



west virginia department of environmental protection

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

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

Wednesday, August 23, 2017
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
550 BAILEY AVENUE, SUITE 510

FORT WORTH, TX 76107

Re: Permit approval for HEAVEN HILL 3-1HM
47-051-01935-00-00

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

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

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



James A. Martin
Chief

Operator's Well Number: HEAVEN HILL 3-1HM
Farm Name: WHITLATCH, RICKY L.
U.S. WELL NUMBER: 47-051-01935-00-00
Horizontal 6A / New Drill
Date Issued: 8/23/2017

Promoting a healthy environment.

08/25/2017

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.

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

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 Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Heaven Hill 3-1HM Well Pad Name: Heaven Hill 3

3) Farm Name/Surface Owner: Ricky L. Whitlatch Public Road Access: Yeater Land CR 21/11

4) Elevation, current ground: 1339' Elevation, proposed post-construction: 1326'

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

Other _____

(b) If Gas Shallow x Deep _____

Horizontal X _____

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6724 - 6776' thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,876'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14,662'

11) Proposed Horizontal Leg Length: 6,633'

12) Approximate Fresh Water Strata Depths: 70', 1038'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 946' and Pittsburgh Coal - 1031'

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 X No _____

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1031' TVD and 308' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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WW-6B
(04/15)

API NO. 47-051 047-051-01935
 OPERATOR WELL NO. Heaven Hill 3-1HM
 Well Pad Name: Heaven Hill 3

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	125'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,130'	1,120'	1128ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,130'	1,120'	1128ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,815'	2,805'	919ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,672'	14,662'	3760ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,529'	
Liners							

ju
4/21/17

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
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. Heaven Hill 3-1HM

Well Pad Name: Heaven Hill 3

JW
4/12/17

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

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

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

Well to be completed with approximately 16,582,500 lb proppant and 256,378 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.43

22) Area to be disturbed for well pad only, less access road (acres): 7.15

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

Conductor and Surface Casing Cement:

Premium NE-1 + 2% CaCl

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

Intermediate Casing:

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

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

Kick Off Plug:

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

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

Production Casing Cement:

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

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

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

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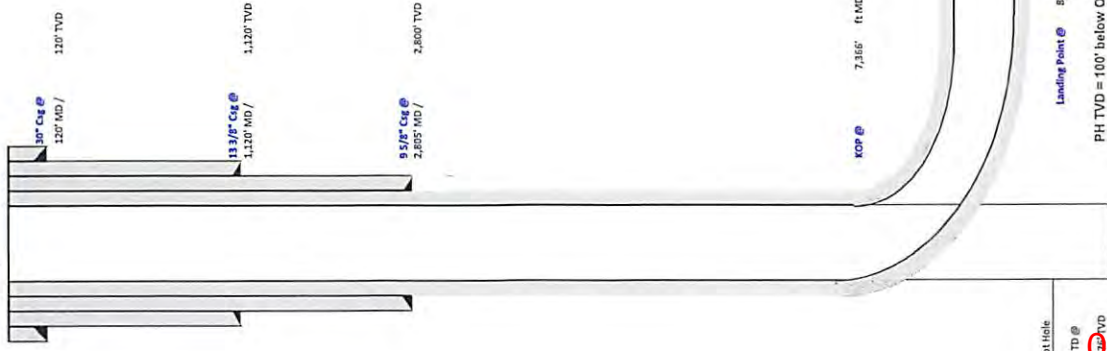
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WELL NAME: Heaven Hill 3-1HM
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,326' GL Elev: 1,326'
 TD: 14,662'
 TH Latitude: 39.80859972
 TH Longitude: -80.69332114
 BH Latitude: 39.78353404
 BH Longitude: -80.68415969



Formation	Depth (MD)	Depth (TVD)
Drepost Fresh Water	1038	
Sewickley Coal	946	
Pittsburgh Coal	1031	
Big Lime	2069	
Weir	2486	
Berea	2684	
Gordon	2946	
Rhinestreet	6068	
Genesee/Burkett	6586	
Tully	6617	
Hamilton	6650	
Marcellus	6724	
Landing Depth	6776	
Onondaga	6776	
Pilot Hole Depth	6876	

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,120'	1,120'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,805'	2,800'	36	J55	Surface
Production	8 7/8 x 6 3/4	5 1/2	14,662'	6,861'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer Notes	
398	A	15.6	Air	None	
1,142	A	15.6	Air	3 Centralizers at equal distance	
897	A	15	Air	1 Centralizer every other ft	
3,320	A	14.5	Air / SOBMT	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to etc.	

Handwritten signature and date: 4/21/17

Lateral TD @ 14,662' ft MD
 6,891' ft TVD

Landing Point @ 5,027' MD / 6,776' TVD
 PH TVD = 100' below Onondaga Top



TUG HILL
OPERATING

Well: Heaven Hill 3-1 HM
Site: Heaven Hill 3
Project: Marshall County, West Virginia
Design: rev3

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2 7/100' build
3	1450.00	5.00	215.00	1449.68	-8.93	-8.25	2.00	215.00	-6.95	Begin 5.00° tangent
4	2905.86	5.00	215.00	2900.00	-112.87	-79.03	0.00	0.00	87.90	Begin 3 7/100' build/turn
5	4079.29	40.00	199.50	3967.74	-523.25	-239.33	3.00	-17.34	441.14	Begin 40.00° tangent
6	6079.29	40.00	199.50	5499.83	-1735.09	-668.46	0.00	0.00	1495.97	Begin 3 7/100' build/turn
7	6157.21	40.19	203.12	5559.44	-1781.83	-686.70	3.00	86.63	1536.21	Begin 40.19° tangen
8	7365.97	40.19	203.12	6482.77	-2499.29	-992.97	0.00	0.00	2146.88	Begin 10 7/100' build/turn
9	8029.80	89.00	150.00	6775.62	-3046.31	-900.57	10.00	-50.79	2698.84	Begin 89.00° lateral section
10	14661.73	89.00	150.00	6891.36	-8788.86	2414.89	0.00	0.00	9114.59	PBHLTD

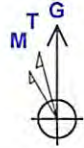


Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
Depth Reference: GL=1326 @ 1326.00ustf

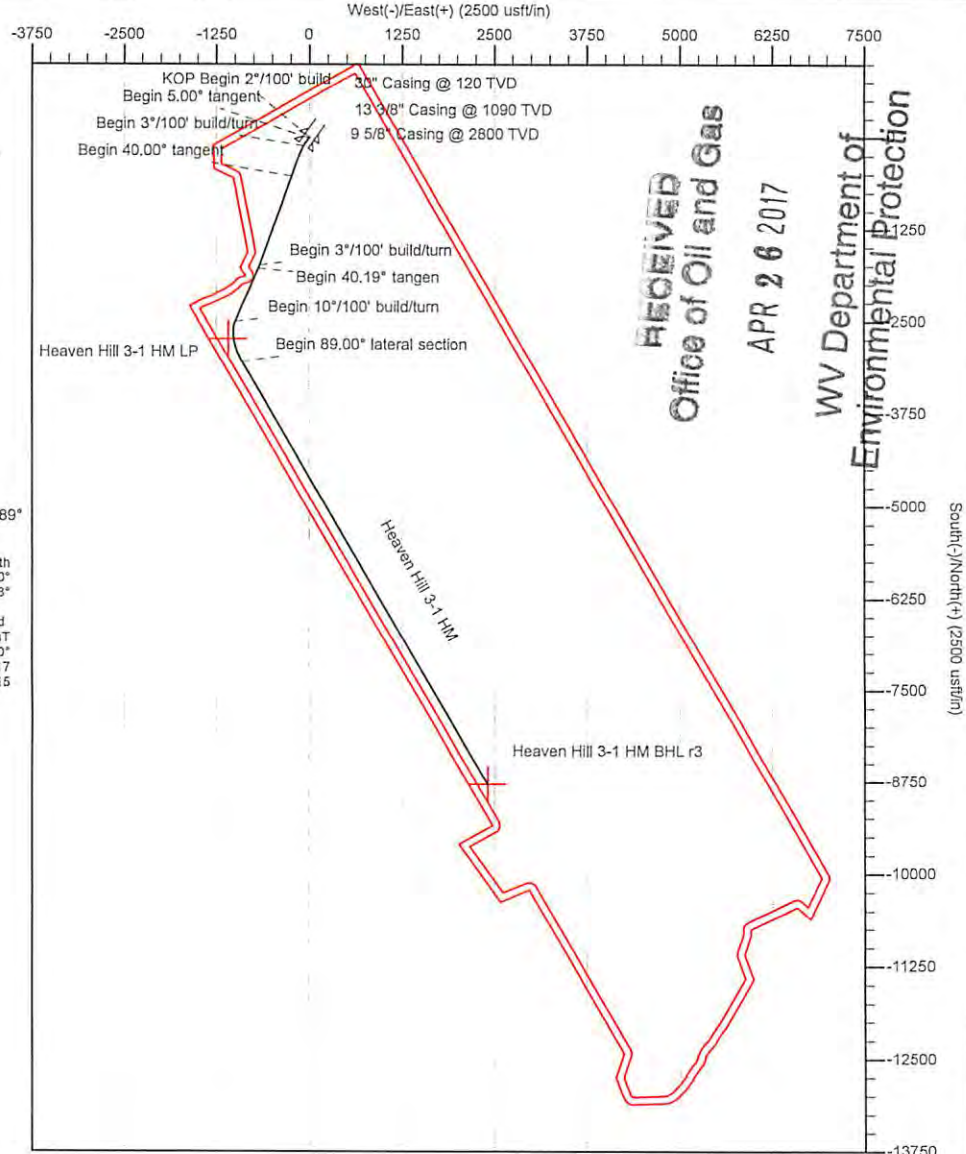
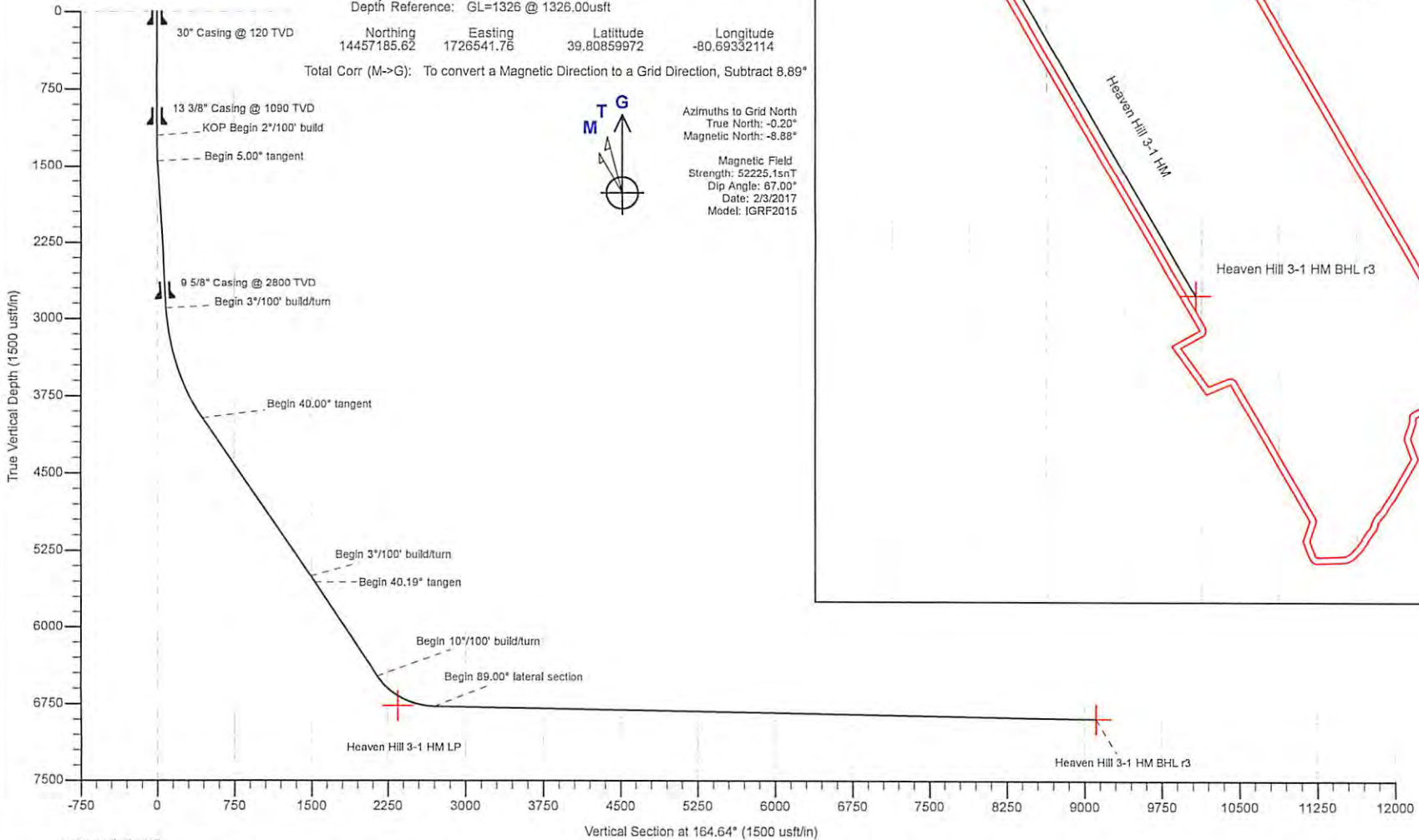
Northing	Easting	Latitude	Longitude
14457185.62	1726541.76	39.80859972	-80.69332114

