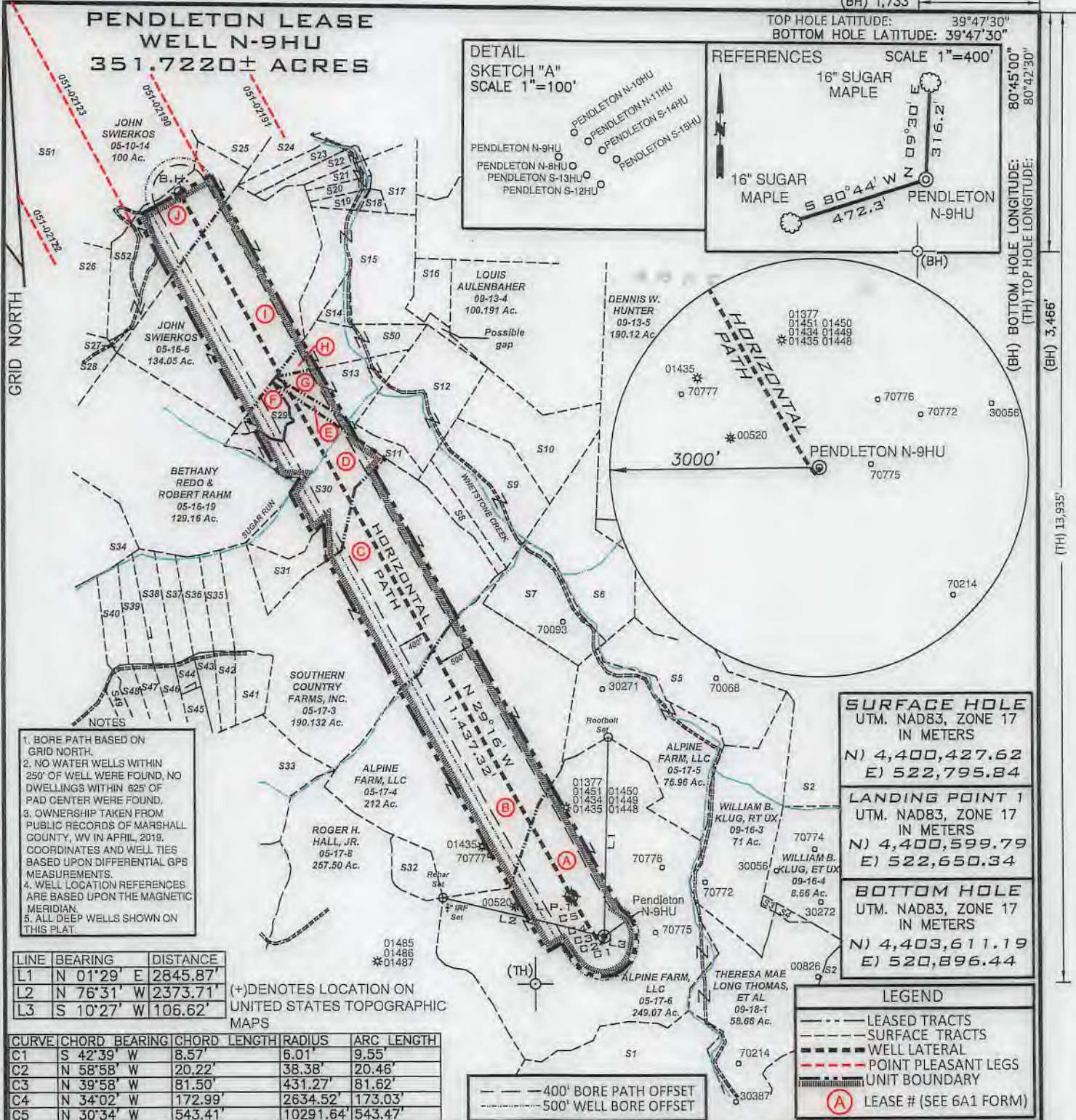
4705 102245



NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE
 DISTRICT PROCTOR, WV
 LAT:39.7136943
 LON:-80.8260157
 LOCATED S 61-27 W AT 29,736' FROM
 PENDLETON N-9HU
 SURFACE LOCATION

| | | | | |
|--|--|------------------|---------------------|-------------------|
|  TUG HILL OPERATING | OPERATOR | 494510851 | TOPO SECTION | LEASE NAME |
| | TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317 | | GLEN EASTON 7.5' | PENDLETON |
| | | | SCALE: | DATE: |
| | | | 1" = 2000' | DATE: 05-10-2019 |

**PENDLETON LEASE
WELL N-9HU
351.7220± ACRES**



- NOTES**
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND. NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN APRIL, 2019. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 5. ALL DEEP WELLS SHOWN ON THIS PLAT.

| LINE | BEARING | DISTANCE |
|------|------------|----------|
| L1 | N 01°29' E | 2845.87' |
| L2 | N 76°31' W | 2373.71' |
| L3 | S 10°27' W | 106.62' |

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

| CURVE | CHORD BEARING | CHORD LENGTH | RADIUS | ARC LENGTH |
|-------|---------------|--------------|-----------|------------|
| C1 | S 42°39' W | 8.57' | 6.01' | 9.55' |
| C2 | N 58°58' W | 20.22' | 38.38' | 20.46' |
| C3 | N 39°58' W | 81.50' | 431.27' | 81.62' |
| C4 | N 34°02' W | 172.99' | 2634.52' | 173.03' |
| C5 | N 30°34' W | 543.41' | 10291.64' | 543.47' |

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,427.62
E) 522,795.84

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,599.79
E) 522,650.34

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,611.19
E) 520,896.44

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

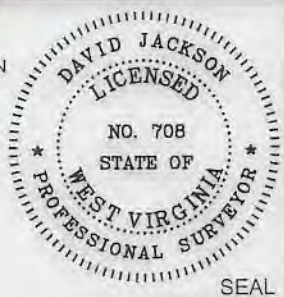
FILE NUMBER _____
DRAWING NUMBER: **PENDLETON N-9HU REV 1**
SCALE: **1" = 2000'**
MINIMUM DEGREE OF ACCURACY: **1/200**
PROVEN SOURCE OF ELEVATION: **SUBMETER MAPPING**
GRADE GPS

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

David L Jackson



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



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

DATE: **MAY 22, 2019**
OPERATORS WELL NO. **PENDLETON N-9HU**
API WELL NO. **47-051-02245 HGA**
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
LOCATION ELEVATION **1271.82'** WATERSHED (HUC 10) **FISH CREEK**
DISTRICT **FRANKLIN** COUNTY **MARSHALL**
QUADRANGLE **GLEN EASTON 7.5'** LEASE NUMBER **SEE WW-6A1 Form**

SURFACE OWNER **ALPINE FARM, LLC** ACREAGE **249.07**
OIL & GAS ROYALTY OWNER **ELI A. & FANNIE MAE WENGERD, ET AL** LEASE ACREAGE **249.07**
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 **POINT PLEASANT** ESTIMATED DEPTH **TVD: 11,787' TMD: 23,444'**
WELL OPERATOR **TUG HILL OPERATING, LLC** DESIGNATED AGENT **DIANNA STAMPER CT CORPORATION SYSTEM**
ADDRESS **1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107** ADDRESS **5400 D BIG TYLER ROAD CHARLESTON, WV 25313**

