



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, September 13, 2017
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
550 BAILEY AVENUE, SUITE 510

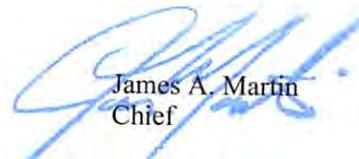
FORT WORTH, TX 76107

Re: Permit approval for HEAVEN HILL 3-4HM
47-051-01947-00-00

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 3-4HM
Farm Name: RICKY L. WHITLATCH
U.S. WELL NUMBER: 47-051-01947-00-00
Horizontal 6A / New Drill
Date Issued: 9/13/2017

Promoting a healthy environment.

09/15/2017

PERMIT CONDITIONS

047-051-01947

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.

09/15/2017

PERMIT CONDITIONS

047-051-01947

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.

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#	2,810'	2,800'	917ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	19,414'	19,404'	4943ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,251'	
Liners							

JW
7/5/17

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			

WW-6B
(10/14)

API NO. 47-051 - _____

OPERATOR WELL NO. Heaven Hill 3-4HM

Well Pad Name: Heaven Hill 3

[Handwritten signature]
7/5/17

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 30,670,000 lb prop and approximately 474,181 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

*Note: Attach additional sheets as needed.

Conductor, Coal and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

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

Intermediate Casing:

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

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

Kick Off Plug:

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

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

Production Casing Cement:

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

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

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

Area of Review**Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, 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

Permit well - Heaven Hill 3-4HM

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
4705170645	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely, Probably an old shallow well	Old well, records are incomplete
4705100847	McElroy Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well	Well records are incomplete, plug date 2/18/2000
4705100846	Hope Natural Gas Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well	Well records are incomplete, plug date 12/12/1999
4705100855	Hope Natural Gas Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well	Old well, records are incomplete, plug date 10/10/2000
4705100593	McElroy Coal Co.	2521	Gordon	Unknown	No. TVD depth of well is too shallow to be within Range of potential Fracture propagation from Marcellus wells	Plug date 2/20/2004
4705170160	Hope Natural Gas Co.	2470	Gordon	Unknown, likley	No. TVD depth of well is too shallow to be within Range of potential Fracture propagation from Marcellus wells	Well Records are incomplete

WV Geological & Economic Survey: Well: County = 51 Permit = 70645

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170645	Marshall	70645	Meigs	Glen Easton	Cameron	39.804233	-80.591104	520442.9	4406075.8

Completion Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_V
4705170645	---	---	---	Prody Mfg E J Jones	---	---	---	---	---	---	---

OFFICE OF OIL AND GAS JUL 07 2017

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,

propagation. The actual shall include at a minimum the API number, operator name, total depths performed, formation(s) and producing zones not performed.

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00847
Get Data Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Btm Hole Log

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

WV Geological & Economic Survey: Well: County = 51 Permit = 00847 Report Time: Thursday, June 08, 2017

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 7054 51 847

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705100847 Marshall 847 Meade Glen Easton Cameron 39.790314 -80.837344 528788.4 4405406.8

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 PROP_V
 4705100847 2/18/2003 Plugging Completed Larry J Whetzel M-25 McElroy Coal Company
 4705100847 unknown Prpty Map E J Jones 1250 Manufacturers Light & Heat Co

Completion Information:
 API CMP_DT SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FMT INITIAL_CLASS FINAL_CLASS TYPE RIG CMP_MTHD TVD TMD
 4705100847 2/18/2003 2/18/2003 unclassified unclassified not available unknown unknown
 4705100847 unknown unknown 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

Plugging Information:
 API PLG_DT DEPTH_PBT
 4705100847 2/18/2003 0

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00846
Get Data Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Btm Hole Log

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

WV Geological & Economic Survey: Well: County = 51 Permit = 00846 Report Time: Thursday, June 08, 2017

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 7055 51 846

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705100846 Marshall 846 Meade Glen Easton Cameron 39.797852 -80.834335 527024.4 4405368.2

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 PROP_V
 4705100846 12/12/1999 Plugging Completed Alisa Wenz M-53 Consolidation Coal Co McElroy Coal Company
 4705100846 unknown Prpty Map E Gorby 550 Hope Natural Gas Company

Completion Information:
 API CMP_DT SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FMT INITIAL_CLASS FINAL_CLASS TYPE RIG CMP_MTHD TVD TMD
 4705100846 12/12/1999 12/12/1999 1252 Ground Level unclassified unclassified not available unknown unknown
 4705100846 unknown unknown 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

Plugging Information:
 API PLG_DT DEPTH_PBT
 4705100846 12/12/1999 0

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00855
Get Data Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Btm Hole Log

Table Descriptions
[County Code Translations](#)
[Permit/Numbering Schemas](#)
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[Disclaimer](#)
[WVGES Main](#)
[Pipeline Plus](#) New

WV Geological & Economic Survey: Well: County = 51 Permit = 00855 Report Time: Thursday, June 08, 2017

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 7070 51 855

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705100855 Marshall 855 Meade Glen Easton Cameron 39.790439 -80.830762 527333.2 4404547.2

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 PROP_V
 4705100855 10/10/2000 Plugging Completed K N & D R McCasle M-28 Consolidation Coal Co
 4705100855 unknown Prpty Map Samuel Riggs 571 Hope Natural Gas Company

Completion Information:
 API CMP_DT SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FMT INITIAL_CLASS FINAL_CLASS TYPE RIG CMP_MTHD TVD TMD
 4705100855 10/10/2000 9/14/2000 1259 Ground Level unclassified unclassified not available unknown unknown
 4705100855 unknown unknown 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

Plugging Information:
 API PLG_DT DEPTH_PBT
 4705100855 10/10/2000 0

There is no Sample data for this well

OFFICE OF OIL AND GAS

RECEIVED
Office of Oil and Gas
JUL 07 2017
WV Department of
Environmental Protection

09/15/2017

WVGES Pipeline

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

Enter Permit #: 00593

Get Data | Reset

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

Table Resolutions
[County Code Transactions](#)
[Permit Numbers/Status](#)
[Lease Notes](#)
[Contact Information](#)
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WV Geological & Economic Survey: **Well: County = 51 Permit = 00593** Report Time: Thursday, June 09, 2017 1:37:32 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725100593	Marshall	003	Meigs	044	044	875127	872902	4	440507

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	PROP_VD
4725100593	11/27/14		Completed	David Dondelinger	1	1227				Man-A-More, Light & Heat Co.	
4725100593	2/23/2004		Plugging	Completed	Harmon & Mary E Crow		M-78		J W West	Midway Coal Company	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD
4725100593	11/27/14			Camacho-Gamer	Greenland Gas Pm	Gordon	unclassified	unclassified	Gas	Unknown	Unknown	2521	
4725100593	2/23/2004	2/12/2004	760	Ground Level									

There is no Pay data for this well

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

Plugging Information:

API	PLG_DT	DEPTH_FBT
4725100593	2/23/2004	0

There is no Sample data for this well

WVGES Pipeline

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

Enter Permit #: 70160

Get Data | Reset

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

Table Resolutions
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[Lease Notes](#)
[Contact Information](#)
[Pipeline](#)
[WVGES Main](#)
[Pipeline Plus](#)

WV Geological & Economic Survey: **Well: County = 51 Permit = 70160** Report Time: Thursday, June 09, 2017 2:4

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725170160	Marshall	70160	Meigs	044	044	875609	86270611	3	4404508

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	PROP_VD	PROP_TRGT_FM
4725170160			Original Log	Completed	John W West	1	M-43			Wheeling Natural Gas Co. The		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF
4725170160			760	Barometer	Gordon (LycOff)		unclassified	unclassified	not available	Unknown	Unknown	2470	2470		