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.89°



Azimuths to Grid North
True North: -0.20°
Magnetic North: -8.88°

Magnetic Field
Strength: 52225.1snT
Dip Angle: 67.00°
Date: 2/3/2017
Model: IGRF2015



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-1 HM
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-1 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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	Heaven Hill 3				
Site Position:		Northing:	14,457,178.77 usft	Latitude:	39.80858060
From:	Lat/Long	Easting:	1,726,571.98 usft	Longitude:	-80.69321360
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Heaven Hill 3-1 HM					
Well Position	+N/-S	0.00 usft	Northing:	14,457,185.62 usft	Latitude:	39.80859972
	+E/-W	0.00 usft	Easting:	1,726,541.76 usft	Longitude:	-80.69332114
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,326.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/3/2017	-8.69	67.00	52,225.08573543

Design	rev3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	164.64	

Plan Survey Tool Program	Date	4/7/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	14,661.18 rev3 (Original Hole)	MWD		
			MWD - Standard		

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COMPASS 50061680175
08/25/2017

047-051-01935



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-1 HM
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-1 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,450.00	5.00	215.00	1,449.68	-8.93	-6.25	2.00	2.00	0.00	215.00	
2,905.86	5.00	215.00	2,900.00	-112.87	-79.03	0.00	0.00	0.00	0.00	
4,079.29	40.00	199.50	3,967.74	-523.25	-239.33	3.00	2.98	-1.32	-17.34	
6,079.29	40.00	199.50	5,499.83	-1,735.09	-668.46	0.00	0.00	0.00	0.00	
6,157.21	40.19	203.12	5,559.44	-1,781.83	-686.70	3.00	0.25	4.64	86.63	
7,365.97	40.19	203.12	6,482.77	-2,499.29	-992.97	0.00	0.00	0.00	0.00	
8,029.80	89.00	150.00	6,775.62	-3,046.31	-900.57	10.00	7.35	-8.00	-60.79	
14,661.73	89.00	150.00	6,891.36	-8,788.86	2,414.89	0.00	0.00	0.00	0.00	Heaven Hill 3-1 HM B

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Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 3
 Well: Heaven Hill 3-1 HM
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Heaven Hill 3-1 HM
 TVD Reference: GL=1326 @ 1326.00usft
 MD Reference: GL=1326 @ 1326.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
100.00	0.00	0.00	100.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
200.00	0.00	0.00	200.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
300.00	0.00	0.00	300.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
400.00	0.00	0.00	400.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
500.00	0.00	0.00	500.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
600.00	0.00	0.00	600.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
700.00	0.00	0.00	700.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
800.00	0.00	0.00	800.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
900.00	0.00	0.00	900.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,185.62	1,726,541.76	39.80859972	-80.69332114
KOP Begin 2°/100' build									
1,300.00	2.00	215.00	1,299.98	-1.43	-1.00	14,457,184.20	1,726,540.76	39.80859581	-80.69332472
1,400.00	4.00	215.00	1,399.84	-5.72	-4.00	14,457,179.91	1,726,537.76	39.80858406	-80.69333546
1,450.00	5.00	215.00	1,449.68	-8.93	-6.25	14,457,176.69	1,726,535.51	39.80857526	-80.69334351
Begin 5.00° tangent									
1,500.00	5.00	215.00	1,499.49	-12.50	-8.75	14,457,173.13	1,726,533.01	39.80856548	-80.69335246
1,600.00	5.00	215.00	1,599.11	-19.64	-13.75	14,457,165.99	1,726,528.01	39.80854592	-80.69337035
1,700.00	5.00	215.00	1,698.73	-26.78	-18.75	14,457,158.85	1,726,523.01	39.80852636	-80.69338823
1,800.00	5.00	215.00	1,798.35	-33.92	-23.75	14,457,151.71	1,726,518.01	39.80850680	-80.69340612
1,900.00	5.00	215.00	1,897.97	-41.06	-28.75	14,457,144.57	1,726,513.01	39.80848724	-80.69342401
2,000.00	5.00	215.00	1,997.59	-48.20	-33.75	14,457,137.43	1,726,508.01	39.80846768	-80.69344190
2,100.00	5.00	215.00	2,097.21	-55.34	-38.75	14,457,130.29	1,726,503.01	39.80844812	-80.69345978
2,200.00	5.00	215.00	2,196.83	-62.48	-43.75	14,457,123.15	1,726,498.01	39.80842856	-80.69347767
2,300.00	5.00	215.00	2,296.45	-69.61	-48.74	14,457,116.01	1,726,493.01	39.80840900	-80.69349556
2,400.00	5.00	215.00	2,396.07	-76.75	-53.74	14,457,108.87	1,726,488.02	39.80838944	-80.69351345
2,500.00	5.00	215.00	2,495.69	-83.89	-58.74	14,457,101.73	1,726,483.02	39.80836988	-80.69353134
2,600.00	5.00	215.00	2,595.31	-91.03	-63.74	14,457,094.59	1,726,478.02	39.80835032	-80.69354922
2,700.00	5.00	215.00	2,694.93	-98.17	-68.74	14,457,087.45	1,726,473.02	39.80833076	-80.69356711
2,800.00	5.00	215.00	2,794.55	-105.31	-73.74	14,457,080.31	1,726,468.02	39.80831120	-80.69358500
2,900.00	5.00	215.00	2,894.17	-112.45	-78.74	14,457,073.17	1,726,463.02	39.80829164	-80.69360289
2,905.86	5.00	215.00	2,900.00	-112.87	-79.03	14,457,072.76	1,726,462.73	39.80829050	-80.69360393
Begin 3°/100' build/tum									
3,000.00	7.74	208.74	2,993.55	-121.79	-84.44	14,457,063.83	1,726,457.32	39.80826605	-80.69362328
3,100.00	10.70	205.63	3,092.25	-136.07	-91.69	14,457,049.55	1,726,450.07	39.80822690	-80.69364929
3,200.00	13.68	203.85	3,189.99	-155.26	-100.49	14,457,030.37	1,726,441.27	39.80817429	-80.69368086
3,300.00	16.66	202.71	3,286.49	-179.30	-110.81	14,457,006.32	1,726,430.95	39.80810835	-80.69371789
3,400.00	19.65	201.90	3,381.50	-208.14	-122.62	14,456,977.49	1,726,419.14	39.80802927	-80.69376029
3,500.00	22.64	201.30	3,474.75	-241.69	-135.88	14,456,943.94	1,726,405.88	39.80793727	-80.69380793
3,600.00	25.64	200.83	3,566.00	-279.85	-150.57	14,456,905.77	1,726,391.19	39.80783260	-80.69386070
3,700.00	28.63	200.45	3,654.98	-322.53	-166.64	14,456,863.09	1,726,375.12	39.80771554	-80.69391844
3,800.00	31.63	200.14	3,741.46	-369.61	-184.05	14,456,816.02	1,726,357.71	39.80758641	-80.69398099
3,900.00	34.63	199.88	3,825.19	-420.96	-202.74	14,456,764.67	1,726,339.02	39.80744558	-80.69404819
4,000.00	37.62	199.66	3,905.96	-476.43	-222.68	14,456,709.19	1,726,319.08	39.80729342	-80.69411985
4,079.29	40.00	199.50	3,967.74	-523.25	-239.33	14,456,662.37	1,726,302.43	39.80716499	-80.69417970
Begin 40.00° tangent									
4,100.00	40.00	199.50	3,983.60	-535.80	-243.77	14,456,649.83	1,726,297.99	39.80713058	-80.69419568
4,200.00	40.00	199.50	4,060.21	-596.39	-265.23	14,456,589.23	1,726,276.53	39.80696438	-80.69426222
4,300.00	40.00	199.50	4,136.81	-656.98	-286.68	14,456,528.64	1,726,255.08	39.80679818	-80.69434995
4,400.00	40.00	199.50	4,213.42	-717.57	-308.14	14,456,468.05	1,726,233.62	39.80663198	-80.69442709
4,500.00	40.00	199.50	4,290.02	-778.17	-329.60	14,456,407.46	1,726,212.16	39.80646578	-80.69450423
4,600.00	40.00	199.50	4,366.62	-838.76	-351.05	14,456,346.87	1,726,190.71	39.80629958	-80.69458137

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 WV Department of Environmental Protection
 COMPASS 5000-14 Build 85
 08/25/2017



Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 3
 Well: Heaven Hill 3-1 HM
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Heaven Hill 3-1 HM
 TVD Reference: GL=1326 @ 1326.00usft
 MD Reference: GL=1326 @ 1326.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,700.00	40.00	199.50	4,443.23	-899.35	-372.51	14,456,286.27	1,726,169.25	39.80613338	-80.69465850
4,800.00	40.00	199.50	4,519.83	-959.94	-393.97	14,456,225.68	1,726,147.79	39.80596718	-80.69473564
4,900.00	40.00	199.50	4,596.44	-1,020.53	-415.42	14,456,165.09	1,726,126.34	39.80580098	-80.69481278
5,000.00	40.00	199.50	4,673.04	-1,081.13	-436.88	14,456,104.50	1,726,104.88	39.80563479	-80.69488991
5,100.00	40.00	199.50	4,749.65	-1,141.72	-458.34	14,456,043.91	1,726,083.42	39.80546859	-80.69496705
5,200.00	40.00	199.50	4,826.25	-1,202.31	-479.79	14,455,983.32	1,726,061.97	39.80530239	-80.69504418
5,300.00	40.00	199.50	4,902.86	-1,262.90	-501.25	14,455,922.72	1,726,040.51	39.80513619	-80.69512132
5,400.00	40.00	199.50	4,979.46	-1,323.49	-522.71	14,455,862.13	1,726,019.05	39.80496999	-80.69519845
5,500.00	40.00	199.50	5,056.06	-1,384.08	-544.16	14,455,801.54	1,725,997.59	39.80480379	-80.69527558
5,600.00	40.00	199.50	5,132.67	-1,444.68	-565.62	14,455,740.95	1,725,976.14	39.80463759	-80.69535272
5,700.00	40.00	199.50	5,209.27	-1,505.27	-587.08	14,455,680.36	1,725,954.68	39.80447139	-80.69542985
5,800.00	40.00	199.50	5,285.88	-1,565.86	-608.53	14,455,619.76	1,725,933.22	39.80430519	-80.69550698
5,900.00	40.00	199.50	5,362.48	-1,626.45	-629.99	14,455,559.17	1,725,911.77	39.80413899	-80.69558411
6,000.00	40.00	199.50	5,439.09	-1,687.04	-651.45	14,455,498.58	1,725,890.31	39.80397279	-80.69566125
6,079.29	40.00	199.50	5,499.83	-1,735.09	-668.46	14,455,450.54	1,725,873.30	39.80384101	-80.69572240
Begin 3°/100' build/turn									
6,100.00	40.04	200.46	5,515.69	-1,747.60	-673.01	14,455,438.02	1,725,868.75	39.80380668	-80.69573876
6,157.21	40.19	203.12	5,559.44	-1,781.83	-686.70	14,455,403.80	1,725,855.06	39.80371282	-80.69578790
Begin 40.19° tangen									
6,200.00	40.19	203.12	5,592.13	-1,807.22	-697.54	14,455,378.40	1,725,844.22	39.80364318	-80.69582680
6,300.00	40.19	203.12	5,668.51	-1,866.58	-722.87	14,455,319.05	1,725,818.88	39.80348041	-80.69591774
6,400.00	40.19	203.12	5,744.90	-1,925.93	-748.21	14,455,259.69	1,725,793.55	39.80331764	-80.69600868
6,500.00	40.19	203.12	5,821.28	-1,985.29	-773.55	14,455,200.34	1,725,768.21	39.80315487	-80.69609961
6,600.00	40.19	203.12	5,897.67	-2,044.65	-798.89	14,455,140.98	1,725,742.87	39.80299210	-80.69619055
6,700.00	40.19	203.12	5,974.06	-2,104.00	-824.23	14,455,081.62	1,725,717.53	39.80282934	-80.69628148
6,800.00	40.19	203.12	6,050.44	-2,163.36	-849.57	14,455,022.27	1,725,692.19	39.80266657	-80.69637242
6,900.00	40.19	203.12	6,126.83	-2,222.71	-874.91	14,454,962.91	1,725,666.85	39.80250380	-80.69646335
7,000.00	40.19	203.12	6,203.22	-2,282.07	-900.24	14,454,903.56	1,725,641.51	39.80234103	-80.69655429
7,100.00	40.19	203.12	6,279.60	-2,341.42	-925.58	14,454,844.20	1,725,616.18	39.80217826	-80.69664522
7,200.00	40.19	203.12	6,355.99	-2,400.78	-950.92	14,454,784.85	1,725,590.84	39.80201549	-80.69673615
7,300.00	40.19	203.12	6,432.38	-2,460.13	-976.26	14,454,725.49	1,725,565.50	39.80185272	-80.69682709
7,365.97	40.19	203.12	6,482.77	-2,499.29	-992.97	14,454,686.34	1,725,548.78	39.80174535	-80.69688707
Begin 10°/100' build/turn									
7,400.00	41.94	198.67	6,508.43	-2,520.17	-1,000.93	14,454,665.46	1,725,540.83	39.80168808	-80.69691565
7,500.00	47.93	187.30	6,579.30	-2,588.82	-1,016.38	14,454,596.81	1,725,525.38	39.80149969	-80.69697150
7,600.00	54.84	178.02	6,641.76	-2,666.68	-1,019.70	14,454,518.94	1,725,522.06	39.80128589	-80.69698424
7,700.00	62.33	170.26	6,693.91	-2,751.39	-1,010.78	14,454,434.23	1,725,530.98	39.80105317	-80.69695349
7,800.00	70.21	163.52	6,734.15	-2,840.38	-989.88	14,454,345.25	1,725,551.88	39.80080860	-80.69688018
7,900.00	78.31	157.42	6,761.28	-2,930.93	-957.66	14,454,254.69	1,725,584.10	39.80055961	-80.69676653
8,000.00	86.54	151.68	6,774.46	-3,020.31	-915.08	14,454,165.32	1,725,626.68	39.80031377	-80.69661601
8,029.80	89.00	150.00	6,775.62	-3,046.31	-900.57	14,454,139.31	1,725,641.19	39.80024223	-80.69656467
Begin 89.00° lateral section									
8,100.00	89.00	150.00	6,776.84	-3,107.10	-865.47	14,454,078.53	1,725,676.28	39.80007497	-80.69644045
8,200.00	89.00	150.00	6,778.59	-3,193.68	-815.48	14,453,991.94	1,725,726.28	39.79983671	-80.69626351
8,300.00	89.00	150.00	6,780.33	-3,280.27	-765.49	14,453,905.35	1,725,776.27	39.79959845	-80.69608657
8,400.00	89.00	150.00	6,782.08	-3,366.86	-715.50	14,453,818.76	1,725,826.26	39.79936019	-80.69590962
8,500.00	89.00	150.00	6,783.82	-3,453.45	-665.51	14,453,732.17	1,725,876.25	39.79912192	-80.69573268
8,600.00	89.00	150.00	6,785.57	-3,540.04	-615.51	14,453,645.58	1,725,926.25	39.79888366	-80.69555574
8,700.00	89.00	150.00	6,787.31	-3,626.63	-565.52	14,453,558.99	1,725,976.24	39.79864540	-80.69537880
8,800.00	89.00	150.00	6,789.06	-3,713.22	-515.53	14,453,472.40	1,726,026.23	39.79840714	-80.69520186
8,900.00	89.00	150.00	6,790.80	-3,799.81	-465.54	14,453,385.81	1,726,076.22	39.79816887	-80.69502493
9,000.00	89.00	150.00	6,792.55	-3,886.40	-415.54	14,453,299.23	1,726,126.22	39.79793061	-80.69484799
9,100.00	89.00	150.00	6,794.29	-3,972.99	-365.55	14,453,212.64	1,726,176.21	39.79769234	-80.69467106
9,200.00	89.00	150.00	6,796.04	-4,059.58	-315.56	14,453,126.05	1,726,226.20	39.79745408	-80.69449413

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 COMASS 50044 Build 85
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Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 3
 Well: Heaven Hill 3-1 HM
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Heaven Hill 3-1 HM
 TVD Reference: GL=1326 @ 1326.00usft
 MD Reference: GL=1326 @ 1326.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,300.00	89.00	150.00	6,797.79	-4,146.17	-265.57	14,453,039.46	1,726,276.19	39.79721581	-80.69431719
9,400.00	89.00	150.00	6,799.53	-4,232.76	-215.57	14,452,952.87	1,726,326.18	39.79697755	-80.69414026
9,500.00	89.00	150.00	6,801.28	-4,319.35	-165.58	14,452,866.28	1,726,376.18	39.79673928	-80.69396333
9,600.00	89.00	150.00	6,803.02	-4,405.94	-115.59	14,452,779.69	1,726,426.17	39.79650102	-80.69378641
9,700.00	89.00	150.00	6,804.77	-4,492.52	-65.60	14,452,693.10	1,726,476.16	39.79626275	-80.69360948
9,800.00	89.00	150.00	6,806.51	-4,579.11	-15.60	14,452,606.51	1,726,526.15	39.79602449	-80.69343255
9,900.00	89.00	150.00	6,808.26	-4,665.70	34.39	14,452,519.92	1,726,576.15	39.79578622	-80.69325563
10,000.00	89.00	150.00	6,810.00	-4,752.29	84.38	14,452,433.33	1,726,626.14	39.79554795	-80.69307871
10,100.00	89.00	150.00	6,811.75	-4,838.88	134.37	14,452,346.74	1,726,676.13	39.79530969	-80.69290178
10,200.00	89.00	150.00	6,813.49	-4,925.47	184.37	14,452,260.15	1,726,726.12	39.79507142	-80.69272486
10,300.00	89.00	150.00	6,815.24	-5,012.06	234.36	14,452,173.56	1,726,776.12	39.79483315	-80.69254794
10,400.00	89.00	150.00	6,816.98	-5,098.65	284.35	14,452,086.97	1,726,826.11	39.79459488	-80.69237102
10,500.00	89.00	150.00	6,818.73	-5,185.24	334.34	14,452,000.39	1,726,876.10	39.79435662	-80.69219411
10,600.00	89.00	150.00	6,820.47	-5,271.83	384.33	14,451,913.80	1,726,926.09	39.79411835	-80.69201719
10,700.00	89.00	150.00	6,822.22	-5,358.42	434.33	14,451,827.21	1,726,976.09	39.79388008	-80.69184028
10,800.00	89.00	150.00	6,823.96	-5,445.01	484.32	14,451,740.62	1,727,026.08	39.79364181	-80.69166336
10,900.00	89.00	150.00	6,825.71	-5,531.60	534.31	14,451,654.03	1,727,076.07	39.79340354	-80.69148645
11,000.00	89.00	150.00	6,827.45	-5,618.19	584.30	14,451,567.44	1,727,126.06	39.79316527	-80.69130954
11,100.00	89.00	150.00	6,829.20	-5,704.78	634.30	14,451,480.85	1,727,176.06	39.79292700	-80.69113263
11,200.00	89.00	150.00	6,830.94	-5,791.37	684.29	14,451,394.26	1,727,226.05	39.79268873	-80.69095572
11,300.00	89.00	150.00	6,832.69	-5,877.95	734.28	14,451,307.67	1,727,276.04	39.79245046	-80.69077882
11,400.00	89.00	150.00	6,834.44	-5,964.54	784.27	14,451,221.08	1,727,326.03	39.79221219	-80.69060191
11,500.00	89.00	150.00	6,836.18	-6,051.13	834.27	14,451,134.49	1,727,376.02	39.79197392	-80.69042500
11,600.00	89.00	150.00	6,837.93	-6,137.72	884.26	14,451,047.90	1,727,426.02	39.79173565	-80.69024810
11,700.00	89.00	150.00	6,839.67	-6,224.31	934.25	14,450,961.31	1,727,476.01	39.79149738	-80.69007120
11,800.00	89.00	150.00	6,841.42	-6,310.90	984.24	14,450,874.72	1,727,526.00	39.79125911	-80.68989430
11,900.00	89.00	150.00	6,843.16	-6,397.49	1,034.24	14,450,788.13	1,727,575.99	39.79102083	-80.68971740
12,000.00	89.00	150.00	6,844.91	-6,484.08	1,084.23	14,450,701.54	1,727,625.99	39.79078256	-80.68954050
12,100.00	89.00	150.00	6,846.65	-6,570.67	1,134.22	14,450,614.96	1,727,675.98	39.79054429	-80.68936360
12,200.00	89.00	150.00	6,848.40	-6,657.26	1,184.21	14,450,528.37	1,727,725.97	39.79030602	-80.68918670
12,300.00	89.00	150.00	6,850.14	-6,743.85	1,234.21	14,450,441.78	1,727,775.96	39.79006774	-80.68900981
12,400.00	89.00	150.00	6,851.89	-6,830.44	1,284.20	14,450,355.19	1,727,825.96	39.78982947	-80.68883291
12,500.00	89.00	150.00	6,853.63	-6,917.03	1,334.19	14,450,268.60	1,727,875.95	39.78959120	-80.68865602
12,600.00	89.00	150.00	6,855.38	-7,003.62	1,384.18	14,450,182.01	1,727,925.94	39.78935292	-80.68847913
12,700.00	89.00	150.00	6,857.12	-7,090.21	1,434.17	14,450,095.42	1,727,975.93	39.78911465	-80.68830224
12,800.00	89.00	150.00	6,858.87	-7,176.79	1,484.17	14,450,008.83	1,728,025.93	39.78887637	-80.68812535
12,900.00	89.00	150.00	6,860.61	-7,263.38	1,534.16	14,449,922.24	1,728,075.92	39.78863810	-80.68794846
13,000.00	89.00	150.00	6,862.36	-7,349.97	1,584.15	14,449,835.65	1,728,125.91	39.78839982	-80.68777158
13,100.00	89.00	150.00	6,864.10	-7,436.56	1,634.14	14,449,749.06	1,728,175.90	39.78816155	-80.68759469
13,200.00	89.00	150.00	6,865.85	-7,523.15	1,684.14	14,449,662.47	1,728,225.90	39.78792327	-80.68741781
13,300.00	89.00	150.00	6,867.59	-7,609.74	1,734.13	14,449,575.88	1,728,275.89	39.78768500	-80.68724092
13,400.00	89.00	150.00	6,869.34	-7,696.33	1,784.12	14,449,489.29	1,728,325.88	39.78744672	-80.68706404
13,500.00	89.00	150.00	6,871.09	-7,782.92	1,834.11	14,449,402.70	1,728,375.87	39.78720845	-80.68688716
13,600.00	89.00	150.00	6,872.83	-7,869.51	1,884.11	14,449,316.12	1,728,425.87	39.78697017	-80.68671028
13,700.00	89.00	150.00	6,874.58	-7,956.10	1,934.10	14,449,229.53	1,728,475.86	39.78673189	-80.68653340
13,800.00	89.00	150.00	6,876.32	-8,042.69	1,984.09	14,449,142.94	1,728,525.85	39.78649362	-80.68635653
13,900.00	89.00	150.00	6,878.07	-8,129.28	2,034.08	14,449,056.35	1,728,575.84	39.78625534	-80.68617965
14,000.00	89.00	150.00	6,879.81	-8,215.87	2,084.08	14,448,969.76	1,728,625.83	39.78601706	-80.68600278
14,100.00	89.00	150.00	6,881.56	-8,302.46	2,134.07	14,448,883.17	1,728,675.83	39.78577878	-80.68582590
14,200.00	89.00	150.00	6,883.30	-8,389.05	2,184.06	14,448,796.58	1,728,725.82	39.78554050	-80.68564903
14,300.00	89.00	150.00	6,885.05	-8,475.63	2,234.05	14,448,709.99	1,728,775.81	39.78530222	-80.68547215
14,400.00	89.00	150.00	6,886.79	-8,562.22	2,284.05	14,448,623.40	1,728,825.80	39.78506395	-80.68529529
14,500.00	89.00	150.00	6,888.54	-8,648.81	2,334.04	14,448,536.81	1,728,875.80	39.78482567	-80.68511842
14,600.00	89.00	150.00	6,890.28	-8,735.40	2,384.03	14,448,450.22	1,728,925.79	39.78458739	-80.68494156