COUNTY NAME
PERMIT

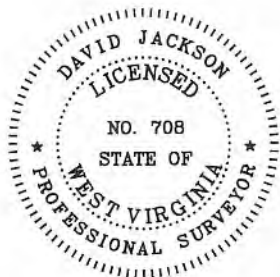
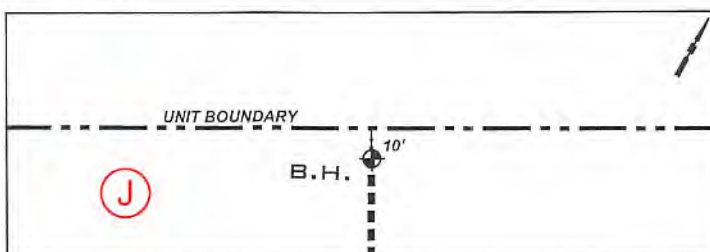
form wv6

**PENDLETON LEASE
WELL N-9HU
351.7220± ACRES**

4705102245

| Number | TAX MAP-PARCEL | SURFACE OWNER | ACRES |
|--------|----------------|---|---------|
| S1 | 05-24-01 | LINDA L. HENDRICKSON | 175.0 |
| S2 | 09-16-05 | ROBERT M. & NANCY R. MCCARDLE | 133.0 |
| S3 | 09-18-03 | WILLIAM B. KLUG ET UX | 1.33 |
| S4 | 09-18-04 | WILLIAM B. KLUG ET UX | 1.0 |
| S5 | 09-16-02 | ROBERT M. & NANCY R. MCCARDLE | 53.40 |
| S6 | 09-16-01 | ROBERT M. & NANCY R. MCCARDLE | 46.80 |
| S7 | 05-16-13 | DAVID ALAN RUBCICH, ET AL | 33.31 |
| S8 | 05-16-12 | LOUIS VAN SCYOC | 10.80 |
| S9 | 09-13-01 | LOUIS VAN SCYOC | 46.13 |
| S10 | 09-13-02 | SYLVIA I. VAN SCYOC AND WONETTA V. & NORMAN G. JOHNSON (LIFE) | 41.5 |
| S11 E | 05-16-11 | GERTRUDE HOLTZ | 9.93 |
| S12 | 09-13-03 | LOUIS VAN SCYOC | 52.40 |
| S13 G | 05-16-09 | LOUIS AULENBACHER | 20.0 |
| S14 | 05-16-10 | FRANK P. LAUTAR, EST. | |
| S15 | 05-16-07 | LOUIS AULENBAUCHER | 50.0 |
| S16 | 09-13-02 | SYLVIA I. VAN SCYOC AND WONETTA V. & NORMAN G. JOHNSON | 8.05 |
| S17 | 05-10-13 | JOSEPH LEE CROW | 12.18 |
| S18 | 05-10-13.1 | DAVID LEE QUIGLEY, JR. | 2.88 |
| S19 | 05-10-19 | BRADLEY L. & CONNIE L. HUBBEARD | 3.209 |
| S20 | 05-10-20 | LOUIS AULENBAUCHER | 3.554 |
| S21 | 05-10-21 | LOUIS AULENBAUCHER | 3.677 |
| S22 | 05-10-22 | LOUIS AULENBAUCHER | 6.461 |
| S23 | 05-10-12.1 | JOHN PAUL SMITH, JR. ET AL | 8.86 |
| S24 | 05-10-10 | LOUIS DELBERT VAN SCYOC | 24.50 |
| S25 | 05-10-09 | HERBERT M. AULENBACHER, JR. | 141.43 |
| S26 | 05-16-03 | DONNA VIVIAN YOHO | 71.205 |
| S27 | 05-16-04 | JOHN SWIERKOS | 0.96 |
| S28 | 05-16-25 | JOHN SWIERKOS | 79.04 |
| S29 F | 05-16-18 | JOHN SWIERKOS | 10.0 |
| S30 D | 05-16-17 | RICHARD D. & JULIA M. REPASKY | 55.34 |
| S31 | 05-16-16 | SOUTHERN COUNTRY FARMS, INC. | 9.75 |
| S32 | 05-17-07 | ALPINE FARM, LLC | 10.8 |
| S33 | 05-17-02 | COLBY HOMER & BELLE M. YOHO | 104.08 |
| S34 | 05-16-21 | JAMES M. RUCKMAN ET UX | 60.75 |
| S35 | 05-17-16 | GLEN A. GUNTO | 9.702 |
| S36 | 05-16-15.1 | GLEN A. GUNTO | 10.17 |
| S37 | 05-17-15 | GLEN A. GUNTO | 10.202 |
| S38 | 05-18-13 | SOUTHERN COUNTRY FARMS, INC. | 11.054 |
| S39 | 05-18-13.9 | ROY & RENEE BUTLER (LIFE) | 9.603 |
| S40 | 05-18-13.4 | RENEE D. STREIGHT BUTLER (LIFE) | 9.938 |
| S41 | 05-17-3.1 | WILBUR L. RIDDLE, ET UX | 10.148 |
| S42 | 05-17-1.6 | LOLA M. SLAUGHTER | 6.347 |
| S43 | 05-17-1.5 | DONNIE R. & LOLA M. SLAUGHTER | 5.607 |
| S44 | 05-17-1.2 | DONNIE R. & LOLA M. SLAUGHTER | 5.073 |
| S45 | 05-17-1.3 | JODY & MICHELLE ANDERSON | 5.00 |
| S46 | 05-17-1.1 | DONNIE R. & LOLA M. SLAUGHTER | 8.076 |
| S47 | 05-17-1.4 | DONNIE R. & LOLA M. SLAUGHTER | 8.844 |
| S48 | 05-17-14 | SOUTHERN COUNTRY FARMS, INC. | 7.314 |
| S49 | 05-17-13 | ROY E. & RENEE D. BUTLER | 5.433 |
| S50 H | 05-16-8 | LOUIS AULENBACHER | 21.0 |
| S51 | 05-10-15 | TERRY A. & JODI L. HARDING | 120.805 |
| S52 J | 05-16-5 | JOHN SWIERKOS | 52.07 |

DETAIL "A"