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

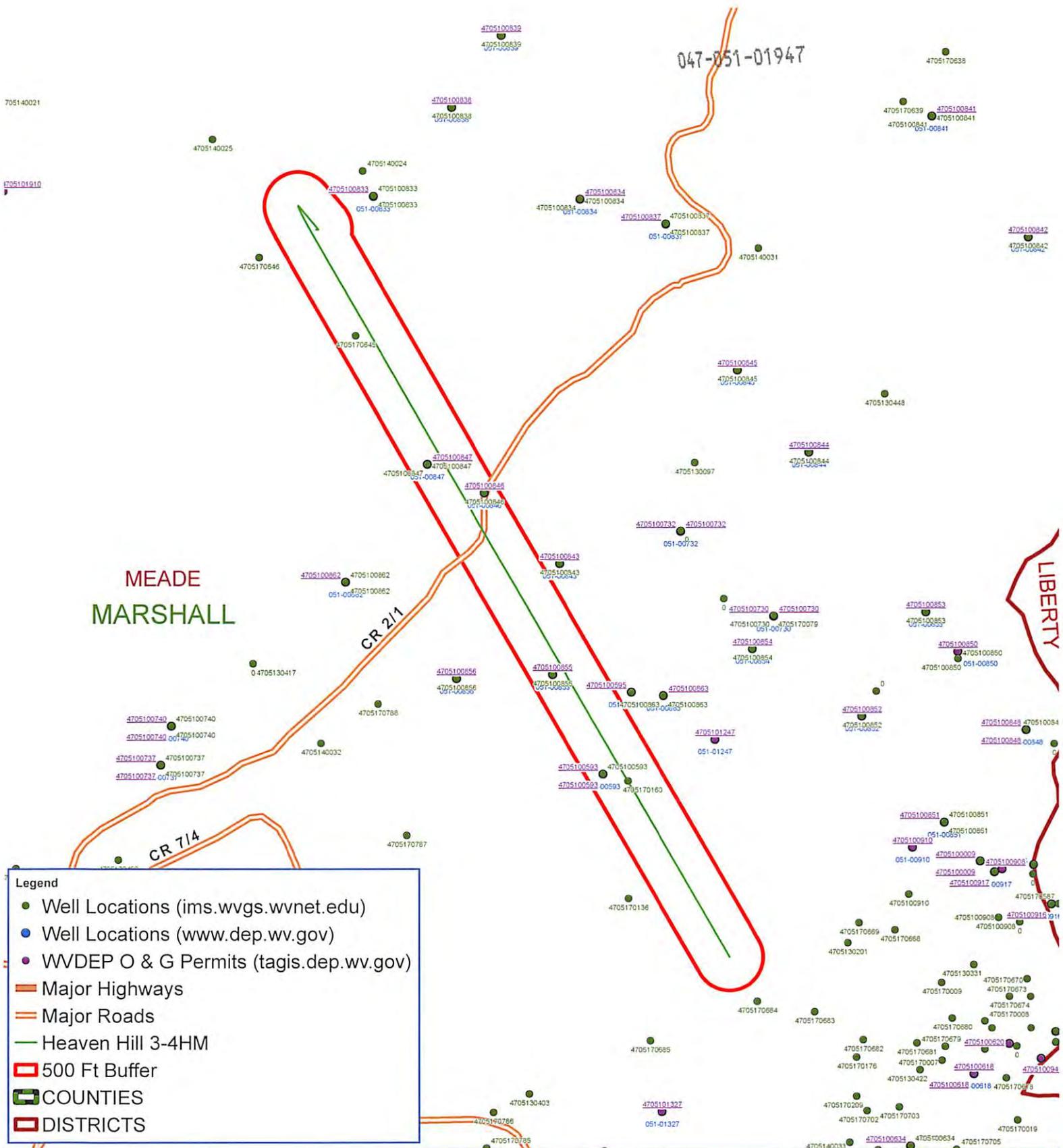
There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

OFFICE OF OIL AND GAS JUL 07 2017

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Legend

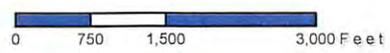
- Well Locations (ims.wvgs.wvnet.edu)
- Well Locations (www.dep.wv.gov)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 3-4HM
- ▭ 500 Ft Buffer
- ▭ COUNTIES
- ▭ DISTRICTS



Heaven Hill 3-4HM

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:

09/15/2017

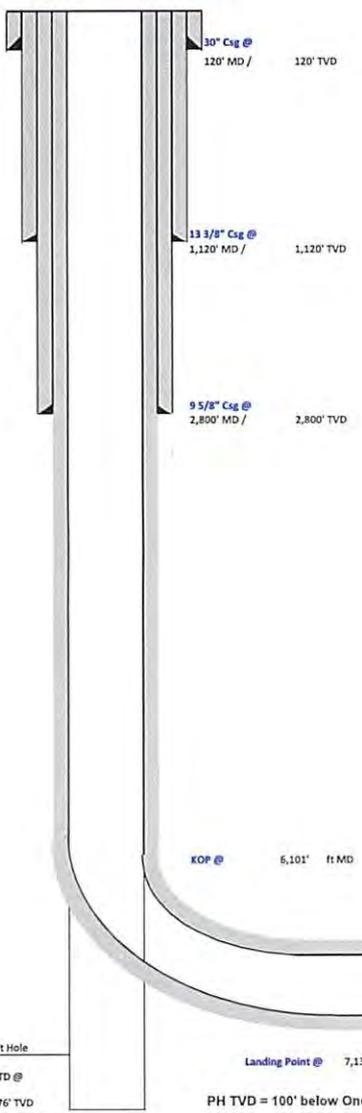


WELL NAME: Heaven Hill 3-4HM
STATE: West Virginia **COUNTY:** Marshall
DISTRICT: Meade
DF Elev: 1,326' **GL Elev:** 1,326'
TD: 19,404'
TH Latitude: 39.80857655
TH Longitude: -80.69319108
BH Latitude: 39.77893089
BH Longitude: -80.6715141

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1038
Sewickley Coal	946
Pittsburgh Coal	1031
Big Lime	2060
Weir	2486
Berea	2684
Gordon	2946
Rhinestreet	6068
Genesee/Burkett	6586
Tully	6617
Hamilton	6650
Marcellus	6724
Landing Depth	6763
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	2,800'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	19,404'	6,977'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,142	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	895	A	15	Air	1 Centralizer every other jt
Production	4,359	A	14.5	Air / SOB/M	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Pilot Hole
 PH TD @ 6,876' TVD
 Landing Point @ 7,136' MD / 6,763' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 19,404' ft MD
 6,977' ft TVD

Handwritten signature/initials

OFFICE OF OIL AND GAS JUL 07 2017 047-051-01947



TUG HILL
OPERATING

Well: Heaven Hill 3-4 HM
Site: Heaven Hill 3
Project: Marshall County, West Virginia
Design: rev2
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	1350.00	3.00	90.00	1349.93	0.00	3.93	2.00	90.00	1.94	Begin 3.00° tangent
4	1850.00	3.00	90.00	1849.25	0.00	30.09	0.00	0.00	14.88	Begin 2°/100' drop
5	2000.00	0.00	90.00	1999.18	0.00	34.02	2.00	180.00	16.82	Begin vertical hold section
6	4000.82	0.00	90.00	4000.00	0.00	34.02	0.00	90.00	16.82	Begin 2°/100' build
7	4737.55	14.73	319.90	4728.64	72.06	-26.66	2.00	319.90	-75.82	Begin 14.73° tangent
8	6101.05	14.73	319.90	6047.29	337.33	-250.04	0.00	0.00	-416.84	Begin 10°/100' build/turn
9	7136.07	89.00	150.00	6762.90	-150.61	-5.76	10.00	-169.61	128.07	Begin 89.00° lateral section
10	19403.87	89.00	150.00	6977.00	-10773.22	6127.20	0.00	0.00	2393.75	PBHL/TD

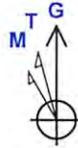


Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
Depth Reference: RKB=1326 @ 1326.00usft