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-1 HM
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-1 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,661.73	89.00	150.00	6,891.36	-8,788.86	2,414.89	14,448,396.77	1,728,956.65	39.78444029	-80.68483237
PBHL/TD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Heaven Hill 3-1 HM LP - hit/miss target - Shape - Point	0.00	0.01	6,769.00	-2,735.27	-1,080.29	14,454,450.35	1,725,461.47	39.80109809	-80.69720078
- plan misses target center by 103.46usft at 7701.36usft MD (6694.54 TVD, -2752.58 N, -1010.57 E)									
Heaven Hill 3-1 HM BHL - plan hits target center - Point	0.00	0.01	6,891.36	-8,788.86	2,414.89	14,448,396.77	1,728,956.65	39.78444029	-80.68483237

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
120.00	120.00	30" Casing @ 120 TVD	30	36	
1,090.00	1,090.00	13 3/8" Casing @ 1090 TVD	13-3/8	17	
2,805.48	2,800.00	9 5/8" Casing @ 2800 TVD	9-5/8	12-1/4	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,200.00	1,200.00	0.00	0.00	KOP Begin 2°/100' build
1,450.00	1,449.68	-8.93	-6.25	Begin 5.00° tangent
2,905.86	2,900.00	-112.87	-79.03	Begin 3°/100' build/turn
4,079.29	3,967.74	-523.25	-239.33	Begin 40.00° tangent
6,079.29	5,499.83	-1,735.09	-668.46	Begin 3°/100' build/turn
6,157.21	5,559.44	-1,781.83	-686.70	Begin 40.19° tangen
7,365.97	6,482.77	-2,499.29	-992.97	Begin 10°/100' build/turn
8,029.80	6,775.62	-3,046.31	-900.57	Begin 89.00° lateral section
14,661.73	6,891.36	-8,788.86	2,414.89	PBHL/TD

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Operator's Well No. Heaven Hill 3-1HM**Area of Review****Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

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

Data Sources Reviewed:

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

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

Request maps for:

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

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

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

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Page 1 of 4


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08/25/2017

Permit well - Heaven Hill 3-1HM
 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
4705100862	Hope Natural Gas	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow producing well that has since been plugged	Old well, records are incomplete. A field survey was conducted to locate this well and it was found plugged at the location shown on the well plat.
4705170788	Hope Natural Gas	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow producing well	Old well, records are incomplete. A field survey was conducted to locate this well and no evidence of this well was found.
4705101327	Chesapeake Appalachia LLC	40'	None	None	No	Permitted well, possibly had conductor set but no evidence of pad site in area. It is an abandoned location



[Table Descriptions](#)
[County Code Translations](#)
[Permit Numbering Series](#)
[Usage Notes](#)
[Contact Information](#)
[Disclaimer](#)
[WVGES Main](#)
[Pipeline-Plus! New](#)

Select County: **(051) Marshall** | Select datatypes: (Check All)

Enter Permit #: **00862**

Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show Water Logs Btm Hole Loc

Get Data Reset

WV Geological & Economic Survey: Well: County = 51 Permit = 00862

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70656	51	862

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LOH_DD	UTME	UTMN
4705100862	Marshall	662	Meade	Glen Easton	Cameron	39.794224	-80.601668	526297.0	4404063.0

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETE
4705100862	11/14/2001		Plugging	Completed	David A Whetzel		M-242		Consolidation Coal Co	Consolidation Coal Co.
4705100862	--/--		Original Loc	Prty Map	M E Cunningham		724			Hope Natural Gas Company

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD DEEPEST_FM DEEP	API	PLD_DT	DEPTH_PBT	VAL_CLASS	TYPE	RIG	CMP_MTHD	TVD
4705100862	11/14/2001	11/11/2001			4705100862	11/14/2001	0	unclassified	not available	unknown	unknown	unknown
4705100862	--/--	--/--						unclassified	not available	unknown	unknown	unknown

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

5.11. Area of Review-- The permittee shall review the area surrounding the proposed well pad so as to identify and evaluate potential conduits for unintended fracture propagation, a report of which the permittee shall provide to the Office with the application for well work. All existing active, plugged, abandoned, and undocumented wells within a five hundred feet (500') radius of the surface location of the well that is the subject of the new application and within a five hundred feet (500') radius of the lateral section of the wellbore shall be considered for the potential of unintended fracture propagation. The report shall detail those wells that are known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation. The detail shall include at a minimum the API number, operator name, total depth, perforated formation(s) and producing zones not perforated.

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 Environmental Protection

08/25/2017

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 70788
Get Data Resol

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Blm Hole Log

[Table Descriptions](#)
[County Code Translations](#)
[County/Parish/State Codes](#)
[Uncons. Notes](#)
[Current Information](#)
[Database:](#)
[WVGES2 Tables](#)
["Pipeline-Plus" New](#)

WV Geological & Economic Survey: **Well: County = 51 Permit = 70788**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_78	QUAD_18	LAY_06	LOW_00	UTMB	UTMN
4705170788	Marshall	70788	Meade	Olson	Easton	Carman	39.739277	-10.636276	638644.7 4494416.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION
4705170788	-/-	-/-	unknown	Patty Map	GW	Cunningham	658			Hope Natural Gas Company

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FKT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD
4705170788	-/-	-/-	-/-	-/-				unclassified	unclassified		not available	unknown	unknown

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 01327
Get Data Resol

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Blm Hole Log

[Table Descriptions](#)
[County Code Translations](#)
[County/Parish/State Codes](#)
[Uncons. Notes](#)
[Current Information](#)
[Database:](#)
[WVGES2 Tables](#)
["Pipeline-Plus" New](#)

WV Geological & Economic Survey: **Well: County = 51 Permit = 01327**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_78	QUAD_18	LAY_06	LOW_00	UTMB	UTMN
4705131327	Marshall	01327	Meade	Olson	Easton	Carman	39.739277	-10.636276	638644.7 4494416.4

Bottom Hole Location Information:

API	EF	FLWD	UTMB	UTMN	LOW_00	LAY_06	
4705131327	1	2	Prosser	013135	4821567	-13.613132	39.739277

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROF_VD	PROP_TRGT_FM		
4705131327	6/27/2015	6/27/2015	3113	Shaw-DeLoach	Carman	Prosser	4821567	4821567	0281851271408	0281867	Drill Pay/Bore	Carman	Prosser	4821567

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FKT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTO	O_BEP	O_APT	O_SEP
4705131327	6/27/2015	6/27/2015	3113	Shaw-DeLoach	Carman	Prosser	4821567	4821567	0281851271408	0281867	Drill Pay/Bore	Carman	Prosser	4821567	43			

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

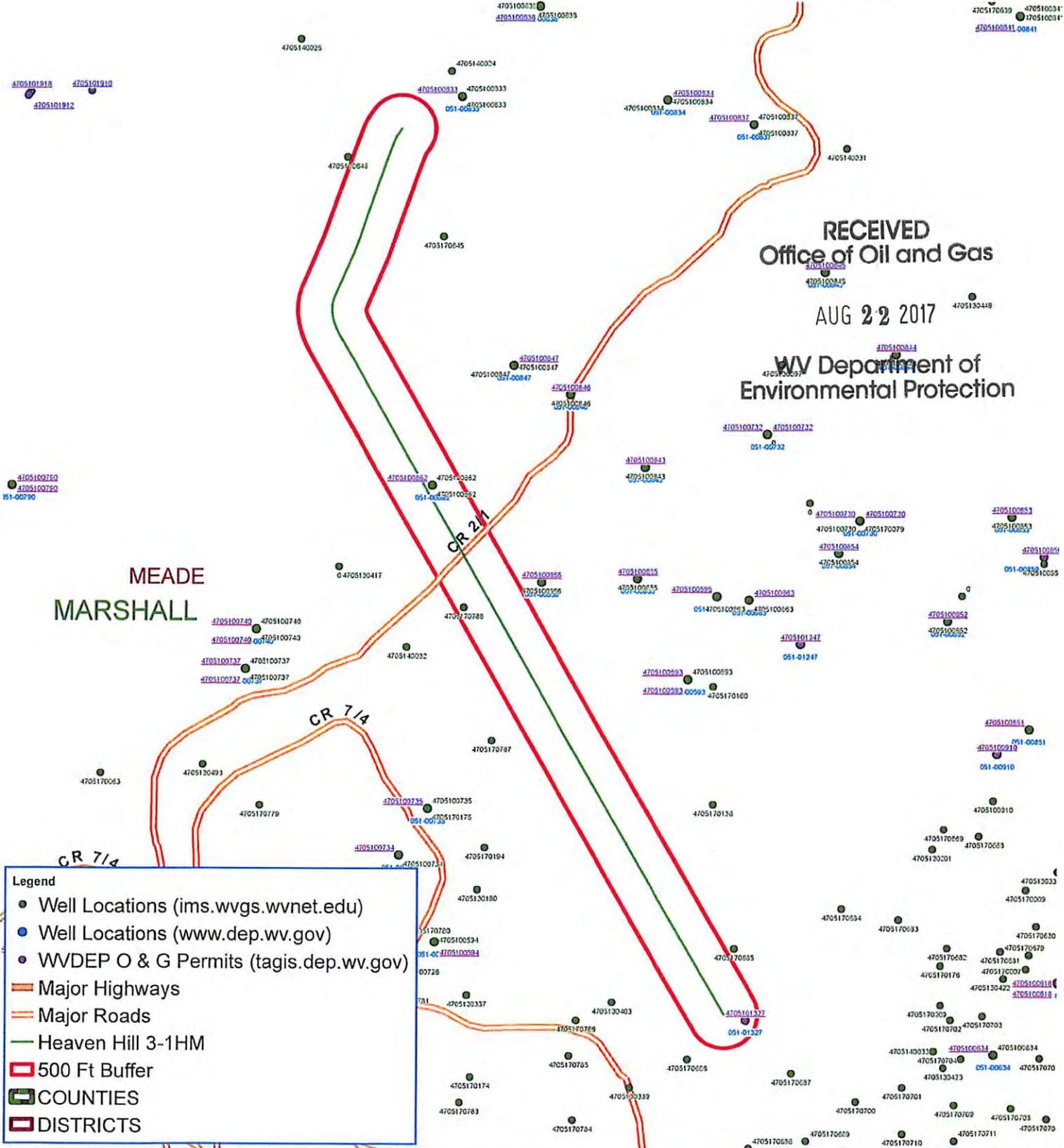
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MEADE
MARSHALL

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Well Locations (www.dep.wv.gov)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 3-1HM
- 500 Ft Buffer
- COUNTIES
- DISTRICTS



Heaven Hill 3-1HM Meade District Marshall County, WV



Map Created: May 31, 2017
Map Current As Of: May 31, 2017

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

Map Prepared by:
EPS
08/25/2017
LAND SERVICES

WW-9
(4/16)

047-051-01935

API Number 47 - 051 - _____
Operator's Well No. Heaven Hill 3-1HM

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 containment

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

Subscribed and sworn before me this 18 day of April, 2017

Annette Jenkin
9/24/2019

My commission expires _____

Notary Public



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WV Department of
Environmental Protection
Notary Public, State of West Virginia
My Commission Expires
September 24, 2019

08/25/2017

Form WW-9

Operator's Well No. Heaven Hill 3-1HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 18.43 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: Jim Unholzer