P.S. 708

David L Jackson



**TUG HILL
OPERATING**

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

WELL PLAT
PAGE 2 OF 3
DATE: 06/13/2019

**PENDLETON LEASE
WELL N-9HU
351.7220± ACRES**

4705 102245

| Lease ID | Tag | Parcel | Grantor, Lessor, Etc. | Deed Book/Page | |
|----------|-----|---------|--|----------------|-----|
| 10*14114 | A | 5-17-6 | ELI & FANNIE MAE WENGERD | 671 | 323 |
| 10*14125 | B | 5-17-4 | SHIBEN ESTATES INC | 695 | 460 |
| 10*14099 | C | 5-17-3 | SOUTHERN COUNTRY FARMS INC | 666 | 489 |
| 10*18126 | D | 5-16-17 | BARBARA ANN ADKINS JOHNSON | 929 | 556 |
| 10*18689 | D | 5-16-17 | THE ESTATE OF ROY JOSEPH LEACH | 936 | 141 |
| 10*19138 | D | 5-16-17 | AARON DEAN LITMAN | 769 | 52 |
| 10*19142 | D | 5-16-17 | GLEN Y MILLER | 772 | 518 |
| 10*19165 | D | 5-16-17 | VICKI LYNN WOOD | 775 | 73 |
| 10*19207 | D | 5-16-17 | MARY VOLTZ | 786 | 296 |
| 10*19642 | D | 5-16-17 | NOEL A PARKS | 944 | 92 |
| 10*21939 | D | 5-16-17 | ULA F NELSON | 960 | 96 |
| 10*22550 | D | 5-16-17 | SHARON TOLER WILLIAMS & HERVY WILLIAMS | 966 | 124 |
| 10*19057 | D | 5-16-17 | JACK MICHAEL FOREMAN | 817 | 640 |
| 10*19063 | D | 5-16-17 | JULIE SPRINGWATER | 818 | 120 |
| 10*19121 | D | 5-16-17 | JOE PAUL WELLMAN MARGARET ANN BONNETT ET AL | 773 | 518 |
| 10*19136 | D | 5-16-17 | WILLIAM L LITMAN | 772 | 90 |
| 10*19132 | D | 5-16-17 | KLOVA ANN MORRIS | 764 | 28 |
| 10*19134 | D | 5-16-17 | REVA JUNE ICARD | 763 | 626 |
| 10*22310 | E | 5-16-11 | THE ROMAN CATHOLIC DIOCESE OF WHEELING-CHARLESTON BY THE MOST REVEREND MICHAEL J BRANSFIELD BISHOP | 964 | 520 |
| 10*21468 | F | 5-16-18 | JOHN A SWIERKOS | 953 | 317 |
| 10*18526 | G | 5-16-9 | ANN TURNER YOUNG SHRIVER | 933 | 591 |
| 10*18597 | G | 5-16-9 | MARK ALLEN LENENBERG | 934 | 638 |
| 10*18636 | G | 5-16-9 | CHERYL STEFFEN AND GREGORY STEFFEN | 936 | 240 |
| 10*18637 | G | 5-16-9 | THOMAS RICHMOND YOUNG ANITA A YOUNG | 936 | 244 |
| 10*19467 | G | 5-16-9 | ROBERT R FISHER AND AUDREY L IRVIN | 942 | 592 |
| 10*19788 | G | 5-16-9 | REX B FISHER AND DEBORAH FISHER | 948 | 295 |
| 10*21014 | G | 5-16-9 | JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN | 946 | 29 |
| 10*21015 | G | 5-16-9 | ROBERT L MCLAUGHLIN | 946 | 339 |
| 10*21189 | G | 5-16-9 | NATALIE GIBBS | 941 | 261 |
| 10*21267 | G | 5-16-9 | JAMES E NICHOLAS AND BEVERLY D NICHOLAS | 943 | 513 |
| 10*21504 | G | 5-16-9 | PAULETA LINDA CHEATHAM AND CARL WOHLERS | 951 | 142 |
| 10*21638 | G | 5-16-9 | THE MILDRED Y MILLS TRUST JULY 5TH 2007 | 956 | 172 |
| 10*21709 | G | 5-16-9 | THOMAS YOUNG AND JANE CLAIRE YOUNG | 959 | 350 |
| 10*21710 | G | 5-16-9 | PENELOPE A JONES | 959 | 355 |
| 10*18339 | G | 5-16-9 | RESOURCE MINERALS HEADWATER I LP | 940 | 448 |
| 10*22295 | G | 5-16-9 | RACHEL B OSTRANDER | 822 | 210 |
| 10*22319 | G | 5-16-9 | SHARON G VAN SCYOC | 822 | 204 |
| 10*22865 | G | 5-16-9 | JAMES H CAMPBELL | 977 | 60 |
| 10*22866 | G | 5-16-9 | MARGARET R DONOFRIO | 977 | 57 |
| 10*18339 | H | 5-16-8 | RESOURCE MINERALS HEADWATER I LP | 940 | 448 |
| 10*18526 | H | 5-16-8 | ANN TURNER YOUNG SHRIVER | 933 | 591 |
| 10*18597 | H | 5-16-8 | MARK ALLEN LENENBERG | 934 | 638 |
| 10*18636 | H | 5-16-8 | CHERYL STEFFEN AND GREGORY STEFFEN | 936 | 240 |
| 10*18637 | H | 5-16-8 | THOMAS RICHMOND YOUNG ANITA A YOUNG | 936 | 244 |
| 10*19467 | H | 5-16-8 | ROBERT R FISHER AND AUDREY L IRVIN | 942 | 592 |
| 10*19788 | H | 5-16-8 | REX B FISHER AND DEBORAH FISHER | 948 | 295 |
| 10*21014 | H | 5-16-8 | JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN | 946 | 29 |
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| 10*21267 | H | 5-16-8 | JAMES E NICHOLAS AND BEVERLY D NICHOLAS | 943 | 513 |
| 10*21504 | H | 5-16-8 | PAULETA LINDA CHEATHAM AND CARL WOHLERS | 951 | 142 |
| 10*21638 | H | 5-16-8 | THE MILDRED Y MILLS TRUST JULY 5TH 2007 | 956 | 172 |
| 10*21709 | H | 5-16-8 | THOMAS YOUNG AND JANE CLAIRE YOUNG | 959 | 350 |
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| 10*22295 | H | 5-16-8 | RACHEL B OSTRANDER | 822 | 210 |
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| 10*22865 | H | 5-16-8 | JAMES H CAMPBELL | 977 | 60 |
| 10*22866 | H | 5-16-8 | MARGARET R DONOFRIO | 977 | 57 |
| 10*21468 | I | 5-16-6 | JOHN A SWIERKOS | 953 | 317 |
| 10*14919 | J | 5-16-5 | CHESTNUT HOLDINGS INC | 836 | 117 |



P.S. 708 *David L Jackson*



**TUG HILL
OPERATING**

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

WELL PLAT
PAGE 3 OF 3
DATE: 06/13/2019

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

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

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

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

*See attached pages


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

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

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

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 Region

4705102245

| Lease ID | Parcel | Tag | Grantor, Lessor, Etc. | Grantee, Lessee, Etc. | Royalty | Deed Book/Page | | Assignment | Assignment | Assignment | Assignment | Assignment |
|----------|---------|-----|--|----------------------------|---------|----------------|-----|------------|------------|--|--|---|
| 10*14114 | 5-17-6 | A | ELI & FANNIE MAE WENGERD | GASTAR EXPLORATION USA INC | 1/8+ | 671 | 323 | N/A | N/A | Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353 | Merger of Gastar Exploration Inc & Gastar Exploration USA Inc: 21/41 | Gastar Exploration Inc to TH Exploration II LLC: 36/9 |
| 10*14125 | 5-17-4 | B | SHIBEN ESTATES INC | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 460 | N/A | N/A | Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353 | Merger of Gastar Exploration Inc & Gastar Exploration USA Inc: 21/41 | Gastar Exploration Inc to TH Exploration II LLC: 36/9 |
| 10*14099 | 5-17-3 | C | SOUTHERN COUNTRY FARMS INC | GASTAR EXPLORATION USA INC | 1/8+ | 666 | 489 | N/A | N/A | Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353 | Merger of Gastar Exploration Inc & Gastar Exploration USA Inc: 21/41 | Gastar Exploration Inc to TH Exploration II LLC: 36/9 |
| 10*18126 | 5-16-17 | D | BARBARA ANN ADKINS JOHNSON | TH EXPLORATION LLC | 1/8+ | 929 | 556 | N/A | N/A | N/A | N/A | N/A |
| 10*18689 | 5-16-17 | D | THE ESTATE OF ROY JOSEPH LEACH | TH EXPLORATION LLC | 1/8+ | 936 | 141 | N/A | N/A | N/A | N/A | N/A |
| 10*19138 | 5-16-17 | D | AARON DEAN LITMAN | CHEVRON USA INC | 1/8+ | 769 | 52 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19142 | 5-16-17 | D | GLEN Y MILLER | CHEVRON USA INC | 1/8+ | 772 | 518 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19165 | 5-16-17 | D | VICKI LYNN WOOD | CHEVRON USA INC | 1/8+ | 775 | 73 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19207 | 5-16-17 | D | MARY VOLTZ | CHEVRON USA INC | 1/8+ | 786 | 296 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19642 | 5-16-17 | D | NOEL A PARKS | TH EXPLORATION LLC | 1/8+ | 944 | 92 | N/A | N/A | N/A | N/A | N/A |
| 10*21939 | 5-16-17 | D | ULA F NELSON | TH EXPLORATION LLC | 1/8+ | 960 | 96 | N/A | N/A | N/A | N/A | N/A |
| 10*22550 | 5-16-17 | D | SHARON TOLER WILLIAMS & HERVY WILLIAMS | TH EXPLORATION LLC | 1/8+ | 966 | 124 | N/A | N/A | N/A | N/A | N/A |
| 10*19057 | 5-16-17 | D | JACK MICHAEL FOREMAN | CHEVRON USA INC | 1/8+ | 817 | 640 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19063 | 5-16-17 | D | JULIE SPRINGWATER | CHEVRON USA INC | 1/8+ | 818 | 120 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19121 | 5-16-17 | D | JOE PAUL WELLMAN MARGARET ANN BONNETT ET AL | CHEVRON USA INC | 1/8+ | 773 | 518 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19136 | 5-16-17 | D | WILLIAM L LITMAN | CHEVRON USA INC | 1/8+ | 772 | 90 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19132 | 5-16-17 | D | KLOVA ANN MORRIS | CHEVRON USA INC | 1/8+ | 764 | 28 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*19134 | 5-16-17 | D | REVA JUNE ICARD | CHEVRON USA INC | 1/8+ | 763 | 626 | N/A | N/A | N/A | N/A | Chevron USA Inc to TH Exploration LLC: 40/127 |
| 10*22310 | 5-16-11 | E | THE ROMAN CATHOLIC DIOCESE OF WHEELING-CHARLESTON BY THE MOST REVEREND MICHAEL J BRANSFIELD BISHOP | TH EXPLORATION LLC | 1/8+ | 964 | 520 | N/A | N/A | N/A | N/A | N/A |