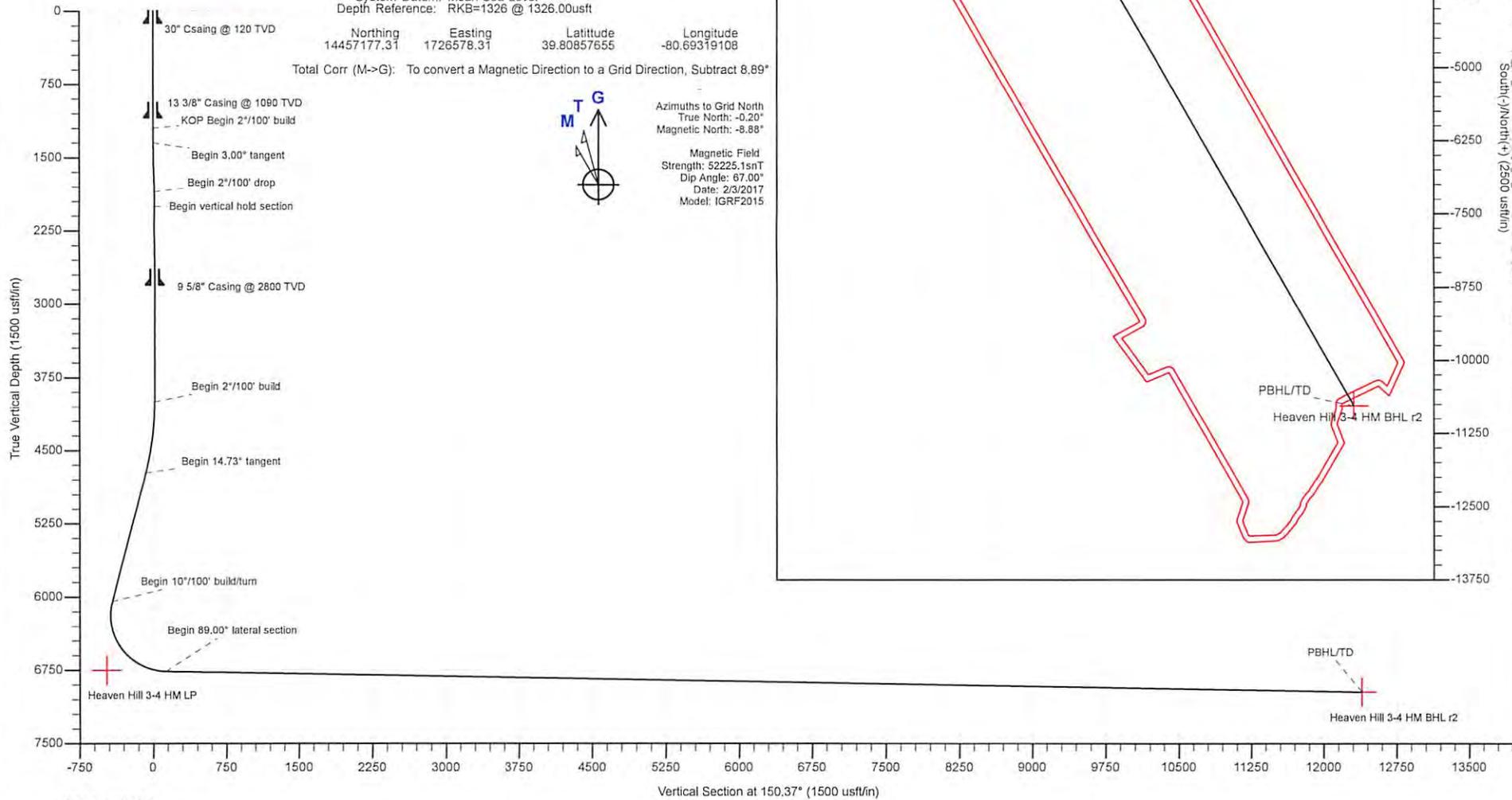
Northing: 14457177.31 Easting: 1726578.31 Latitude: 39.80857655 Longitude: -80.69319108

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



Vertical Section at 150.37° (1500 usft/in)

047-051-01947

OFFICE OF TUG HILL OPERATING



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	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 3-4 HM					
Well Position	+N/-S	0.00 usft	Northing:	14,457,177.31 usft	Latitude:	39.80857655
	+E/-W	0.00 usft	Easting:	1,726,578.31 usft	Longitude:	-80.69319108
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	52,225.05940637

Design	rev2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	150.37

Plan Survey Tool Program	Date	5/17/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,403.87 rev2 (Original Hole)	MWD MWD - Standard	

OFFICE OF OIL AND GAS JUL 07 2017



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Plan Sections											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00		
1,350.00	3.00	90.00	1,349.93	0.00	3.93	2.00	2.00	0.00	90.00		
1,850.00	3.00	90.00	1,849.25	0.00	30.09	0.00	0.00	0.00	0.00		
2,000.00	0.00	90.00	1,999.18	0.00	34.02	2.00	-2.00	0.00	180.00		
4,000.82	0.00	90.00	4,000.00	0.00	34.02	0.00	0.00	0.00	90.00		
4,737.55	14.73	319.90	4,728.64	72.06	-26.66	2.00	2.00	0.00	319.90		
6,101.05	14.73	319.90	6,047.29	337.33	-250.04	0.00	0.00	0.00	0.00		
7,136.07	89.00	150.00	6,762.90	-150.61	-5.76	10.00	7.18	-16.42	-169.61		
19,403.87	89.00	150.00	6,977.00	-10,773.22	6,127.20	0.00	0.00	0.00	0.00	Heaven Hill 3-4 HM B	

OFFICE OF OIL AND GAS JUL 07 2017



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,177.31	1,726,578.31	39.80857655	-80.69319108	
KOP Begin 2°/100' build										
1,300.00	2.00	90.00	1,299.98	0.00	1.75	14,457,177.31	1,726,580.06	39.80857654	-80.69318487	
1,350.00	3.00	90.00	1,349.93	0.00	3.93	14,457,177.31	1,726,582.24	39.80857651	-80.69317710	
Begin 3.00° tangent										
1,400.00	3.00	90.00	1,399.86	0.00	6.54	14,457,177.31	1,726,584.86	39.80857649	-80.69316778	
1,500.00	3.00	90.00	1,499.73	0.00	11.78	14,457,177.31	1,726,590.09	39.80857644	-80.69314915	
1,600.00	3.00	90.00	1,599.59	0.00	17.01	14,457,177.31	1,726,595.32	39.80857639	-80.69313051	
1,700.00	3.00	90.00	1,699.45	0.00	22.24	14,457,177.31	1,726,600.56	39.80857634	-80.69311188	
1,800.00	3.00	90.00	1,799.31	0.00	27.48	14,457,177.31	1,726,605.79	39.80857629	-80.69309324	
1,850.00	3.00	90.00	1,849.25	0.00	30.09	14,457,177.31	1,726,608.41	39.80857627	-80.69308392	
Begin 2°/100' drop										
1,900.00	2.00	90.00	1,899.20	0.00	32.28	14,457,177.31	1,726,610.59	39.80857625	-80.69307616	
2,000.00	0.00	90.00	1,999.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
Begin vertical hold section										
2,100.00	0.00	0.00	2,099.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,200.00	0.00	0.00	2,199.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,300.00	0.00	0.00	2,299.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,400.00	0.00	0.00	2,399.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,500.00	0.00	0.00	2,499.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,600.00	0.00	0.00	2,599.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,700.00	0.00	0.00	2,699.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,800.00	0.00	0.00	2,799.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
2,900.00	0.00	0.00	2,899.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,000.00	0.00	0.00	2,999.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,100.00	0.00	0.00	3,099.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,200.00	0.00	0.00	3,199.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,300.00	0.00	0.00	3,299.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,400.00	0.00	0.00	3,399.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,500.00	0.00	0.00	3,499.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,600.00	0.00	0.00	3,599.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,700.00	0.00	0.00	3,699.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,800.00	0.00	0.00	3,799.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
3,900.00	0.00	0.00	3,899.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
4,000.00	0.00	0.00	3,999.18	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
4,000.82	0.00	0.00	4,000.00	0.00	34.02	14,457,177.31	1,726,612.33	39.80857623	-80.69306994	
Begin 2°/100' build										
4,100.00	1.98	319.90	4,099.16	1.31	32.91	14,457,178.63	1,726,611.23	39.80857985	-80.69307386	
4,200.00	3.98	319.90	4,199.02	5.29	29.56	14,457,182.61	1,726,607.87	39.80859081	-80.69308575	
4,300.00	5.98	319.90	4,298.63	11.94	23.97	14,457,189.25	1,726,602.28	39.80860911	-80.69310559	
4,400.00	7.98	319.90	4,397.89	21.24	16.14	14,457,198.55	1,726,594.45	39.80863473	-80.69313337	
4,500.00	9.98	319.90	4,496.66	33.18	6.08	14,457,210.50	1,726,584.39	39.80866762	-80.69316903	