Comments: _____

Title: Oil & Gas Inspector

Date: 4/21/17

Field Reviewed? Yes No

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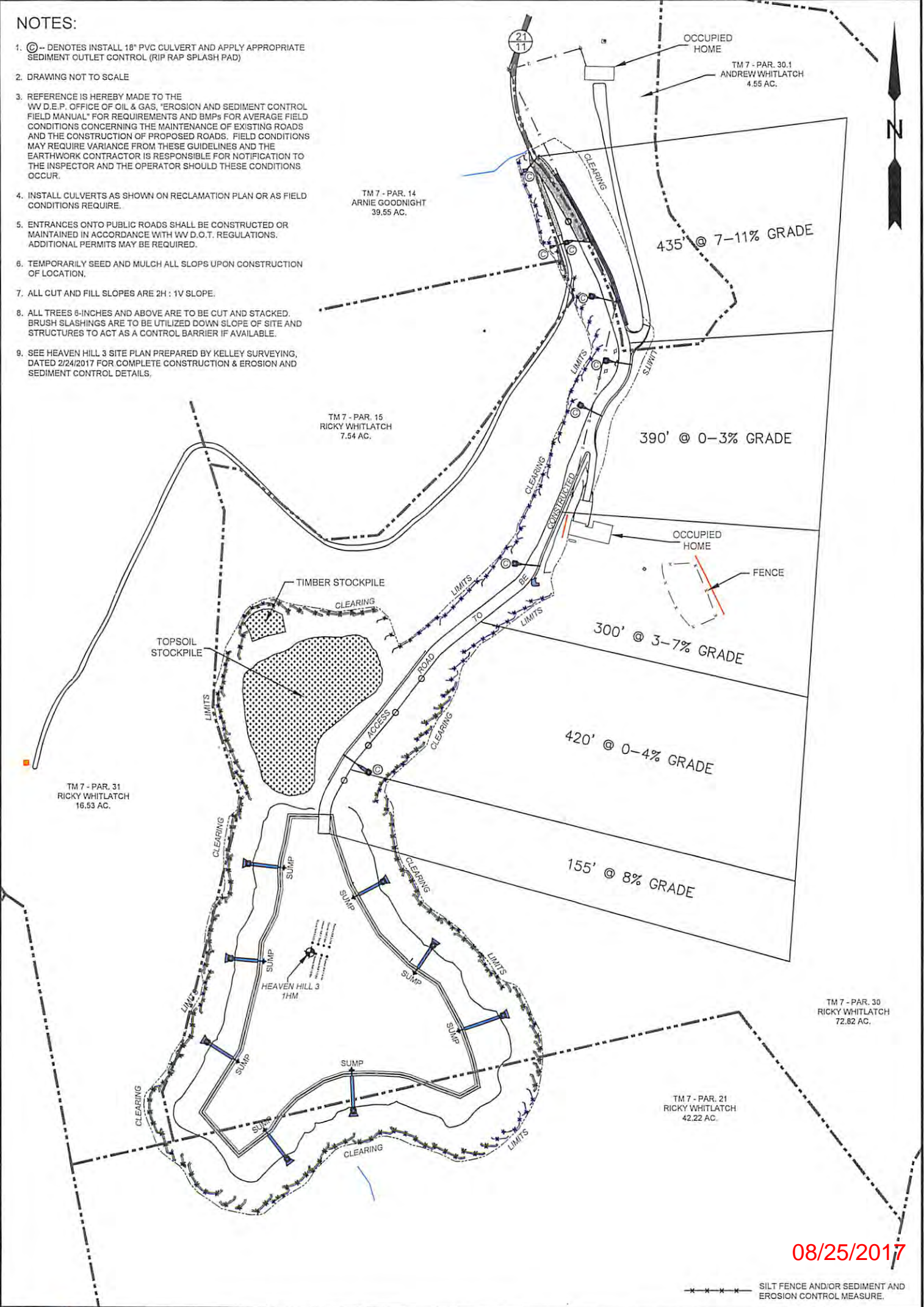
08/25/2017

PROPOSED HEAVEN HILL 3 - 1HM

047-051-01935

NOTES:

1. (C) -- DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. 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.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL 3 SITE PLAN PREPARED BY KELLEY SURVEYING, DATED 2/24/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



08/25/2017

--- SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE.

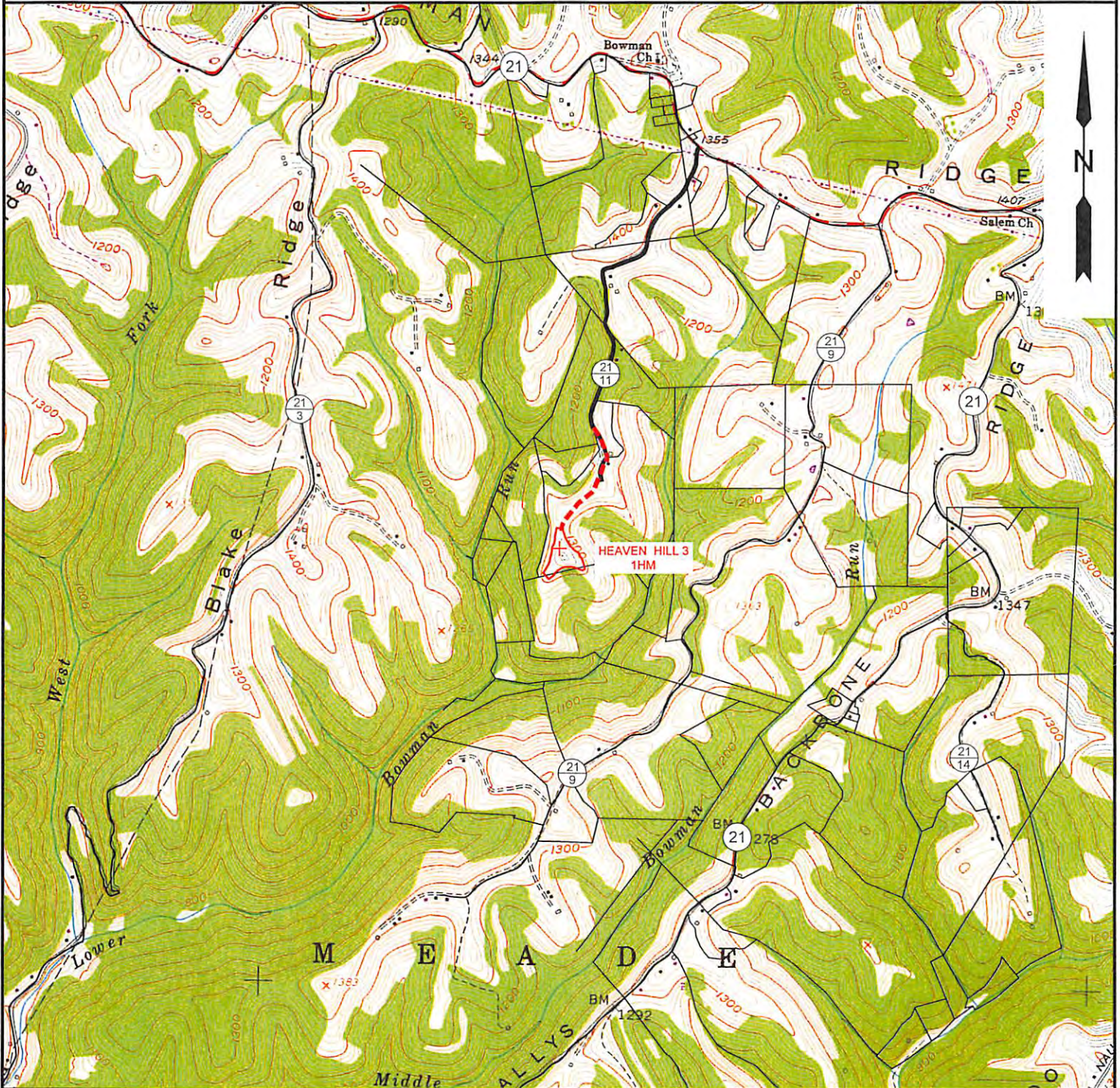
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Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	04/13/2017	NONE

TUG HILL
OPERATING

PROPOSED HEAVEN HILL 3 - 1HM

047-051-01935



NOTE: CLOSEST WATER PURVEYOR
 GRANDVIEW - DOOLIN PUBLIC SERVICE DISTRICT
 PROCTOR, WV

LAT: 39.7137712
 LON: -80.8258327
 LOCATED: S 47°57'55" W AT 50,802' FROM HEAVEN HILL 3 - 1HM SURFACE LOCATION



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www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		04/13/2017	1" = 2000'



**TUG HILL
OPERATING**

08/25/2017



Well Site Safety Plan

Tug Hill Operating, LLC

JW
4/21/17

Well Name: Heaven Hill 3-1HM

Pad Location: Heaven Hill 3

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:
Northing-4,406,558.99
Easting -526,250.98

April 2017

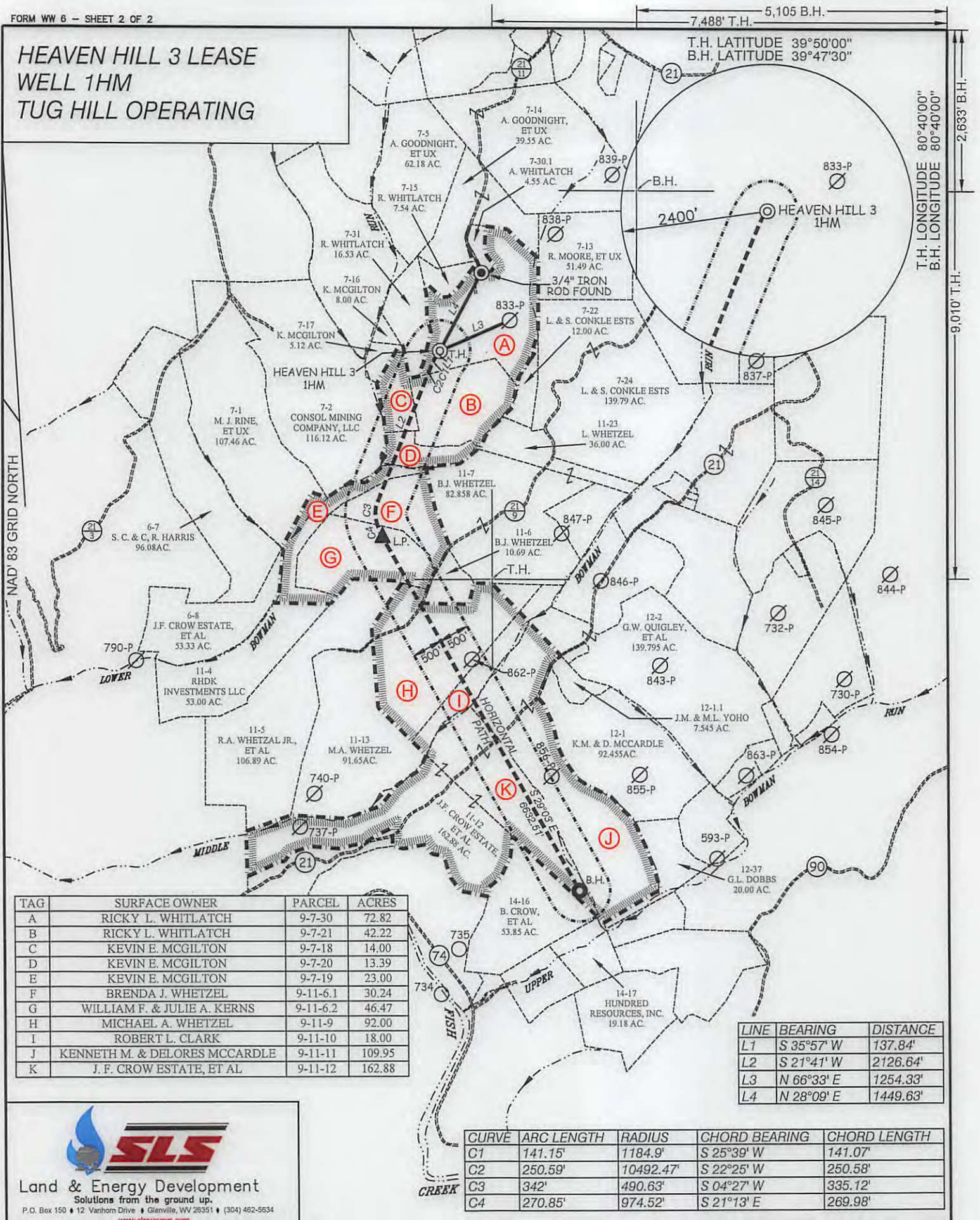
RECEIVED
Office of Oil and Gas

APR 26 2017

WV Department of
Environmental Protection

08/25/2017

**HEAVEN HILL 3 LEASE
WELL 1HM
TUG HILL OPERATING**



TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	KEVIN E. MCGILTON	9-7-18	14.00
D	KEVIN E. MCGILTON	9-7-20	13.39
E	KEVIN E. MCGILTON	9-7-19	23.00
F	BRENDA J. WHETZEL	9-11-6.1	30.24
G	WILLIAM F. & JULIE A. KERNS	9-11-6.2	46.47
H	MICHAEL A. WHETZEL	9-11-9	92.00
I	ROBERT L. CLARK	9-11-10	18.00
J	KENNETH M. & DELORES MCCARDLE	9-11-11	109.95
K	J. F. CROW ESTATE, ET AL	9-11-12	162.88

LINE	BEARING	DISTANCE
L1	S 35°57' W	137.84'
L2	S 21°41' W	2126.64'
L3	N 66°33' E	1254.33'
L4	N 28°09' E	1449.63'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	141.15'	1184.9'	S 25°39' W	141.07'
C2	250.59'	10492.47'	S 22°25' W	250.58'
C3	342'	490.63'	S 04°27' W	335.12'
C4	270.85'	974.52'	S 21°13' E	269.98'



Land & Energy Development

Solutions from the ground up.