4705102245

Department of Environmental Protection

Department of Environmental Protection

| Lease ID | Parcel | Tag | Grantor, Lessor, etc. | Grantee, Lessee, etc. | Royalty | Deed Book/Page | | Assignment | Assignment | Assignment | Assignment | Assignment |
|----------|---------|-----|---|------------------------|---------|----------------|-----|------------|---|--|--|---|
| 10*21468 | 5-16-18 | F | JOHN A SWIERKOS | TH EXPLORATION LLC | 1/8+ | 953 | 317 | N/A | N/A | N/A | N/A | N/A |
| 10*18526 | 5-16-9 | G | ANN TURNER YOUNG SHRIVER | TH EXPLORATION LLC | 1/8+ | 933 | 591 | N/A | N/A | N/A | N/A | N/A |
| 10*18597 | 5-16-9 | G | MARK ALLEN LENENBERG | TH EXPLORATION LLC | 1/8+ | 934 | 638 | N/A | N/A | N/A | N/A | N/A |
| 10*18636 | 5-16-9 | G | CHERYL STEFFEN AND GREGORY STEFFEN | TH EXPLORATION LLC | 1/8+ | 936 | 240 | N/A | N/A | N/A | N/A | N/A |
| 10*18637 | 5-16-9 | G | THOMAS RICHMOND YOUNG ANITA A YOUNG | TH EXPLORATION LLC | 1/8+ | 936 | 244 | N/A | N/A | N/A | N/A | N/A |
| 10*19467 | 5-16-9 | G | ROBERT R FISHER AND AUDREY L IRVIN | TH EXPLORATION LLC | 1/8+ | 942 | 592 | N/A | N/A | N/A | N/A | N/A |
| 10*19788 | 5-16-9 | G | REX B FISHER AND DEBORAH FISHER | TH EXPLORATION LLC | 1/8+ | 948 | 295 | N/A | N/A | N/A | N/A | N/A |
| 10*21014 | 5-16-9 | G | JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN | TH EXPLORATION LLC | 1/8+ | 946 | 29 | N/A | N/A | N/A | N/A | N/A |
| 10*21015 | 5-16-9 | G | ROBERT L MCLAUGHLIN | TH EXPLORATION LLC | 1/8+ | 946 | 339 | N/A | N/A | N/A | N/A | N/A |
| 10*21189 | 5-16-9 | G | NATALIE GIBBS | TH EXPLORATION LLC | 1/8+ | 941 | 261 | N/A | N/A | N/A | N/A | N/A |
| 10*21267 | 5-16-9 | G | JAMES E NICHOLAS AND BEVERLY D NICHOLAS | TH EXPLORATION LLC | 1/8+ | 943 | 513 | N/A | N/A | N/A | N/A | N/A |
| 10*21504 | 5-16-9 | G | PAULETA LINDA CHEATHAM AND CARL WOHLERS | TH EXPLORATION LLC | 1/8+ | 951 | 142 | N/A | N/A | N/A | N/A | N/A |
| 10*21638 | 5-16-9 | G | THE MILDRED Y MILLS TRUST JULY 5TH 2007 | TH EXPLORATION LLC | 1/8+ | 956 | 172 | N/A | N/A | N/A | N/A | N/A |
| 10*21709 | 5-16-9 | G | THOMAS YOUNG AND JANE CLAIRE YOUNG | TH EXPLORATION LLC | 1/8+ | 959 | 350 | N/A | N/A | N/A | N/A | N/A |
| 10*21710 | 5-16-9 | G | PENELOPE A JONES | TH EXPLORATION LLC | 1/8+ | 959 | 355 | N/A | N/A | N/A | N/A | N/A |
| 10*18339 | 5-16-9 | G | RESOURCE MINERALS HEADWATER I LP | TH EXPLORATION LLC | 1/8+ | 940 | 448 | N/A | N/A | N/A | N/A | N/A |
| 10*22295 | 5-16-9 | G | RACHEL B OSTRANDER | FOSSIL CREEK OHIO, LLC | 1/8+ | 822 | 210 | N/A | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/54 | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 34/266 | Fossil Creek Ohio LLC & Gulfport Energy Corporation to American Petroleum Partners Operating LLC: 36/588 | American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109 |
| 10*22319 | 5-16-9 | G | SHARON G VAN SCYOC | FOSSIL CREEK OHIO, LLC | 1/8+ | 822 | 204 | N/A | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/54 | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 34/266 | Fossil Creek Ohio LLC & Gulfport Energy Corporation to American Petroleum Partners Operating LLC: 36/588 | American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109 |
| 10*22865 | 5-16-9 | G | JAMES H CAMPBELL | TH EXPLORATION LLC | 1/8+ | 977 | 60 | N/A | N/A | N/A | N/A | N/A |
| 10*22866 | 5-16-9 | G | MARGARET R DONOFRIO | TH EXPLORATION LLC | 1/8+ | 977 | 57 | N/A | N/A | N/A | N/A | N/A |
| 10*18339 | 5-16-8 | H | RESOURCE MINERALS HEADWATER I LP | TH EXPLORATION LLC | 1/8+ | 940 | 448 | N/A | N/A | N/A | N/A | N/A |
| 10*18526 | 5-16-8 | H | ANN TURNER YOUNG SHRIVER | TH EXPLORATION LLC | 1/8+ | 933 | 591 | N/A | N/A | N/A | N/A | N/A |
| 10*18597 | 5-16-8 | H | MARK ALLEN LENENBERG | TH EXPLORATION LLC | 1/8+ | 934 | 638 | N/A | N/A | N/A | N/A | N/A |
| 10*18636 | 5-16-8 | H | CHERYL STEFFEN AND GREGORY STEFFEN | TH EXPLORATION LLC | 1/8+ | 936 | 240 | N/A | N/A | N/A | N/A | N/A |
| 10*18637 | 5-16-8 | H | THOMAS RICHMOND YOUNG ANITA A YOUNG | TH EXPLORATION LLC | 1/8+ | 936 | 244 | N/A | N/A | N/A | N/A | N/A |
| 10*19467 | 5-16-8 | H | ROBERT R FISHER AND AUDREY L IRVIN | TH EXPLORATION LLC | 1/8+ | 942 | 592 | N/A | N/A | N/A | N/A | N/A |
| 10*19788 | 5-16-8 | H | REX B FISHER AND DEBORAH FISHER | TH EXPLORATION LLC | 1/8+ | 948 | 295 | N/A | N/A | N/A | N/A | N/A |
| 10*21014 | 5-16-8 | H | JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN | TH EXPLORATION LLC | 1/8+ | 946 | 29 | N/A | N/A | N/A | N/A | N/A |
| 10*21015 | 5-16-8 | H | ROBERT L MCLAUGHLIN | TH EXPLORATION LLC | 1/8+ | 946 | 339 | N/A | N/A | N/A | N/A | N/A |
| 10*21189 | 5-16-8 | H | NATALIE GIBBS | TH EXPLORATION LLC | 1/8+ | 941 | 261 | N/A | N/A | N/A | N/A | N/A |
| 10*21267 | 5-16-8 | H | JAMES E NICHOLAS AND BEVERLY D NICHOLAS | TH EXPLORATION LLC | 1/8+ | 943 | 513 | N/A | N/A | N/A | N/A | N/A |
| 10*21504 | 5-16-8 | H | PAULETA LINDA CHEATHAM AND CARL WOHLERS | TH EXPLORATION LLC | 1/8+ | 951 | 142 | N/A | N/A | N/A | N/A | N/A |
| 10*21638 | 5-16-8 | H | THE MILDRED Y MILLS TRUST JULY 5TH 2007 | TH EXPLORATION LLC | 1/8+ | 956 | 172 | N/A | N/A | N/A | N/A | N/A |
| 10*21709 | 5-16-8 | H | THOMAS YOUNG AND JANE CLAIRE YOUNG | TH EXPLORATION LLC | 1/8+ | 959 | 350 | N/A | N/A | N/A | N/A | N/A |
| 10*21710 | 5-16-8 | H | PENELOPE A JONES | TH EXPLORATION LLC | 1/8+ | 959 | 355 | N/A | N/A | N/A | N/A | N/A |