OFFICE OF OIL AND GAS JUL 07 2017



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,600.00	11.98	319.90	4,594.82	47.76	-6.19	14,457,225.07	1,726,572.12	39.80870776	-80.69321255	
4,700.00	13.98	319.90	4,692.26	64.94	-20.66	14,457,242.25	1,726,557.65	39.80875509	-80.69326387	
4,737.55	14.73	319.90	4,728.63	72.06	-26.66	14,457,249.38	1,726,551.65	39.80877471	-80.69328514	
Begin 14.73° tangent										
4,800.00	14.73	319.90	4,789.03	84.21	-36.89	14,457,261.53	1,726,541.42	39.80880817	-80.69332143	
4,900.00	14.73	319.90	4,885.74	103.67	-53.28	14,457,280.98	1,726,525.04	39.80886175	-80.69337952	
5,000.00	14.73	319.90	4,982.45	123.12	-69.66	14,457,300.44	1,726,508.65	39.80891533	-80.69343762	
5,100.00	14.73	319.90	5,079.16	142.58	-86.04	14,457,319.89	1,726,492.27	39.80896892	-80.69349572	
5,200.00	14.73	319.90	5,175.88	162.03	-102.43	14,457,339.35	1,726,475.89	39.80902250	-80.69355382	
5,300.00	14.73	319.90	5,272.59	181.49	-118.81	14,457,358.80	1,726,459.50	39.80907608	-80.69361192	
5,400.00	14.73	319.90	5,369.30	200.94	-135.19	14,457,378.26	1,726,443.12	39.80912966	-80.69367002	
5,500.00	14.73	319.90	5,466.01	220.40	-151.57	14,457,397.71	1,726,426.74	39.80918325	-80.69372812	
5,600.00	14.73	319.90	5,562.72	239.85	-167.96	14,457,417.17	1,726,410.36	39.80923683	-80.69378622	
5,700.00	14.73	319.90	5,659.43	259.31	-184.34	14,457,436.62	1,726,393.97	39.80929041	-80.69384432	
5,800.00	14.73	319.90	5,756.14	278.76	-200.72	14,457,456.08	1,726,377.59	39.80934399	-80.69390242	
5,900.00	14.73	319.90	5,852.86	298.22	-217.11	14,457,475.53	1,726,361.21	39.80939758	-80.69396052	
6,000.00	14.73	319.90	5,949.57	317.67	-233.49	14,457,494.99	1,726,344.82	39.80945116	-80.69401862	
6,100.00	14.73	319.90	6,046.28	337.13	-249.87	14,457,514.44	1,726,328.44	39.80950474	-80.69407672	
6,101.05	14.73	319.90	6,047.29	337.33	-250.04	14,457,514.65	1,726,328.27	39.80950530	-80.69407733	
Begin 10°/100' build/turn										
6,200.00	5.30	300.31	6,144.65	349.30	-262.13	14,457,526.61	1,726,316.19	39.80953827	-80.69412021	
6,300.00	6.00	175.87	6,244.41	346.41	-265.75	14,457,523.72	1,726,312.56	39.80953038	-80.69413315	
6,400.00	15.61	159.41	6,342.54	328.56	-260.63	14,457,505.87	1,726,317.68	39.80948131	-80.69411514	
6,500.00	25.52	155.47	6,436.06	296.29	-246.92	14,457,473.60	1,726,331.39	39.80939255	-80.69406672	
6,600.00	35.48	153.65	6,522.12	250.57	-225.04	14,457,427.89	1,726,353.27	39.80926680	-80.69398937	
6,700.00	45.45	152.54	6,598.11	192.80	-195.66	14,457,370.12	1,726,382.65	39.80910788	-80.69388544	
6,800.00	55.43	151.77	6,661.71	124.74	-159.66	14,457,302.05	1,726,418.65	39.80892061	-80.69375809	
6,900.00	65.42	151.16	6,711.00	48.44	-118.15	14,457,225.75	1,726,460.17	39.80871069	-80.69361118	
7,000.00	75.41	150.64	6,744.48	-33.77	-72.37	14,457,143.54	1,726,505.94	39.80848449	-80.69344919	
7,100.00	85.40	150.17	6,761.13	-119.39	-23.73	14,457,057.92	1,726,554.59	39.80824889	-80.69327703	
7,136.07	89.00	150.00	6,762.90	-150.61	-5.76	14,457,026.70	1,726,572.55	39.80816298	-80.69321344	
Begin 89.00° lateral section										
7,200.00	89.00	150.00	6,764.01	-205.97	26.20	14,456,971.34	1,726,604.51	39.80801066	-80.69310031	
7,300.00	89.00	150.00	6,765.76	-292.56	76.19	14,456,884.75	1,726,654.50	39.80777239	-80.69292335	
7,400.00	89.00	150.00	6,767.50	-379.15	126.18	14,456,798.16	1,726,704.50	39.80753413	-80.69274640	
7,500.00	89.00	150.00	6,769.25	-465.74	176.18	14,456,711.57	1,726,754.49	39.80729586	-80.69256945	
7,600.00	89.00	150.00	6,770.99	-552.33	226.17	14,456,624.98	1,726,804.48	39.80705759	-80.69239250	
7,700.00	89.00	150.00	6,772.74	-638.92	276.16	14,456,538.40	1,726,854.47	39.80681932	-80.69221555	
7,800.00	89.00	150.00	6,774.48	-725.51	326.15	14,456,451.81	1,726,904.47	39.80658106	-80.69203860	
7,900.00	89.00	150.00	6,776.23	-812.10	376.15	14,456,365.22	1,726,954.46	39.80634279	-80.69186166	
8,000.00	89.00	150.00	6,777.98	-898.69	426.14	14,456,278.63	1,727,004.45	39.80610452	-80.69168471	
8,100.00	89.00	150.00	6,779.72	-985.28	476.13	14,456,192.04	1,727,054.44	39.80586625	-80.69150777	
8,200.00	89.00	150.00	6,781.47	-1,071.86	526.12	14,456,105.45	1,727,104.43	39.80562798	-80.69133083	
8,300.00	89.00	150.00	6,783.21	-1,158.45	576.11	14,456,018.86	1,727,154.43	39.80538971	-80.69115388	
8,400.00	89.00	150.00	6,784.96	-1,245.04	626.11	14,455,932.27	1,727,204.42	39.80515144	-80.69097694	
8,500.00	89.00	150.00	6,786.70	-1,331.63	676.10	14,455,845.68	1,727,254.41	39.80491317	-80.69080001	
8,600.00	89.00	150.00	6,788.45	-1,418.22	726.09	14,455,759.09	1,727,304.40	39.80467490	-80.69062307	
8,700.00	89.00	150.00	6,790.19	-1,504.81	776.08	14,455,672.50	1,727,354.40	39.80443663	-80.69044613	
8,800.00	89.00	150.00	6,791.94	-1,591.40	826.08	14,455,585.91	1,727,404.39	39.80419836	-80.69026920	
8,900.00	89.00	150.00	6,793.68	-1,677.99	876.07	14,455,499.32	1,727,454.38	39.80396009	-80.69009226	
9,000.00	89.00	150.00	6,795.43	-1,764.58	926.06	14,455,412.73	1,727,504.37	39.80372182	-80.68991533	
9,100.00	89.00	150.00	6,797.17	-1,851.17	976.05	14,455,326.14	1,727,554.37	39.80348355	-80.68973840	
9,200.00	89.00	150.00	6,798.92	-1,937.76	1,026.05	14,455,239.56	1,727,604.36	39.80324528	-80.68956147	
9,300.00	89.00	150.00	6,800.66	-2,024.35	1,076.04	14,455,152.97	1,727,654.35	39.80300700	-80.68938454	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,400.00	89.00	150.00	6,802.41	-2,110.94	1,126.03	14,455,066.38	1,727,704.34	39.80276873	-80.68920761	
9,500.00	89.00	150.00	6,804.15	-2,197.53	1,176.02	14,454,979.79	1,727,754.34	39.80253046	-80.68903068	
9,600.00	89.00	150.00	6,805.90	-2,284.12	1,226.02	14,454,893.20	1,727,804.33	39.80229219	-80.68885376	
9,700.00	89.00	150.00	6,807.64	-2,370.70	1,276.01	14,454,806.61	1,727,854.32	39.80205391	-80.68867683	
9,800.00	89.00	150.00	6,809.39	-2,457.29	1,326.00	14,454,720.02	1,727,904.31	39.80181564	-80.68849991	
9,900.00	89.00	150.00	6,811.13	-2,543.88	1,375.99	14,454,633.43	1,727,954.31	39.80157737	-80.68832299	
10,000.00	89.00	150.00	6,812.88	-2,630.47	1,425.99	14,454,546.84	1,728,004.30	39.80133909	-80.68814607	
10,100.00	89.00	150.00	6,814.63	-2,717.06	1,475.98	14,454,460.25	1,728,054.29	39.80110082	-80.68796915	
10,200.00	89.00	150.00	6,816.37	-2,803.65	1,525.97	14,454,373.66	1,728,104.28	39.80086254	-80.68779223	
10,300.00	89.00	150.00	6,818.12	-2,890.24	1,575.96	14,454,287.07	1,728,154.27	39.80062427	-80.68761531	
10,400.00	89.00	150.00	6,819.86	-2,976.83	1,625.95	14,454,200.48	1,728,204.27	39.80038599	-80.68743839	
10,500.00	89.00	150.00	6,821.61	-3,063.42	1,675.95	14,454,113.89	1,728,254.26	39.80014772	-80.68726148	
10,600.00	89.00	150.00	6,823.35	-3,150.01	1,725.94	14,454,027.30	1,728,304.25	39.79990944	-80.68708457	
10,700.00	89.00	150.00	6,825.10	-3,236.60	1,775.93	14,453,940.71	1,728,354.24	39.79967117	-80.68690765	
10,800.00	89.00	150.00	6,826.84	-3,323.19	1,825.92	14,453,854.13	1,728,404.24	39.79943289	-80.68673074	
10,900.00	89.00	150.00	6,828.59	-3,409.78	1,875.92	14,453,767.54	1,728,454.23	39.79919461	-80.68655383	
11,000.00	89.00	150.00	6,830.33	-3,496.37	1,925.91	14,453,680.95	1,728,504.22	39.79895634	-80.68637692	
11,100.00	89.00	150.00	6,832.08	-3,582.96	1,975.90	14,453,594.36	1,728,554.21	39.79871806	-80.68620002	
11,200.00	89.00	150.00	6,833.82	-3,669.54	2,025.89	14,453,507.77	1,728,604.21	39.79847978	-80.68602311	
11,300.00	89.00	150.00	6,835.57	-3,756.13	2,075.89	14,453,421.18	1,728,654.20	39.79824151	-80.68584621	
11,400.00	89.00	150.00	6,837.31	-3,842.72	2,125.88	14,453,334.59	1,728,704.19	39.79800323	-80.68566930	
11,500.00	89.00	150.00	6,839.06	-3,929.31	2,175.87	14,453,248.00	1,728,754.18	39.79776495	-80.68549240	
11,600.00	89.00	150.00	6,840.80	-4,015.90	2,225.86	14,453,161.41	1,728,804.18	39.79752667	-80.68531550	
11,700.00	89.00	150.00	6,842.55	-4,102.49	2,275.86	14,453,074.82	1,728,854.17	39.79728839	-80.68513860	
11,800.00	89.00	150.00	6,844.29	-4,189.08	2,325.85	14,452,988.23	1,728,904.16	39.79705011	-80.68496170	
11,900.00	89.00	150.00	6,846.04	-4,275.67	2,375.84	14,452,901.64	1,728,954.15	39.79681183	-80.68478480	
12,000.00	89.00	150.00	6,847.78	-4,362.26	2,425.83	14,452,815.05	1,729,004.15	39.79657356	-80.68460790	
12,100.00	89.00	150.00	6,849.53	-4,448.85	2,475.83	14,452,728.46	1,729,054.14	39.79633528	-80.68443101	
12,200.00	89.00	150.00	6,851.28	-4,535.44	2,525.82	14,452,641.87	1,729,104.13	39.79609700	-80.68425412	
12,300.00	89.00	150.00	6,853.02	-4,622.03	2,575.81	14,452,555.29	1,729,154.12	39.79585872	-80.68407722	
12,400.00	89.00	150.00	6,854.77	-4,708.62	2,625.80	14,452,468.70	1,729,204.12	39.79562043	-80.68390033	
12,500.00	89.00	150.00	6,856.51	-4,795.21	2,675.79	14,452,382.11	1,729,254.11	39.79538215	-80.68372344	
12,600.00	89.00	150.00	6,858.26	-4,881.80	2,725.79	14,452,295.52	1,729,304.10	39.79514387	-80.68354655	
12,700.00	89.00	150.00	6,860.00	-4,968.39	2,775.78	14,452,208.93	1,729,354.09	39.79490559	-80.68336966	
12,800.00	89.00	150.00	6,861.75	-5,054.97	2,825.77	14,452,122.34	1,729,404.08	39.79466731	-80.68319278	
12,900.00	89.00	150.00	6,863.49	-5,141.56	2,875.76	14,452,035.75	1,729,454.08	39.79442903	-80.68301589	
13,000.00	89.00	150.00	6,865.24	-5,228.15	2,925.76	14,451,949.16	1,729,504.07	39.79419075	-80.68283901	
13,100.00	89.00	150.00	6,866.98	-5,314.74	2,975.75	14,451,862.57	1,729,554.06	39.79395246	-80.68266212	
13,200.00	89.00	150.00	6,868.73	-5,401.33	3,025.74	14,451,775.98	1,729,604.05	39.79371418	-80.68248524	
13,300.00	89.00	150.00	6,870.47	-5,487.92	3,075.73	14,451,689.39	1,729,654.05	39.79347590	-80.68230836	
13,400.00	89.00	150.00	6,872.22	-5,574.51	3,125.73	14,451,602.80	1,729,704.04	39.79323761	-80.68213148	
13,500.00	89.00	150.00	6,873.96	-5,661.10	3,175.72	14,451,516.21	1,729,754.03	39.79299933	-80.68195460	
13,600.00	89.00	150.00	6,875.71	-5,747.69	3,225.71	14,451,429.62	1,729,804.02	39.79276105	-80.68177773	
13,700.00	89.00	150.00	6,877.45	-5,834.28	3,275.70	14,451,343.03	1,729,854.02	39.79252276	-80.68160085	
13,800.00	89.00	150.00	6,879.20	-5,920.87	3,325.70	14,451,256.44	1,729,904.01	39.79228448	-80.68142398	
13,900.00	89.00	150.00	6,880.94	-6,007.46	3,375.69	14,451,169.86	1,729,954.00	39.79204619	-80.68124710	
14,000.00	89.00	150.00	6,882.69	-6,094.05	3,425.68	14,451,083.27	1,730,003.99	39.79180791	-80.68107023	
14,100.00	89.00	150.00	6,884.43	-6,180.64	3,475.67	14,450,996.68	1,730,053.99	39.79156962	-80.68089336	
14,200.00	89.00	150.00	6,886.18	-6,267.23	3,525.67	14,450,910.09	1,730,103.98	39.79133134	-80.68071649	
14,300.00	89.00	150.00	6,887.93	-6,353.81	3,575.66	14,450,823.50	1,730,153.97	39.79109305	-80.68053962	
14,400.00	89.00	150.00	6,889.67	-6,440.40	3,625.65	14,450,736.91	1,730,203.96	39.79085477	-80.68036275	
14,500.00	89.00	150.00	6,891.42	-6,526.99	3,675.64	14,450,650.32	1,730,253.96	39.79061648	-80.68018589	
14,600.00	89.00	150.00	6,893.16	-6,613.58	3,725.63	14,450,563.73	1,730,303.95	39.79037819	-80.68000902	
14,700.00	89.00	150.00	6,894.91	-6,700.17	3,775.63	14,450,477.14	1,730,353.94	39.79013991	-80.67983216	
14,800.00	89.00	150.00	6,896.65	-6,786.76	3,825.62	14,450,390.55	1,730,403.93	39.78990162	-80.67965530	