P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634

www.slsurveys.com

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C.(FT) N. 478,859.7 E. 1,633,272.0

NAD'83 GEO. LAT-(N) 39.808600 LONG-(W) 80.693321

NAD'83 UTM (M) N. 4,406,558.99 E. 526,250.98

LANDING POINT

NAD'83 S.P.C.(FT) N. 475,827.3 E. 1,632,320.7

NAD'83 GEO. LAT-(N) 39.800241 LONG-(W) 80.696564

NAD'83 UTM (M) N. 4,405,630.3 E. 525,976.6

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 470,028.8 E. 1,635,540.5

NAD'83 GEO. LAT-(N) 39.784440 LONG-(W) 80.684832

NAD'83 UTM (M) N. 4,403,880.1 E. 526,987.0

SCALE 1" = 2000'

FILE NO. 8654P1HMR.dwg

DATE APRIL 20, 20 17

REVISED _____, 20 _____

OPERATORS WELL NO. HEAVEN HILL 3-1HM

API WELL NO. 47-051-01935
STATE COUNTY PERMIT



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



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- LEASE # (SEE PG. 1)
- SURFACE OWNER (SEE TABLE)

COUNTY NAME PERMIT

08/25/2017

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

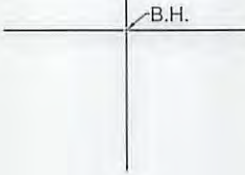
DESIGNATED AGENT DIANNA STAMPER
ADDRESS CT CORPORATION SYSTEM
5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

**HEAVEN HILL 3 LEASE
WELL 1HM
TUG HILL OPERATING**

7,488' T.H. 5,105 B.H.
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
2,633' B.H.
9,010' T.H.

LEASE NAME OR NO.	TAG	PARCEL	OIL & GAS ROYALTY OWNERS	DEED BOOK/PG
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	780 226
10*15557	B	9-7-21	RICKY L WHITLATCH ET AL	780 226
10*15667	C	9-7-18	KEVIN E MCGILTON ET UX	850 351
10*15698	C	9-7-18	ROBERT A EDGE AND SHERRIE N EDGE	900 363
10*15720	C	9-7-18	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	905 458
10*15721	C	9-7-18	TINA L EDGE MONTI AND THOMAS MONTI	905 456
10*16020	C	9-7-18	SHARON HINERMAN MAY & DANIEL G MAY	905 464
10*16028	C	9-7-18	ROSEMARY PARKINS AND STEPHEN PARKINS	905 460
10*16051	C	9-7-18	DONNA JEAN SNIDER AND DAVID SNIDER	905 462
10*16053	C	9-7-18	GARY D HINERMAN AND JUDY ANN HINERMAN	905 466
10*16289	C	9-7-18	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	905 468
10*16412	C	9-7-18	ELIZABETH ANN BLAZER AND PAUL R BLAZER	905 452
10*16413	C	9-7-18	RONALD H EDGE JR	905 454
10*15667	D	9-7-20	KEVIN E MCGILTON ET UX	850 351
10*15698	D	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	900 363
10*15720	D	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	905 458
10*15721	D	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	905 456
10*16020	D	9-7-20	SHARON HINERMAN MAY & DANIEL G MAY	905 464
10*16028	D	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	905 460
10*16051	D	9-7-20	DONNA JEAN SNIDER AND DAVID SNIDER	905 462
10*16053	D	9-7-20	GARY D HINERMAN AND JUDY ANN HINERMAN	905 466
10*16289	D	9-7-20	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	905 468
10*16412	D	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	905 452
10*16413	D	9-7-20	RONALD H EDGE JR	905 454
10*15667	E	9-7-19	KEVIN E MCGILTON ET UX	850 351
10*15667	E	9-7-19	KEVIN E MCGILTON ET UX	850 351
10*15669	F	9-11-6.1	EMMA ANDERSON	861 586
10*15670	F	9-11-6.1	GARY M BONAR	861 577
10*15671	F	9-11-6.1	JUDALENE K COLLUMS	861 571
10*15672	F	9-11-6.1	NAOMI HUPP	861 604
10*47051.256.1	F	9-11-6.1	BRENDA J WHETZEL	881 145
10*47051.256.2	F	9-11-6.1	CAROL JEAN ANDERSON	879 299
10*47051.256.3	F	9-11-6.1	BRENDA S DYKHOUSE	881 148
10*47051.256.4	F	9-11-6.1	GLEN A BONAR	881 151
10*47051.256.5	F	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	882 530
10*15669	G	9-11-6.2	EMMA ANDERSON	861 586
10*15670	G	9-11-6.2	GARY M BONAR	861 577
10*15671	G	9-11-6.2	JUDALENE K COLLUMS	861 571
10*15672	G	9-11-6.2	NAOMI HUPP	861 604
10*47051.256.2	G	9-11-6.2	CAROL JEAN ANDERSON	879 299
10*47051.256.3	G	9-11-6.2	BRENDA S DYKHOUSE	881 148
10*47051.256.4	G	9-11-6.2	GLEN A BONAR	881 151
10*47051.256.5	G	9-11-6.2	JERRY W ZIEN AND KATHLEEN E ZIEN	882 530
10*15560	G	9-11-6.2	WILLIAM F KERNS ET UX	677 561
10*47051.108.1	H	9-11-9	MICHAEL A WHETZEL	885 51
10*15582	I	9-11-10	ROBERT L CLARK	685 239
10*15559	J	9-11-11	KENNETH M MCCARDIE ET UX REV LT	816 499
10*15511	K	9-11-12	DAVID E CROW	718 376
10*15510	K	9-11-12	ELAINE PHELPS ET VIR	718 326
10*15512	K	9-11-12	FRANCES COFFEY	718 378
10*15513	K	9-11-12	KAY KEYES	718 330
10*15514	K	9-11-12	L PAUL CROW	718 336
10*15515	K	9-11-12	DESIRE L CROW	718 334
10*15516	K	9-11-12	ROSE MARIE KIELGCZEWSKI	718 354
10*15517	K	9-11-12	DIANNE GELLNER & GARY GELLNER	718 345
10*15519	K	9-11-12	JOHN CROW	726 580
10*15520	K	9-11-12	TIMOTHY CROW	726 582
10*47051.123.1	K	9-11-12	LLOYD G BAKER	865 389
10*47051.123.2	K	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873 143

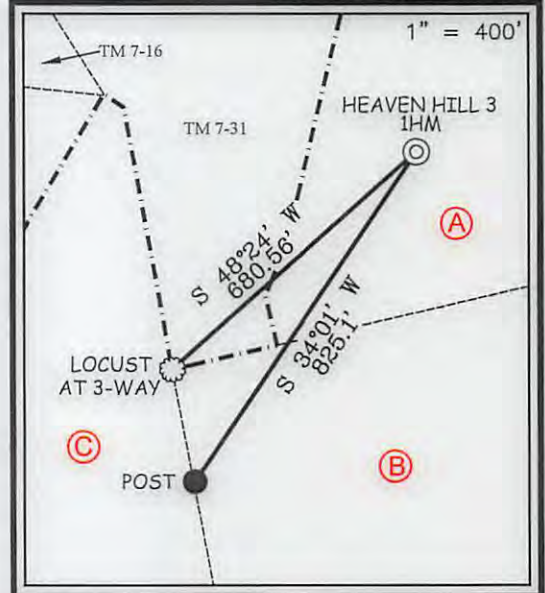


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NAD'83 S.P.C.(FT)	N. 478,859.7	E. 1,633,272.0
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NAD'83 GEO.	LAT-(N) 39.784440	LONG-(W) 80.684832
NAD'83 UTM (M)	N. 4,403,880.1	E. 526,987.0

T.H.

REFERENCES



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'



Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.
677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE APRIL 20, 20 17
REVISED _____, 20 ____
OPERATORS WELL NO. HEAVEN HILL 3-1HM
API WELL NO. 47 - 051 - 01935
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P1HMR.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: GROUND = 1,339.40' ELEVATION PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±
ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE TABLE ABOVE ACREAGE 72.82±

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,876' / TMD: 14,662'

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

08/25/2017

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Heaven Hill Unit 3-1HM

**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

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

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

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

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Office of Oil and Gas

APR 26 2017

WV Department of
Environmental Protection

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: Jonathan White

Its: Regulatory Analyst - Appalachia Region

Lease Name or No	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Red Book/Ps.	Assignment	Assignment	Assignment
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8*	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	B	9-7-21	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8*	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*15667	C	9-7-18	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8*	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	C	9-7-18	ROBERT A EDGE AND SHERIE N EDGE	TH EXPLORATION LLC	1/8*	900 363	N/A	N/A	N/A
10*15720	C	9-7-18	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8*	905 458	N/A	N/A	N/A
10*15721	C	9-7-18	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8*	905 456	N/A	N/A	N/A
10*16020	C	9-7-18	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8*	905 464	N/A	N/A	N/A
10*16028	C	9-7-18	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8*	905 460	N/A	N/A	N/A
10*16051	C	9-7-18	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8*	905 462	N/A	N/A	N/A
10*16053	C	9-7-18	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8*	905 466	N/A	N/A	N/A
10*16289	C	9-7-18	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8*	905 468	N/A	N/A	N/A
10*16412	C	9-7-18	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8*	905 452	N/A	N/A	N/A
10*16413	C	9-7-18	RONALD H EDGE JR	TH EXPLORATION LLC	1/8*	905 454	N/A	N/A	N/A
10*15667	D	9-7-20	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8*	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	D	9-7-20	ROBERT A EDGE AND SHERIE N EDGE	TH EXPLORATION LLC	1/8*	900 363	N/A	N/A	N/A
10*15720	D	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8*	905 458	N/A	N/A	N/A
10*15721	D	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8*	905 456	N/A	N/A	N/A
10*16020	D	9-7-20	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8*	905 464	N/A	N/A	N/A
10*16028	D	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8*	905 460	N/A	N/A	N/A
10*16051	D	9-7-20	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8*	905 462	N/A	N/A	N/A
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10*16412	D	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8*	905 452	N/A	N/A	N/A
10*16413	D	9-7-20	RONALD H EDGE JR	TH EXPLORATION LLC	1/8*	905 454	N/A	N/A	N/A
10*15667	E	9-7-19	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8*	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*15669	F	9-11-6.1	EMMA ANDERSON	CHEVRON USA INC	1/8*	861 586	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	F	9-11-6.1	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8*	861 577	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	F	9-11-6.1	JUDALENE K COLLUMS	CHEVRON USA INC	1/8*	861 571	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	F	9-11-6.1	NAOMI HUPP	CHEVRON USA INC	1/8*	861 604	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.1	F	9-11-6.1	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8*	881 145	N/A	N/A	N/A
10*47051.256.2	F	9-11-6.1	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8*	879 299	N/A	N/A	N/A
10*47051.256.3	F	9-11-6.1	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8*	881 148	N/A	N/A	N/A
10*47051.256.4	F	9-11-6.1	GLEN A BONAR	TH EXPLORATION LLC	1/8*	881 151	N/A	N/A	N/A
10*47051.256.5	F	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8*	882 530	N/A	N/A	N/A
10*15560	G	9-11-6.2	WILLIAM F KERNS ET UX	CHESAPEAKE APPALACHIA LLC	1/8*	677 561	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15669	G	9-11-6.2	EMMA ANDERSON	CHEVRON USA INC	1/8*	861 586	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	G	9-11-6.2	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8*	861 577	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	G	9-11-6.2	JUDALENE K COLLUMS	CHEVRON USA INC	1/8*	861 571	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	G	9-11-6.2	NAOMI HUPP	CHEVRON USA INC	1/8*	861 604	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.2	G	9-11-6.2	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8*	879 299	N/A	N/A	N/A
10*47051.256.3	G	9-11-6.2	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8*	881 148	N/A	N/A	N/A
10*47051.256.4	G	9-11-6.2	GLEN A BONAR	TH EXPLORATION LLC	1/8*	881 151	N/A	N/A	N/A
10*47051.256.5	G	9-11-6.2	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8*	882 530	N/A	N/A	N/A
10*47051.108.1	H	9-11-9	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8*	885 51	N/A	N/A	N/A
10*15582	I	9-11-10	ROBERT L CLARK	CHESAPEAKE APPALACHIA LLC	1/8*	685 239	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15559	J	9-11-11	KENNETH M MCCARDLE ET UX REV LT	CHEVRON USA INC	1/8*	816 499	N/A	N/A	Chevron to Tug Hill: 36/148
10*15510	K	9-11-12	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8*	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15511	K	9-11-12	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8*	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15512	K	9-11-12	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8*	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15513	K	9-11-12	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8*	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15514	K	9-11-12	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8*	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15515	K	9-11-12	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8*	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15516	K	9-11-12	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8*	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15517	K	9-11-12	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8*	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15518	K	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8*	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15519	K	9-11-12	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8*	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15520	K	9-11-12	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8*	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*47051.123.1	K	9-11-12	LLOYD G BAKER	TH EXPLORATION LLC	1/8*	865 389	N/A	N/A	N/A
10*47051.123.2	K	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8*	873 143	N/A	N/A	N/A

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047-051-01935

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

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

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

FURTHER, AFFIANT SAITH NOT.