4705102245

WW-6A1 Supplement

Operator's Well No. Pendleton N - 9HU

| Lease ID | Parcel | Tag | Grantor, Lessor, Etc. | Grantee, Lessee, Etc. | Royalty | Deed Book/Page | | Assignment | Assignment | Assignment | Assignment | Assignment |
|----------|--------|-----|-----------------------|----------------------------|---------|----------------|-----|------------|---|--|--|---|
| 10*22295 | 5-16-8 | H | RACHEL B OSTRANDER | FOSSIL CREEK OHIO, LLC | 1/8+ | 822 | 210 | N/A | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/54 | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 34/266 | Fossil Creek Ohio LLC & Gulfport Energy Corporation to American Petroleum Partners Operating LLC: 36/588 | American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109 |
| 10*22319 | 5-16-8 | H | SHARON G VAN SCYOC | FOSSIL CREEK OHIO, LLC | 1/8+ | 822 | 204 | N/A | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/54 | Fossil Creek Ohio LLC to Gulfport Energy Corporation: 34/266 | Fossil Creek Ohio LLC & Gulfport Energy Corporation to American Petroleum Partners Operating LLC: 36/588 | American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109 |
| 10*22865 | 5-16-8 | H | JAMES H CAMPBELL | TH EXPLORATION LLC | 1/8+ | 977 | 60 | N/A | N/A | N/A | N/A | N/A |
| 10*22866 | 5-16-8 | H | MARGARET R DONOFRIO | TH EXPLORATION LLC | 1/8+ | 977 | 57 | N/A | N/A | N/A | N/A | N/A |
| 10*21468 | 5-16-6 | I | JOHN A SWIERKOS | TH EXPLORATION LLC | 1/8+ | 953 | 317 | N/A | N/A | N/A | N/A | N/A |
| 10*14919 | 5-16-5 | J | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION USA INC | 1/8+ | 836 | 117 | N/A | N/A | Gastar Exploration USA Inc to Atinum Marcellus I LLC: 32/428 | Merger of Gastar Exploration Inc & Gastar Exploration USA Inc: 21/41 | Gastar Exploration Inc to TH Exploration II LLC: 36/9 |

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

BOOK 0040 PAGE 0127

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

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

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

ASHLEY FAVINGER
AMERICAN PETROLEUM PARTNERS OPERATING LLC.
4600 J BARRY COURT STE 310
CANDONSBURG PA 15317-5854

BOOK 0042 PAGE 0109

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (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 December 12, 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"); 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.

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.

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

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the

Marshall County
Jan Pest, Clerk
Instrument 1440860
05/25/2018 @ 02:36:09 PM
ASSIGNMENTS
Book 42 @ Page 109
Pages Recorded 9
Recording Cost \$ 15.00

WI-AGIR-0009

4705102245
4705102245



June 12, 2019

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

RE: Pendleton N-9HU

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Pendleton N-9HU well plat.

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

Sincerely,

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

Amy L. Miller
Permitting Specialist – Appalachia Region

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

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

Date of Notice Certification: 05/30/2019

API No. 47- 051 -
Operator's Well No. Pendleton N-9HU
Well Pad Name: Pendleton

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>522,786.46</u> |
| County: | <u>Marshall</u> | UTM NAD 83 Northing: | <u>4,400,433.30</u> |
| District: | <u>Franklin</u> | Public Road Access: | <u>Rinos Ridge Road (County Route 76)</u> |
| Quadrangle: | <u>Glen Easton 7.5'</u> | Generally used farm name: | <u>Alpine Farm, LLC</u> |
| Watershed: | <u>Middle Fish Creek</u> | | |

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

| | |
|--|---|
| <p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p> | <p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> |
|--|---|

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.

RECEIVED
Office of Oil and Gas

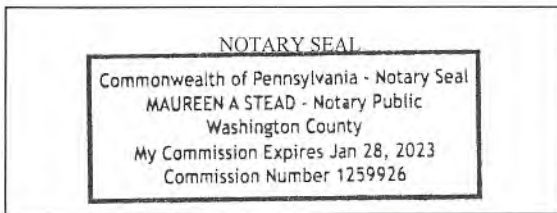
JUN 14 2019

WW-6AC
(1/12)

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 <i>Amy Miller</i></u> | | <u>Canonsburg, PA 15317</u> |
| Its: | <u>Permitting Specialist - Appalachia Region</u> | Facsimile: | <u>724-338-2030</u> |
| Telephone: | <u>724-749-8388</u> | Email: | <u>amiller@tug-hill.com</u> |



Subscribed and sworn before me this 30 day of MAY, 2019.
Maureen A Stead Notary Public
My Commission Expires 1/28/23

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.

RECEIVED
Office of Oil and Gas

JUN 14 2019

WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

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: 5/29/2019 Date Permit Application Filed: 5/30/2019

Notice of:

- [X] 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 [X] 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.