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,900.00	89.00	150.00	6,898.40	-6,873.35	3,875.61	14,450,303.96	1,730,453.92	39.78966333	-80.67947844	
15,000.00	89.00	150.00	6,900.14	-6,959.94	3,925.60	14,450,217.37	1,730,503.92	39.78942504	-80.67930158	
15,100.00	89.00	150.00	6,901.89	-7,046.53	3,975.60	14,450,130.78	1,730,553.91	39.78918676	-80.67912472	
15,200.00	89.00	150.00	6,903.63	-7,133.12	4,025.59	14,450,044.19	1,730,603.90	39.78894847	-80.67894786	
15,300.00	89.00	150.00	6,905.38	-7,219.71	4,075.58	14,449,957.60	1,730,653.89	39.78871018	-80.67877100	
15,400.00	89.00	150.00	6,907.12	-7,306.30	4,125.57	14,449,871.02	1,730,703.89	39.78847189	-80.67859415	
15,500.00	89.00	150.00	6,908.87	-7,392.89	4,175.57	14,449,784.43	1,730,753.88	39.78823360	-80.67841730	
15,600.00	89.00	150.00	6,910.61	-7,479.48	4,225.56	14,449,697.84	1,730,803.87	39.78799531	-80.67824044	
15,700.00	89.00	150.00	6,912.36	-7,566.07	4,275.55	14,449,611.25	1,730,853.86	39.78775702	-80.67806359	
15,800.00	89.00	150.00	6,914.10	-7,652.66	4,325.54	14,449,524.66	1,730,903.86	39.78751873	-80.67788674	
15,900.00	89.00	150.00	6,915.85	-7,739.24	4,375.54	14,449,438.07	1,730,953.85	39.78728044	-80.67770989	
16,000.00	89.00	150.00	6,917.59	-7,825.83	4,425.53	14,449,351.48	1,731,003.84	39.78704215	-80.67753304	
16,100.00	89.00	150.00	6,919.34	-7,912.42	4,475.52	14,449,264.89	1,731,053.83	39.78680386	-80.67735620	
16,200.00	89.00	150.00	6,921.08	-7,999.01	4,525.51	14,449,178.30	1,731,103.83	39.78656557	-80.67717935	
16,300.00	89.00	150.00	6,922.83	-8,085.60	4,575.51	14,449,091.71	1,731,153.82	39.78632728	-80.67700251	
16,400.00	89.00	150.00	6,924.58	-8,172.19	4,625.50	14,449,005.12	1,731,203.81	39.78608899	-80.67682566	
16,500.00	89.00	150.00	6,926.32	-8,258.78	4,675.49	14,448,918.53	1,731,253.80	39.78585070	-80.67664882	
16,600.00	89.00	150.00	6,928.07	-8,345.37	4,725.48	14,448,831.94	1,731,303.80	39.78561240	-80.67647198	
16,700.00	89.00	150.00	6,929.81	-8,431.96	4,775.47	14,448,745.35	1,731,353.79	39.78537411	-80.67629514	
16,800.00	89.00	150.00	6,931.56	-8,518.55	4,825.47	14,448,658.76	1,731,403.78	39.78513582	-80.67611831	
16,900.00	89.00	150.00	6,933.30	-8,605.14	4,875.46	14,448,572.18	1,731,453.77	39.78489753	-80.67594147	
17,000.00	89.00	150.00	6,935.05	-8,691.73	4,925.45	14,448,485.59	1,731,503.76	39.78465923	-80.67576463	
17,100.00	89.00	150.00	6,936.79	-8,778.32	4,975.44	14,448,399.00	1,731,553.76	39.78442094	-80.67558780	
17,200.00	89.00	150.00	6,938.54	-8,864.91	5,025.44	14,448,312.41	1,731,603.75	39.78418265	-80.67541097	
17,300.00	89.00	150.00	6,940.28	-8,951.50	5,075.43	14,448,225.82	1,731,653.74	39.78394435	-80.67523413	
17,400.00	89.00	150.00	6,942.03	-9,038.08	5,125.42	14,448,139.23	1,731,703.73	39.78370606	-80.67505730	
17,500.00	89.00	150.00	6,943.77	-9,124.67	5,175.41	14,448,052.64	1,731,753.73	39.78346776	-80.67488047	
17,600.00	89.00	150.00	6,945.52	-9,211.26	5,225.41	14,447,966.05	1,731,803.72	39.78322947	-80.67470364	
17,700.00	89.00	150.00	6,947.26	-9,297.85	5,275.40	14,447,879.46	1,731,853.71	39.78299117	-80.67452682	
17,800.00	89.00	150.00	6,949.01	-9,384.44	5,325.39	14,447,792.87	1,731,903.70	39.78275288	-80.67434999	
17,900.00	89.00	150.00	6,950.75	-9,471.03	5,375.38	14,447,706.28	1,731,953.70	39.78251458	-80.67417317	
18,000.00	89.00	150.00	6,952.50	-9,557.62	5,425.38	14,447,619.69	1,732,003.69	39.78227629	-80.67399634	
18,100.00	89.00	150.00	6,954.24	-9,644.21	5,475.37	14,447,533.10	1,732,053.68	39.78203799	-80.67381952	
18,200.00	89.00	150.00	6,955.99	-9,730.80	5,525.36	14,447,446.51	1,732,103.67	39.78179969	-80.67364270	
18,300.00	89.00	150.00	6,957.73	-9,817.39	5,575.35	14,447,359.92	1,732,153.67	39.78156140	-80.67346588	
18,400.00	89.00	150.00	6,959.48	-9,903.98	5,625.35	14,447,273.33	1,732,203.66	39.78132310	-80.67328906	
18,500.00	89.00	150.00	6,961.23	-9,990.57	5,675.34	14,447,186.75	1,732,253.65	39.78108480	-80.67311224	
18,600.00	89.00	150.00	6,962.97	-10,077.16	5,725.33	14,447,100.16	1,732,303.64	39.78084650	-80.67293543	
18,700.00	89.00	150.00	6,964.72	-10,163.75	5,775.32	14,447,013.57	1,732,353.64	39.78060821	-80.67275861	
18,800.00	89.00	150.00	6,966.46	-10,250.34	5,825.32	14,446,926.98	1,732,403.63	39.78036991	-80.67258180	
18,900.00	89.00	150.00	6,968.21	-10,336.93	5,875.31	14,446,840.39	1,732,453.62	39.78013161	-80.67240499	
19,000.00	89.00	150.00	6,969.95	-10,423.51	5,925.30	14,446,753.80	1,732,503.61	39.77989331	-80.67222818	
19,100.00	89.00	150.00	6,971.70	-10,510.10	5,975.29	14,446,667.21	1,732,553.60	39.77965501	-80.67205137	
19,200.00	89.00	150.00	6,973.44	-10,596.69	6,025.28	14,446,580.62	1,732,603.60	39.77941671	-80.67187456	
19,300.00	89.00	150.00	6,975.19	-10,683.28	6,075.28	14,446,494.03	1,732,653.59	39.77917841	-80.67169775	
19,400.00	89.00	150.00	6,976.93	-10,769.87	6,125.27	14,446,407.44	1,732,703.58	39.77894011	-80.67152094	
19,403.87	89.00	150.00	6,977.00	-10,773.22	6,127.20	14,446,404.09	1,732,705.52	39.77893089	-80.67151410	