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

David D. Kalish
Affiant: David D. Kalish

JURAT

Jan Pest
MARSHALL County 03:44:28 PM
Instrument No 1416299
Date Recorded 10/19/2016
Document Type NIS
Pages Recorded 1
Book-Page 28-62
Recording Fee \$5.00
Additional \$6.00

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

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

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



My Commission Expires: 10-05-2020
Signature/Notary Public: Robin Bock
Name/Notary Public (Print): Robin Bock

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April 18, 2017

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

RE: Heaven Hill 3-1HM

Subject: Marshall County Route 21/9 and 21 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21/9 and 21 in the area reflected on the Heaven Hill 3-1HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-689-7676, or by email at Jwhite@tug-hillop.com.

Sincerely,

A handwritten signature in blue ink that reads "Jonathan White".

Jonathan White
Regulatory Analyst – Appalachia Region
Cell 304-689-7676
Email: jwhite@tug-hillop.com

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

Date of Notice Certification: 04/21/2017

API No. 47- 051 - _____
Operator's Well No. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

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>526,250.98</u>
County: <u>Marshall</u>	Northing: <u>4,406,558.99</u>
District: <u>Meade</u>	Public Road Access: <u>Yeater Lane (Co. Rt. 21/11)</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Ricky L. Whitlatch</u>
Watershed: <u>(HUC 10) Fish Creek</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p><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 align="center">OOG OFFICE USE ONLY</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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Required Attachments:

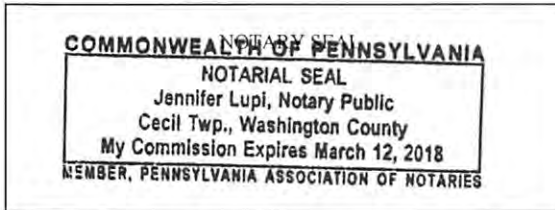
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

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(1/12)

Certification of Notice is hereby given:

THEREFORE, I Jonathan White, 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 Blvd, Southpointe Plaza II, Suite 200</u>
By:	<u>Jonathan White</u> <i>Jonathan White</i>		<u>Canonsburg, PA 15317</u>
Its:	<u>Regulatory Analyst - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>jwhite@tug-hilop.com</u>



Subscribed and sworn before me this 21st day of April 2017.

Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

Oil and Gas Privacy Notice:

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

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WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

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: 04/21/2017 **Date Permit Application Filed:** 04/24/2017

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
Name: Ricky L. Whittatch
Address: 1044 Yeater Lane
Glen Easton, WV 26039
Name: None
Address: _____

COAL OWNER OR LESSEE
Name: Murray Energy Corporation
Address: 46226 National Road
St. Clairsville, OH 43950

COAL OPERATOR
Name: Same as above coal owner
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Andrew Whittatch
Address: 942 Yeater Lane
Glen Easton, WV 26039
Name: Arnie Goodnight, et ux
Address: 102 Goodnight Lane
Moundsville, WV 26041

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: *See supplement page 1A attached
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: None
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: None
Address: _____

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*Please attach additional forms if necessary

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(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

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 jurisdiction of the permit 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, the secretary shall

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API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

08/25/2017

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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(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-1HM
Well Pad Name: Heaven Hill 3

Notice is hereby given by:

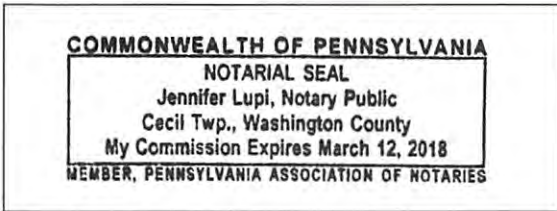
Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: jwhite@tug-hilltop.com

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

Oil and Gas Privacy Notice:

Jonathan White

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 21st day of April, 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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WV Department of
Environment & Natural Resources
08/25/2017

WW-6A

Supplement Pg. 1A

Tug Hill Operating, LLC
 380 Southpointe Blvd, Suite 200
 Cannonsburg, PA 15137

Residences within Two-Thousand Feet (2,000')

Well: Heaven Hill 3 - 1HM
 District: Meade (House #'s 1 & 2)
 State: WV

There are two (2) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

House 1 TM 7 Pcl. 30 Ricky L. Whitlatch Phone: 304-843-1168 Physical Address: 1044 Yeater Ln. Glen Easton, WV 26039 Tax Address: Same	House 2 TM 7 Pcl. 30.1 Andrew Corey Whitlatch Phone: 304-845-9605 Physical Address: 942 Yeater Ln. Glen Easton, WV 26039 Tax Address: Same
--	---



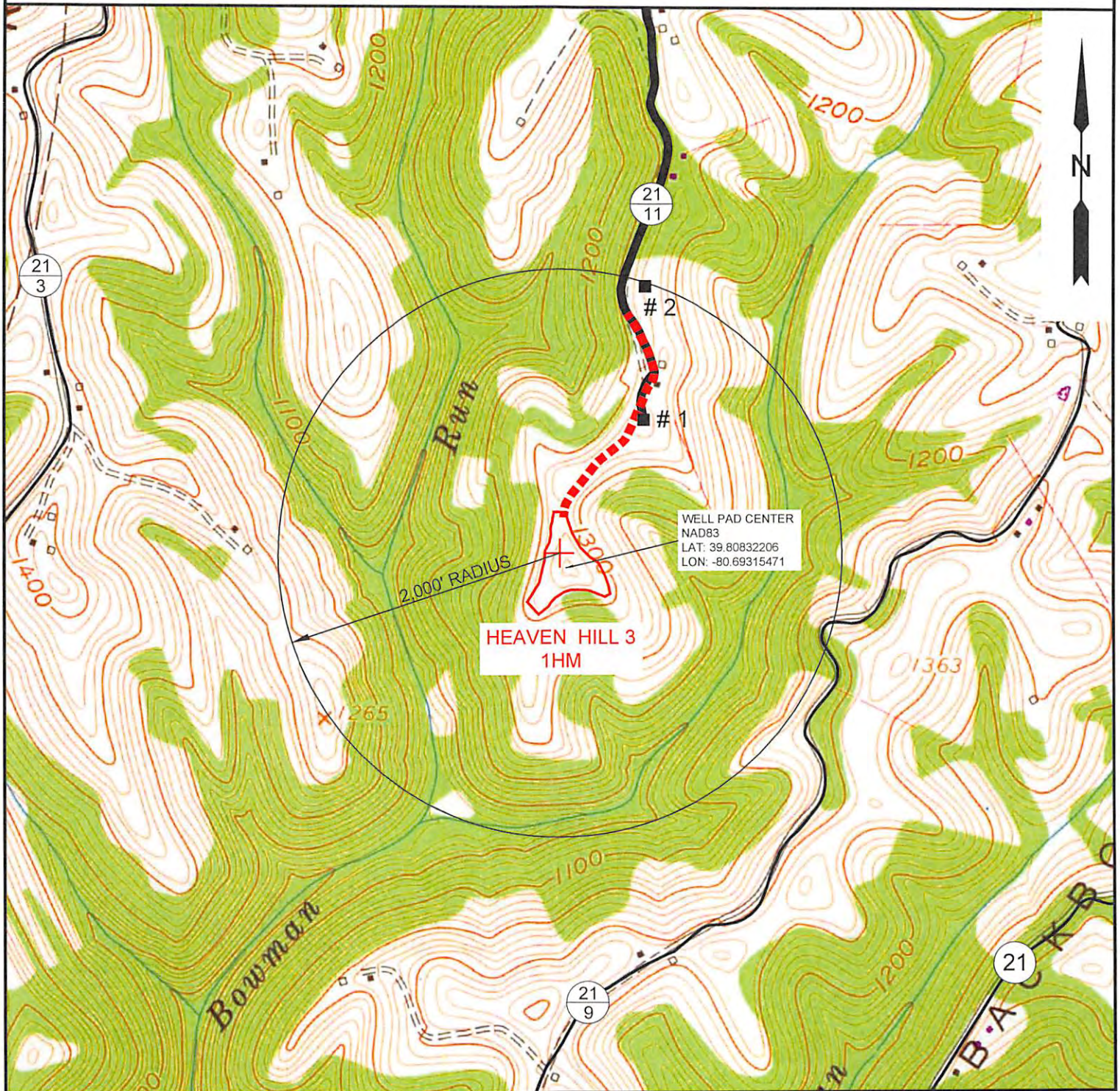
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PROPOSED HEAVEN HILL 3 - 1HM

047-051-01935



NOTE: THERE APPEARS TO BE TWO (2) POSSIBLE WATER SOURCES WITHIN 2,000'.

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Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	04/13/2017	1" = 1000'

APR 26 2017



TUG HILL
WV Department of
Environmental Protection
08/25/2017

WW-6A3
(1/12)Operator Well No. Heaven Hill 3-1HM

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: December 5, 2016 **Date of Planned Entry:** December 16, 2016

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: Ricky L. Whittlatch
Address: 1044 Yeater Lane
Glen Easton, WV 26039
Name: Andrew Whittlatch
Address: 942 Yeater Lane
Glen Easton, WV 26039
Name: Arnie Goodnight ET UX
Address: 102 Goodnight Lane
Moundsville, WV 26041

COAL OWNER OR LESSEE

Name: Murray Energy Corp.
Address: 46226 National Road
St. Clairsville, OH 43950

MINERAL OWNER(s)

Name: Ricky L. Whittlatch
Address: 1044 Yeater Lane
Glen Easton, WV 26039 ****SEE SUPPLEMENT PAGE****
*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>Lat: 39.8083194, Long: -80.6931660</u>
County:	<u>Marshall</u>	Public Road Access:	<u>Yeater Lane (CO. Rt. 21/11)</u>
District:	<u>Meade</u>	Watershed:	<u>HUC-10 Fish Creek</u>
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Ricky L. Whittlatch</u>

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

Notice is hereby given by:

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Blvd., Soutpointe Plaza II, Suite 200</u>
Telephone:	<u>724-0749-8388</u>		<u>Canonsburg, PA 15317</u>
Email:	<u>jwhite@tug-hillop.com</u>	Facsimile:	<u>724-338-2030</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or 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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APR 29 6 12 AM '17
WV Department of Environmental Protection
08/25/2017

Operator Well No. Heaven Hill Unit 3-1HM

WW-6A3 Notice of Entry for Plat Survey Attachment 1 of 1

Mineral Owner(s):

Name: Arnie Goodnight ET UX
Address: 102 Goodnight Lane
Moundsville, WV 26041

✓

Bounty Minerals III Acquisitions, LLC
777 Main Street – Suite 850
Ft. Worth, TX 76102

✓

Andrew Whitlatch
942 Yeater Lane
Glen Easton, WV 26039

✓

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WV Department of
Environmental Protection

04/25/2017

WW-6A5
(1/12)

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

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

Date of Notice: 04/21/2017 **Date Permit Application Filed:** 04/24/2017

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: Ricky L. Whittlatch
Address: 1044 Yeater Lane
Glen Easton, WV 26039

Name: Andrew Whittlatch
Address: 942 Yeater Lane
Glen Easton, WV 26039 **See Attached**

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>526,250.98</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,558.99</u>
District:	<u>Meade</u>	Public Road Access:	<u>Yeater Lane (Co. Rt. 21/11)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Ricky L. Whittlatch</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

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

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

Oil and Gas Privacy Notice:

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Environmental Protection **08/25/2017**

Operator Well No. Heaven Hill Unit 3-1HM

WW-6A5 Notice of Entry for Plat Survey Attachment 1 of 1

Notice is hereby provided to the SURFACE OWNER(s):

Name: Arnie Goodnight, et ux
Address: 102 Goodnight Lane
Moundsville, WV 26041



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Environmental Protection 08/25/2017



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
 Governor

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

March 13, 2017

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 Heaven Hills Unit 3 Pad, Marshall County
 Heaven Hills Unit 3-IHM Well site

47-051-01935

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2017-0126 which have been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/11 SLS.