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

[X] SURFACE OWNER(s)
Name: Elli and Fannie Mae Wengard (Well Pad and Access Road) /
Address: 7932 TWP Road 662
Dundee, OH 44624-9602
Name: _____
Address: _____

[X] SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Ray J. Miller /
Address: 1538 Township Road 660
Dundee, OH 44624
Name: _____
Address: _____

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

[X] COAL OWNER OR LESSEE
Name: Consol Energy, LLC Attn: Casey Saunders
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

[] COAL OPERATOR
Name: _____
Address: _____

[] SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: No water purveyors within 2000'
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(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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WW-6A
(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

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 with 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 -
OPERATOR WELL NO. Pendleton N-9HU
Well Pad Name: Pendleton

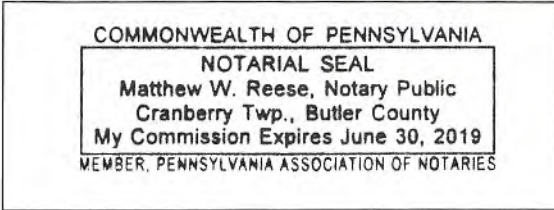
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 29 day of May, 2019.

[Signature] Notary Public

My Commission Expires 6-30-2019

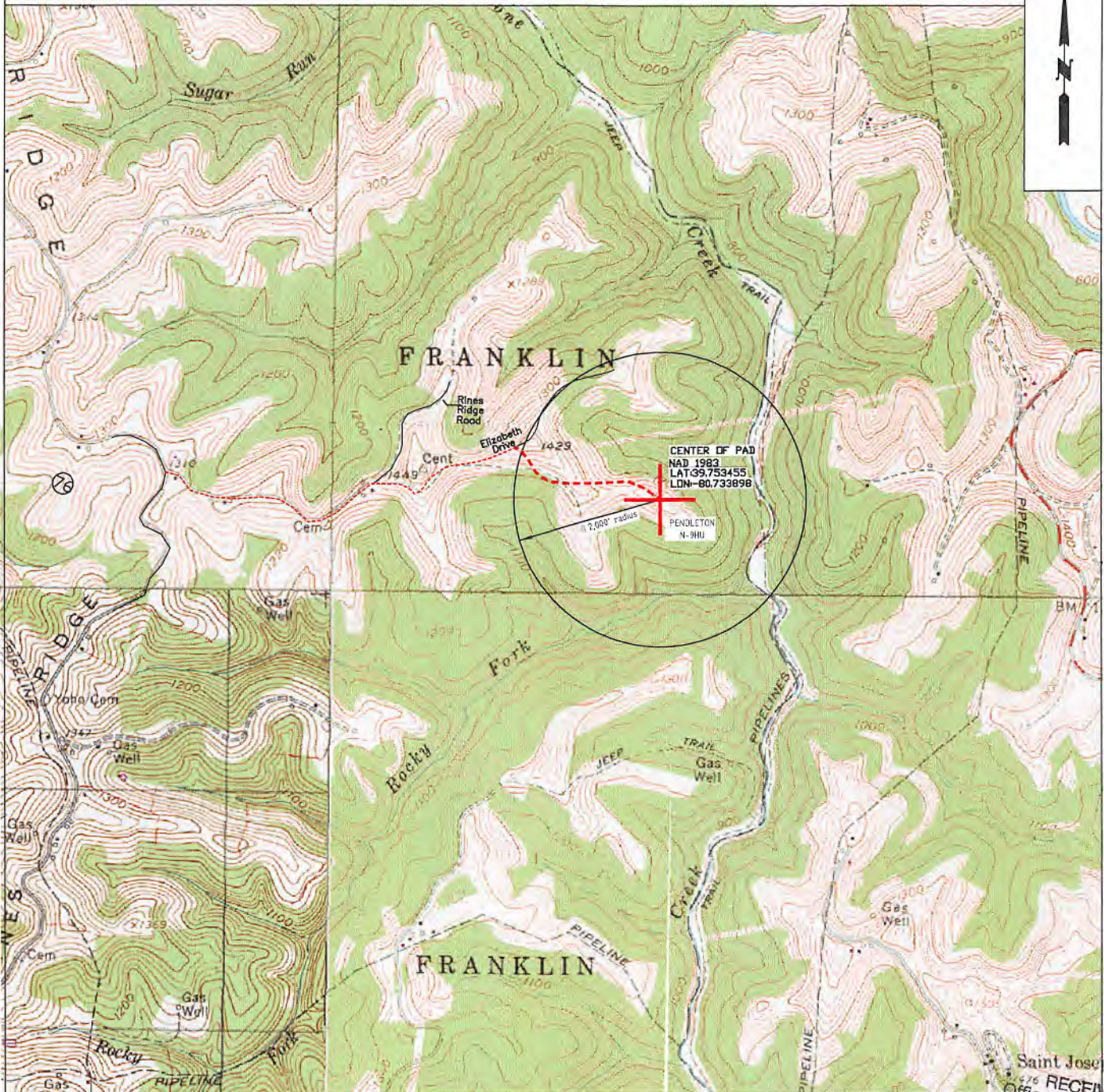
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WW-6A

PROPOSED PENDLETON N-9HU

SUPPLEMENT PG. 1

THERE APPEAR TO BE NO (0) WATER SOURCES WITHIN 2,000'.



**TUG HILL
OPERATING**

| | | | |
|--|-----------|----------------------|------------------|
| OPERATOR | 494510851 | TOPO SECTION | LEASE NAME |
| TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317 | | GLEN EASTON 7.5' | PENDLETON |
| | | SCALE: 1" = 2000' | DATE: 05-09-2019 |

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WW-6A3
(1/12)

Operator Well No. Pendleton N-9HU

**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: 1/28/2019 **Date of Planned Entry:** 2/8/2019

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: Eli and Fannie Mae Wengerd (Well Pad and Access Road)
Address: 7932 TWP Road 662
Dundee, OH 44624-9602

Name: Ray J. Miller (Access Road)
Address: 1538 Township Road 660
Dundee, OH 44624

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: CONSOL Energy, LLC Attn: Casey Saunders
Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(S)

Name: Eli and Fannie Mae Wengerd
Address: 7932 TWP Road 662
Dundee, OH 44624-9602

*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>39.75344; -80.73397</u> |
| County: <u>Marshall</u> | Public Road Access: <u>Rines Ridge Road (County Route 76)</u> |
| District: <u>Franklin</u> | Watershed: <u>Fish Creek</u> |
| Quadrangle: <u>Glen Easton 7.5'</u> | Generally used farm name: <u>Eli and Fannie Mae Wengerd</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: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hillop.com

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

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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
(1/12)

Operator Well No. Pendleton N-9HU

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: 05/29/2019 **Date Permit Application Filed:** 05/30/2019

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

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: Eli and Fannie Mae Wengard (Well Pad and Access Road)
Address: 7932 TWP Road 662
Dundee, OH 44624-9602

Name: Ray J. Miller (Access Road)
Address: 1538 Township Road 660
Dundee, OH 44624

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>522,795.84</u> |
| County: | <u>Marshall</u> | | Northing: | <u>4,400,427.62</u> |
| District: | <u>Franklin</u> | Public Road Access: | <u>Rines Ridge Road (County Route 76)</u> | |
| Quadrangle: | <u>Glen Easton 7.5'</u> | Generally used farm name: | <u>Alpine Farm, LLC</u> | |
| Watershed: | <u>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.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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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

Byrd E. White, III
 Secretary of Transportation

June 11, 2019

Jimmy Wriston, P. E.
 Deputy Secretary/
 Acting Commissioner

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

Subject: DOH Permit for the Pendleton Pad, Marshall County
 Pendleton N-9HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2010-0110 issued to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 76 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. 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 October 1, 2018.