PBHL/TD



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-4 HM
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-4 HM	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Heaven Hill 3-4 HM LP	0.00	0.00	6,752.00	370.13	-306.87	14,457,547.44	1,726,271.44	39.80959590	-80.69427928
- plan misses target center by 257.86usft at 6681.77usft MD (6585.12 TVD, 204.16 N, -201.54 E)									
- Point									
Heaven Hill 3-4 HM BHL	0.00	0.01	6,977.00	-10,773.22	6,127.20	14,446,404.09	1,732,705.52	39.77893089	-80.67151410
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(usft)	(usft)		(")	(")	
120.00	120.00	30" Csaing @ 120 TVD	30	36	
1,090.00	1,090.00	13 3/8" Casing @ 1090 TVD	13-3/8	17	
2,800.82	2,800.00	9 5/8" Casing @ 2800 TVD	9-5/8	12-1/4	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
1,200.00	1,200.00	0.00	0.00	KOP Begin 2°/100' build	
1,350.00	1,349.93	0.00	3.93	Begin 3.00° tangent	
1,850.00	1,849.25	0.00	30.09	Begin 2°/100' drop	
2,000.00	1,999.18	0.00	34.02	Begin vertical hold section	
4,000.82	4,000.00	0.00	34.02	Begin 2°/100' build	
4,737.55	4,728.63	72.06	-26.66	Begin 14.73° tangent	
6,101.05	6,047.29	337.33	-250.04	Begin 10°/100' build/turn	
7,136.07	6,762.90	-150.61	-5.76	Begin 89.00° lateral section	
19,403.87	6,977.00	-10,773.22	6,127.20	PBHL/TD	

API Number 47 - 051 - _____
Operator's Well No. Heaven Hill 3-4HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386425)

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.

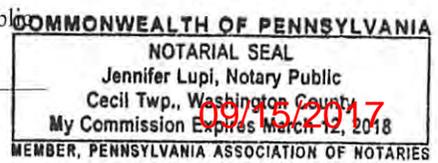
Company Official Signature _____

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

Subscribed and sworn before me this 8th day of June, 20 17

Jennifer Lupi Notary Public
My commission expires March 12, 2018



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

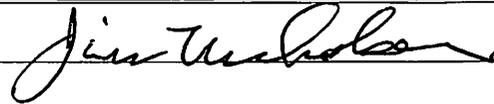
Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