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

Very Truly Yours,

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

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

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 Environmental Protection 08/25/2017



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill 3-1HM

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

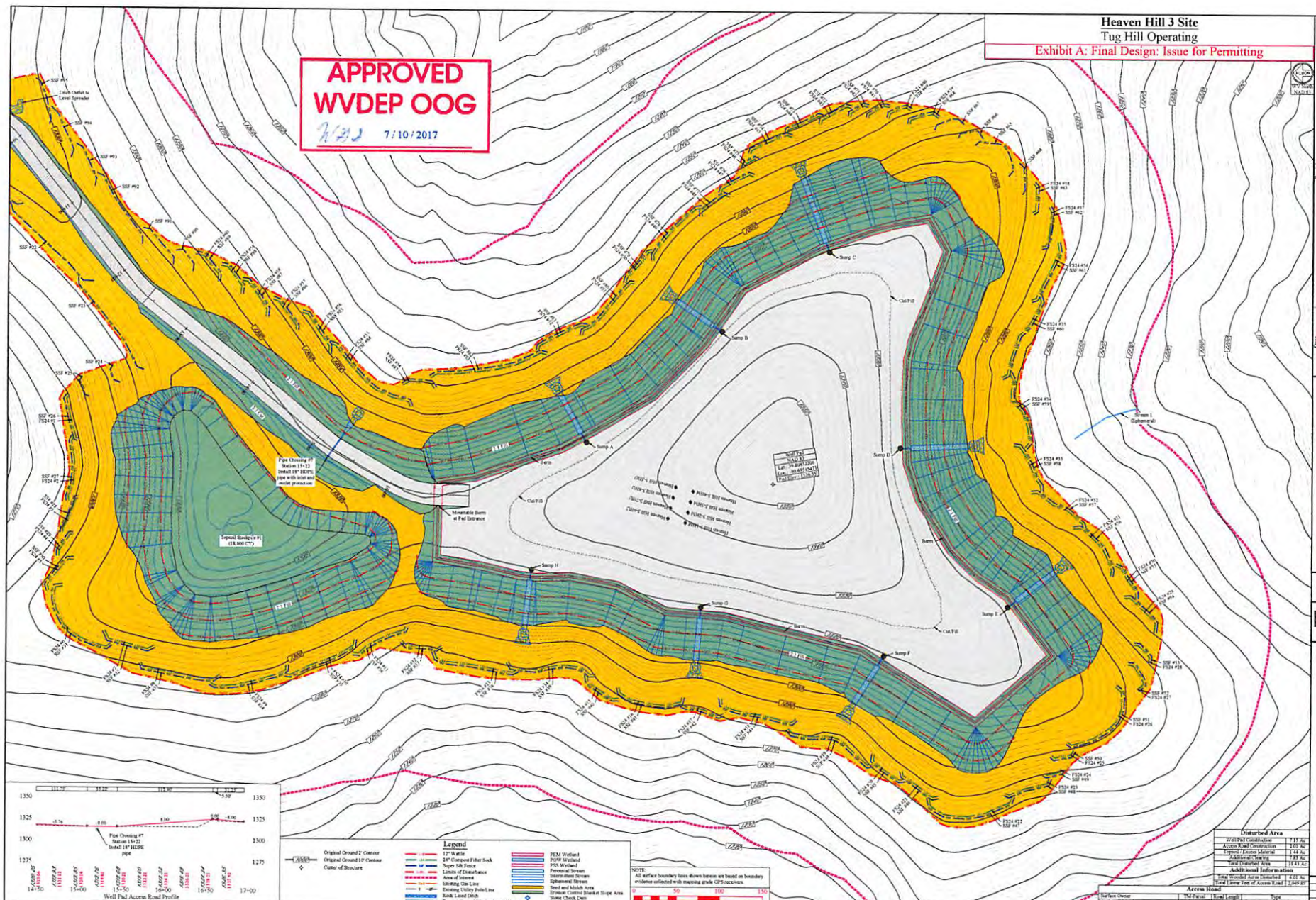
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Heaven Hill 3 Site
Tug Hill Operating

Exhibit A: Final Design: Issue for Permitting

APPROVED
WVDEP OOG
7/10/2017



Revision: 05/22/2017 Design Access Road Modification
 Date: 05/22/2017
TUG HILL OPERATING
 THIS DOCUMENT PREPARED FOR TUG HILL OPERATING
K&S
 Erosion and Sediment Control Plan
Heaven Hill 3 Site
 Meigs District
 Marshall County, WV
 Date: 06/24/2017
 Scale: As Shown
 Designed by: J.S.
 Drawn by: J.S.
 Sheet 7 of 14

Hill 3 Site

Construction Plan, &
 Erosion Control Plans
 All Operating
 Marshall County
 Meade District
 39.80832206°
 -80.69315471°
 Middle Fish Creek Watershed

Pertinent Site Information
 Heaven Hill 3 Site
 Emergency Number: 304-845-1920
 Meade District, Marshall County, WV
 Watershed: Middle Fish Creek Watershed
 Tug Hill Contact Number: 1-817-632-3400

047-051-01935

Revision
 Design
 Design - Access Road Modification

Date
 02-24-2017
 02-24-2017

TUG HILL
 OPERATING



THIS DOCUMENT
 PREPARED FOR
 TUG HILL
 OPERATING

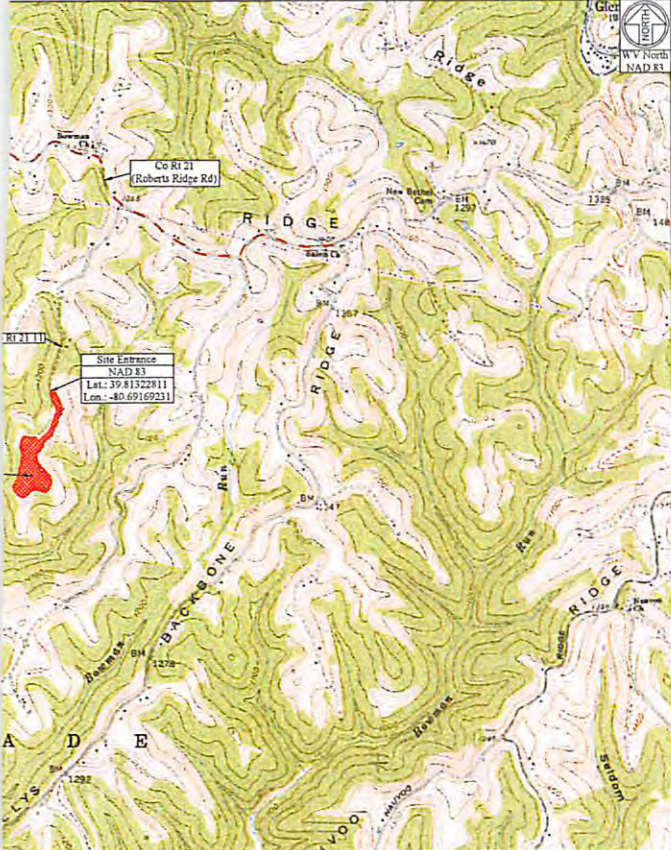
Kelly S. Surveying
 P.O. Box 254
 Oakley, WV 26229
 (304) 338-0983

Cover Sheet
 Heaven Hill 3 Site
 Meade District
 Marshall County, WV

Date: 02/24/2017
 Scale: As Shown
 Designed By: ZS

08/25/2017

Design: Issue for Permitting



WV State Plane Coordinate System
 North Zone, NAD 83
 Elevations Based on NAV88
 Established By Survey Grade GPS
 and OPUS Post-Processing

Property Owner Information - Heaven Hill 3 Site

Owner	TM-Parcel	Well Pad	Access Road	Topsoil/Excess	Add. Clearing	Total Disturbed
Andrew Wiltach	7-30.1	0.00	0.44	0.00	0.31	0.75
Ricky Wiltach	7-30	6.26	1.56	1.44	5.53	14.79
Amie Goodnight	7-14	0.00	0.01	0.00	0.14	0.15
Ricky Wiltach	7-15	0.00	0.00	0.00	0.01	0.01
Ricky Wiltach	7-31	0.00	0.00	0.00	0.20	0.20
Ricky Wiltach	7-21	0.89	0.00	0.00	1.64	2.53
Site Totals (Ac)	7.15	2.01	1.44	7.83	18.43	

Access Road

Surface Owner	TM-Parcel	Road Length	Type
Andrew Wiltach	7-30.1	114.11'	New Access Road Construction
Ricky Wiltach	7-30	1,935.74'	New Access Road Construction

Disturbed Area

Well Pad Construction	7.15 Ac
Access Road Construction	2.01 Ac
Topsoil / Excess Material	1.44 Ac
Additional Clearing	7.83 Ac
Total Disturbed Area	18.43 Ac
Additional Information	
Total Wooded Acres Disturbed	6.01 Ac
Total Linear Feet of Access Road	2,049.85'

Heaven Hill 3 Site Quantities

Description	Cut (CY)	Fill (CY)	Spill (CY)	Borrow (CY)	Max. Slope	Length of Slope
Well Pad	17,541.18	32,513.35	14,997.23		N/A	28'A
Well Pad Access Road	3,439.76	2,892.75	587.01		10.75%	55.14'
Existing Gas Well Road Tie	35.05	42.74		6.69	10.83%	27.13'
Driveway Tie #1	23.57	1.65	21.92		10.36%	28.37'
Driveway Tie #2	61.41	6.61	54.60		7.31%	55.38'
Topsoil/Excess Material Stockpile	0.00	18,000.94		18,000.94	N/A	N/A
Total	51,181.97	53,528.84	15,660.76	18,007.63		
Total Spill (CY) =			-2,346.87			(Excess Spill Capacity)

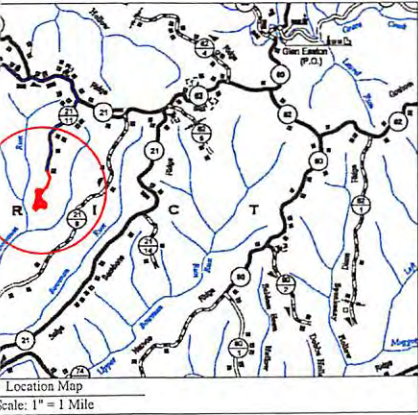
Handwritten signature and date: 4/21/17



Quadrangle: Glen Easton
 Sheet: Middle Fish Creek

Site Locations (NAD 83)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.81322811	-80.69169231
Center of Well Pad	39.80832206	-80.69315471



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



Design Certification
 The drawings, construction notes and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas MCHERR.
 All Plans, Sheets, and/or Reference Diagrams included in this design constitutes a complete set of plans.
 A complete set of plans is necessary to construct the site in accordance with the design.
 Zachary C. Summerfield
 RPE 22214
 Kelly Surveying LLC
 COA: CO4232-40
 Date: 02-24-2017

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N3	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6-7	E&S Plan View
8	Toe Key Exhibit
9-10	Plan View
11-12	Cross Sections - Well Pad
13	Cross Sections - Access Road
14	Cross Sections - Additional Access Roads
G1-G3	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M2	Production Exhibit
D1-D2	Erosion and Sediment Control Details
R1	Access Road Details
P1	Pad Details