Very Truly Yours,

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

Cc: Amy Miller
 Tug Hill Operating
 CH, OM, D-6
 File

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Pendleton N-9HU

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

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JUN 14 2019
WV Department of
Environmental Protection

WEST VIRGINIA COUNTY MAP



APPROVED WVDEP OOG

WVS 6/24/2019

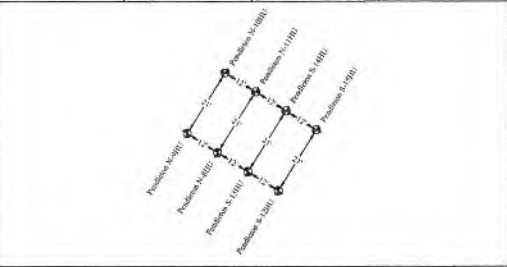
Pendleton Well Site
 Site Design, Construction Plan. &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Franklin District
 Latitude 39.75358810°
 Longitude -80.73421256°
 Middle Fish Creek Watershed

Pertinent S
 Pendlet
 Emergency Nu
 Franklin District,
 Watershed: Middl
 Tug Hill Connect N

| Property Owner I | |
|-------------------|-------------|
| Franklin | |
| Wangard & Miller | 17.4 |
| Wangard & Miller | 17.4 |
| Wangard | 17.4 |
| Total (Ac) | 51.8 |

Exhibit A: Final Design: Issue for Permitting

| County Road Entrance | Site Entrance | Center of Well Pad |
|--|--|--|
| WV-NAD 83 E 409481.23 WV-NAD 83 E 161480.07 WV-NAD 83 E 485810.81 WV-NAD 83 E 144650.58 WV-NAD 83 E 393431.01 WV-NAD 83 E 802570.98 WV-NAD 83 E 3973423.80 WV-NAD 83 E 4075100.81 UTM 17 NAD 83 N 440018.88 UTM 17 NAD 83 E 320741.96 | WV-NAD 83 N 48927.39 WV-NAD 83 E 163963.34 WV-NAD 83 E 48989.95 WV-NAD 83 E 245340.72 WV-NAD 83 E 3975256.69 WV-NAD 83 E 4074102.64 WV-NAD 83 E 3975232.88 WV-NAD 83 E 4074121.06 UTM 17 NAD 83 N 440042.28 UTM 17 NAD 83 E 322348.89 Prod Elev: 2271.82 | WV-NAD 83 N 48978.71 WV-NAD 83 E 162151.22 WV-NAD 83 N 48989.22 WV-NAD 83 E 161507.58 WV-NAD 83 E 3975280.10 WV-NAD 83 E 4074121.26 WV-NAD 83 E 3975232.88 WV-NAD 83 E 4074141.76 UTM 17 NAD 83 N 440042.28 UTM 17 NAD 83 E 322348.89 Prod Elev: 2271.82 |

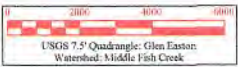


| Well | Well | Well | Well |
|--|--|--|--|
| Pendleton S-21HU WV-NAD 83 E 409481.23 WV-NAD 83 E 161480.07 WV-NAD 83 N 48927.39 WV-NAD 83 E 144650.58 WV-NAD 83 E 393431.01 WV-NAD 83 E 802570.98 WV-NAD 83 E 3973423.80 WV-NAD 83 E 4075100.81 UTM 17 NAD 83 N 440018.88 UTM 17 NAD 83 E 320741.96 | Pendleton S-22HU WV-NAD 83 E 409481.23 WV-NAD 83 E 161480.07 WV-NAD 83 N 48927.39 WV-NAD 83 E 144650.58 WV-NAD 83 E 393431.01 WV-NAD 83 E 802570.98 WV-NAD 83 E 3973423.80 WV-NAD 83 E 4075100.81 UTM 17 NAD 83 N 440018.88 UTM 17 NAD 83 E 320741.96 | Pendleton S-23HU WV-NAD 83 E 409481.23 WV-NAD 83 E 161480.07 WV-NAD 83 N 48927.39 WV-NAD 83 E 144650.58 WV-NAD 83 E 393431.01 WV-NAD 83 E 802570.98 WV-NAD 83 E 3973423.80 WV-NAD 83 E 4075100.81 UTM 17 NAD 83 N 440018.88 UTM 17 NAD 83 E 320741.96 | Pendleton S-24HU WV-NAD 83 E 409481.23 WV-NAD 83 E 161480.07 WV-NAD 83 N 48927.39 WV-NAD 83 E 144650.58 WV-NAD 83 E 393431.01 WV-NAD 83 E 802570.98 WV-NAD 83 E 3973423.80 WV-NAD 83 E 4075100.81 UTM 17 NAD 83 N 440018.88 UTM 17 NAD 83 E 320741.96 |



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| Pendleton | |
|--------------|-------------|
| Well Pad | 17.4 |
| Access Road | 17.4 |
| Access Road | 17.4 |
| Access Road | 17.4 |
| Access Road | 17.4 |
| Access Road | 17.4 |
| Total | 17.4 |
| Total | 17.4 |



Project Contacts

Tug Hill Operating
 Jonathan White - Regulatory Analyst
 724-885-2040 Cell: 334-489-7416 Cell
 Brent Baker - V.P. Production
 817-632-5300 Cell
 Zachary Barnhart/Field
 304-318-6597 Cell

Service and Engineers
 Kenard, Kelly
 304-318-6596 Cell
 John P. Sew
 304-452-2929 Cell
 Zedary Barnhart/Field
 304-318-6597 Cell

Tug Hill Operating, LLC
 190 Southpage Blvd.
 Southpage Plaza N, Suite 200
 Coalinga, CA 93317

Environmental:
 Wetland Determinations as provided by A/E/C Ecology dated January 30, 2019

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

MISS UTILITY OF WEST VIRGINIA
 1-800-245-4848
 www.missutility.com
 Before you dig, call 811. It's the law.
 Call before you dig.

Approach Routes:
 From the intersection of WV Rt 7 and OH Rt 7 near New Martinsville, WV, Travel North on WV Rt 7 for 6.1 mi. Turn Right onto Co Rd 7 (Wells Hill Rd). Follow Co Rd 7 for 2.53 mi. Turn Right onto Co Rd 78 (Waynes Ridge). Follow Co Rd 78 for 0.8 mi. Turn Right onto Co Rd 29 (Elizabeth Dr). Follow Co Rd 29 for 2.1 mi. Turn Left onto Co Rd 76 (Waynes Ridge). Follow Co Rd 76 for 1.9 mi. Turn Right onto the existing access road (Elizabeth Dr). Follow the existing access road for 1.0 mi. The site entrance will be on the Right (southeast) side of the road.

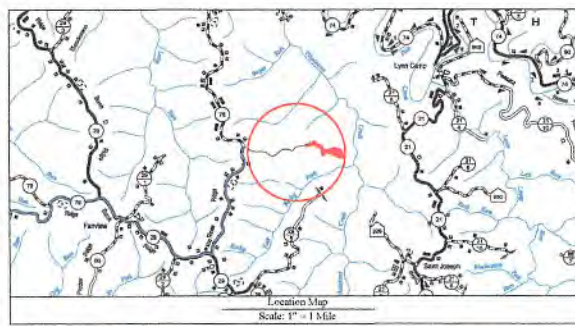
Floodplain Conditions

| | |
|--|----------------|
| AD with construction activities take place in a floodplain | NO |
| Permit needed from state/federal coordinator | NO |
| Floodplain zone | X |
| REP-RAJ Study completed | NA |
| Floodplain elevation/stage | 15.4 |
| Floodplain elevation/stage | 3.035 P. 10755 |
| Average of elevation in flood map | N/A |

The WV Mines Website was consulted. Previous mining activities are not within the AOU.