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: _____



Comments: _____

Title: _____

Oil & Gas Inspector

Date: _____

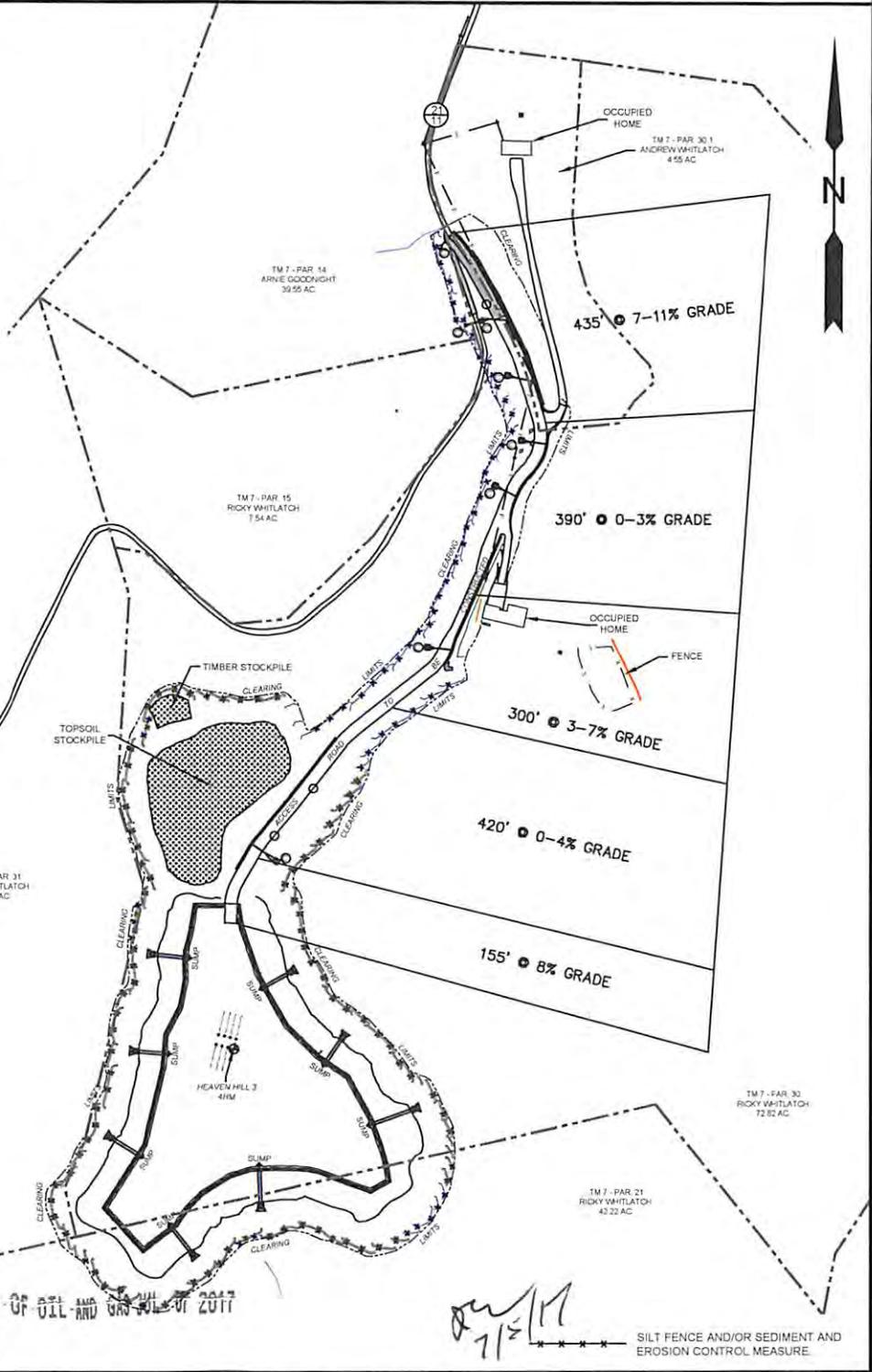
7/5/17

Field Reviewed? Yes No

PROPOSED HEAVEN HILL 3 - 4HM

NOTES:

1. - 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.



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www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	06/29/2017	NONE

TUG HILL
OPERATING

09/15/2017



Well Site Safety Plan

Tug Hill Operating, LLC

John
7/5/17

Well Name: Heaven Hill 3-4HM

Pad Location: Heaven Hill 3

Marshall County, West Virginia

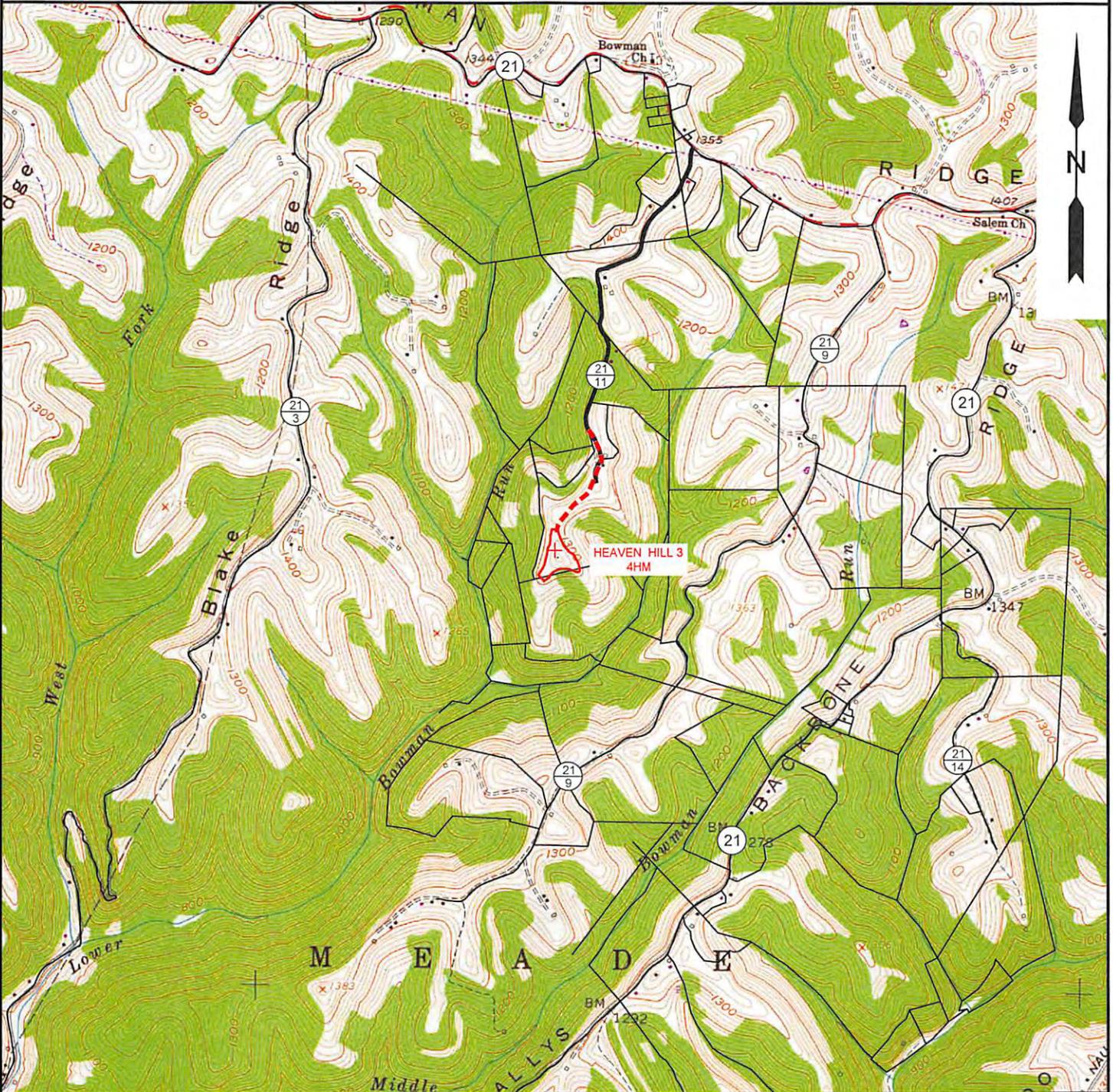
UTM (meters), NAD83, Zone 17:
Northing-4,406,556.46
Easting -526,262.12

July 2017

OFFICE OF OIL AND GAS JUL 07 2017

09/15/2017

PROPOSED HEAVEN HILL 3 - 4HM



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 - 4HM SURFACE LOCATION



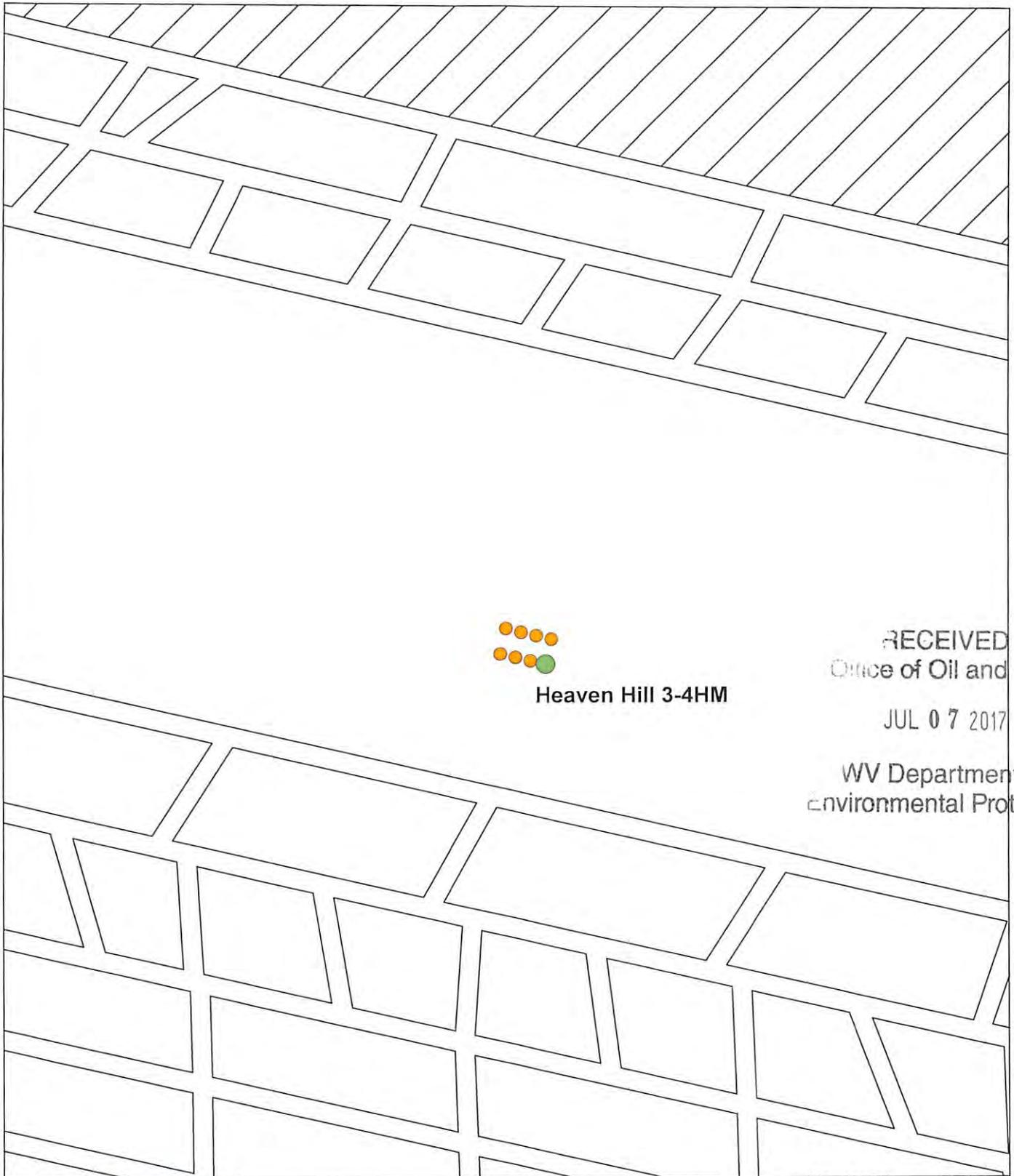
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TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	06/29/2017	1" = 2000'