WVDEP Website files show that there are no active and/or abandoned gas wells within the AOU.

| Site Locations (NAD 27) | | | Site Locations (NAD 83) | | |
|-------------------------|----------------|-----------------|-------------------------|----------------|-----------------|
| Structure | Latitude (DMS) | Longitude (DMS) | Structure | Latitude (DMS) | Longitude (DMS) |
| County Road Entrance | 39 75 35.881 | -80 73 42.126 | County Road Entrance | 39 75 35.881 | -80 73 42.126 |
| Site Entrance | 39 75 35.881 | -80 73 42.126 | Site Entrance | 39 75 35.881 | -80 73 42.126 |
| Center of Well Pad | 39 75 35.881 | -80 73 42.126 | Center of Well Pad | 39 75 35.881 | -80 73 42.126 |



Well Location Restrictions

All Pad construction complies with the following restrictions:

- *25' from an existing well or developed spring and for terrain or denatured areola.
- *62' from an occupied dwelling on any greater than 2,500 ft² used for poultry or dairy measured from the center of the pad.
- *107' from the edge of disturbance to wetlands, perennial streams, natural or artificial lakes, pond or reservoir.
- *200' from the edge of disturbance to a naturally riparianizing tree reserve.
- *1,000' of a surface or ground water (under a public water supply)

(Well Location Restrictions of WV Code 22-6A-12)

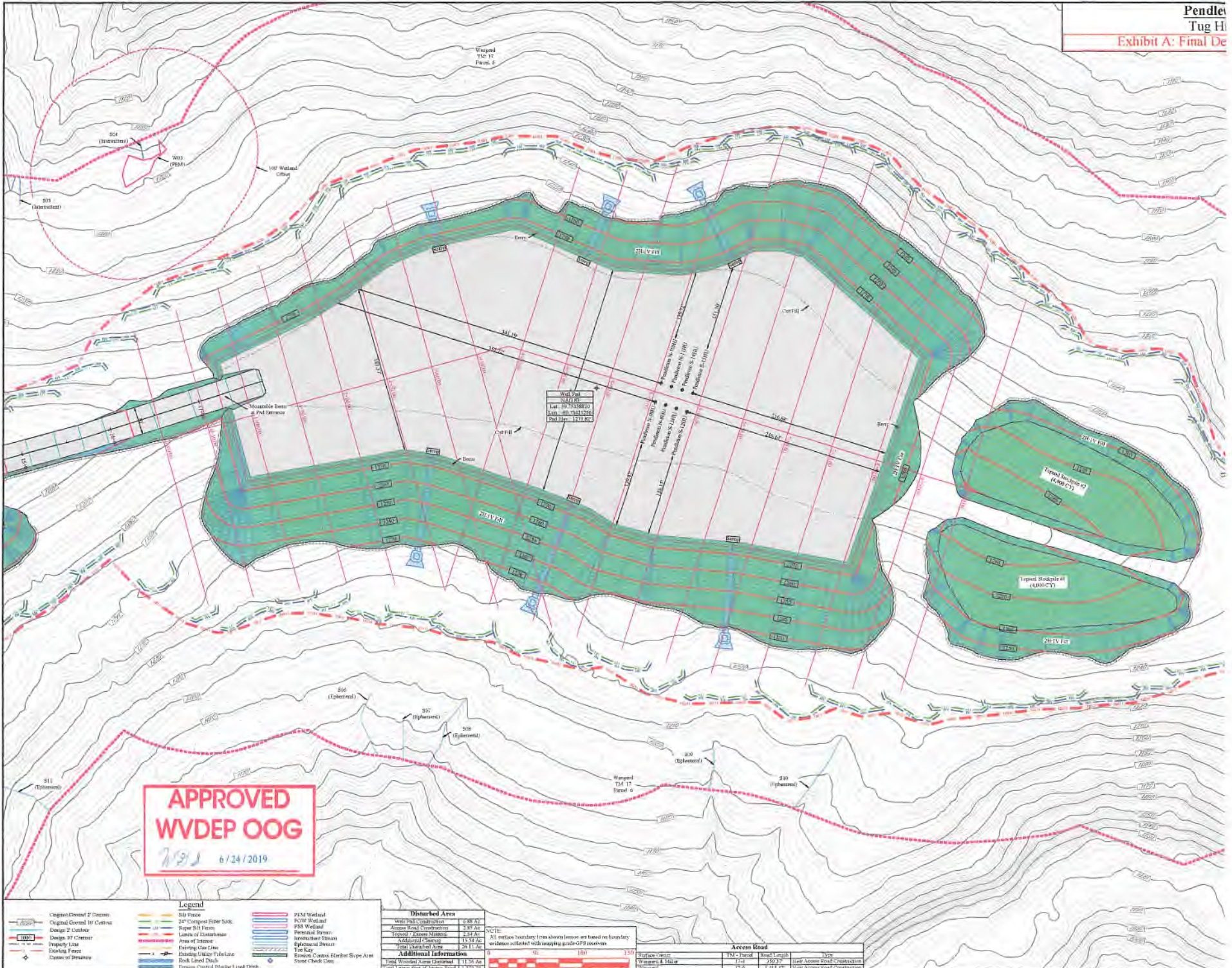
Design Certificate

The design, construction and other information attached hereto has been prepared in accordance with the West Virginia Code of Professional Practice, Office of Professional Engineers.

All Plans, Sheets, and Reference Diagrams provided in this design constitute a complete set of plans. A combination of plans is necessary to construct the site as an entire with the design.

Zachary Barnhart/Field
 Kelly Baker/Field
 Date: 6/24/2019

22214
 STATE OF WEST VIRGINIA
 PROFESSIONAL ENGINEERS



APPROVED
WVDEP OOG
7/9/19 6/24/2019

Legend

| | | |
|------------------------------|------------------------------------|--------------------------------------|
| Original Contour 2' Contour | 50' Fence | 100' Wetland |
| Original Contour 10' Contour | 20" Copper Pipe S&K | 100' Wetland |
| Design 10' Contour | Paper Roll Fence | FBS Wetland |
| Design 10' Contour | Area of Disturbance | Proposed Stream |
| Design 10' Contour | Area of Interest | Interruption Stream |
| Design 10' Contour | Existing Gas Line | Epifaunal Deposit |
| Design 10' Contour | Existing Utility Pipeline | Tree Log |
| Design 10' Contour | Rock Lined Ditch | Erosion Control Elevation Slope Area |
| Design 10' Contour | Erosion Control Blanket Load Thrch | Stream Check Dam |

Disturbed Area

| | |
|-----------------------------|-----------------|
| Wetland | 0.08 AC |
| Acacia Road Construction | 2.87 AC |
| Proposed Access Road | 2.84 AC |
| Additional Area | 13.51 AC |
| Total Disturbed Area | 19.30 AC |

Additional Information

Total Wetland Area Impacted: 11.26 AC
Total Stream Feet of Access Road: 1,712.72'

NOTE:
All surface boundaries from survey images are based on historical evidence collected with mapping grade GPS receivers

Access Road

| Surface | TN - Pavement | Road Length | Days |
|---------|---------------|-------------|------|
| Wetland | 1.2 | 1,272' | 1 |
| Wetland | 1.0 | 1,213.72' | 1 |