TUG HILL
OPERATING

09/15/2017



Heaven Hill 3-4HM

RECEIVED
Office of Oil and Gas

JUL 07 2017

WV Department of
Environmental Protection

CONFIDENTIAL

0510 20 30 40
Feet

Heaven Hill 3 Pad
Heaven Hill 3-4HM Well Location

Category

- Surface Location
- Coal Mined Area

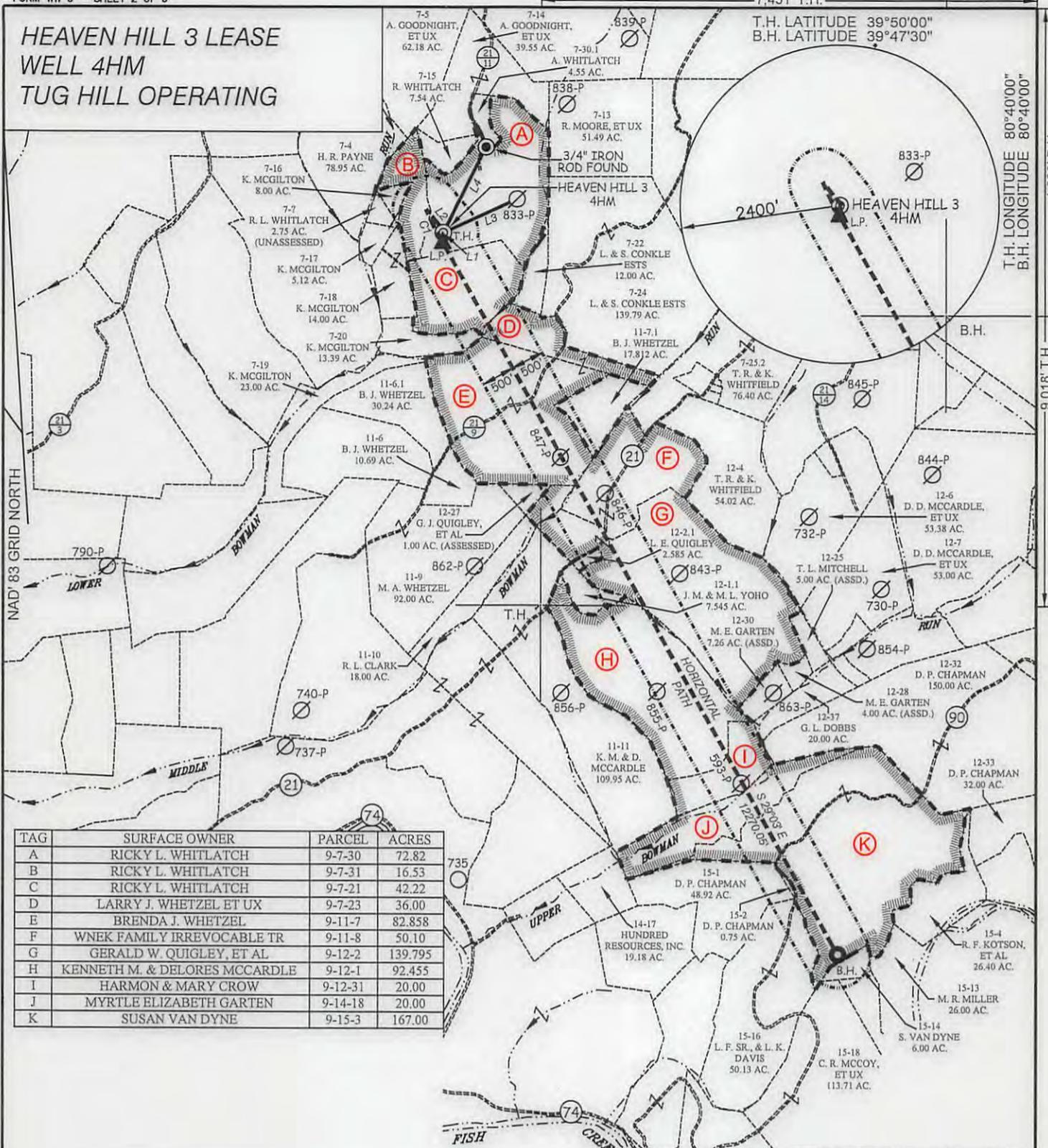


**HEAVEN HILL 3 LEASE
WELL 4HM
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

4,639' B.H.
9,018' T.H.



TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-31	16.53
C	RICKY L. WHITLATCH	9-7-21	42.22
D	LARRY J. WHETZEL ET UX	9-7-23	36.00
E	BRENDIA J. WHETZEL	9-11-7	82.858
F	WNEK FAMILY IRREVOCABLE TR	9-11-8	50.10
G	GERALD W. QUIGLEY, ET AL	9-12-2	139.795
H	KENNETH M. & DELORES MCCARDLE	9-12-1	92.455
I	HARMON & MARY CROW	9-12-31	20.00
J	MYRTLE ELIZABETH GARTEN	9-14-18	20.00
K	SUSAN VAN DYNE	9-15-3	167.00

LINE	BEARING	DISTANCE
L1	S 89°03' E	34.03'
L2	N 39°35' W	460.32'
L3	N 65°30' E	1224.67'
L4	N 26°42' E	1440.77'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	564.21'	3934.77'	S 26°26' E	563.72'

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(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD83 S.P.C.(FT) N. 478,850.79 E. 1,633,308.44
 NAD83 GEO. LAT-(N) 39.808577 LONG-(W) 80.693191
 NAD83 UTM (M) N. 4,406,556.46 E. 526,262.12
LANDING POINT
 NAD83 S.P.C.(FT) N. 478,700.2 E. 1,633,300.2
 NAD83 GEO. LAT-(N) 39.808163 LONG-(W) 80.693213
 NAD83 UTM (M) N. 4,406,510.6 E. 526,260.4
BOTTOM HOLE
 NAD83 S.P.C.(FT) N. 467,973.0 E. 1,639,256.8
 NAD83 GEO. LAT-(N) 39.778931 LONG-(W) 80.671514
 NAD83 UTM (M) N. 4,403,272.8 E. 528,129.7

GREGORY A. SMITH
LICENSED
No. 677
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

(+) 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 PGS. 3,4,5,6)
- SURFACE OWNER (SEE TABLE)

09/15/2017

SCALE 1" = 2000' FILE NO. 8654P4HM.dwg
 DATE JUNE 30, 2017
 REVISED _____, 20____
 OPERATORS WELL NO. HEAVEN HILL 3-4HM
 API WELL 47-051-01947
 NO. STATE COUNTY PERMIT

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

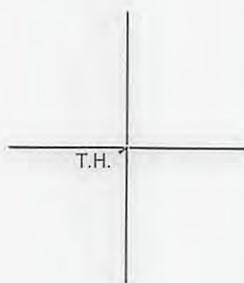
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
 FORT WORTH, TX 76107 CHARLESTON, WV 25313

**HEAVEN HILL 3 LEASE
WELL 4HM
TUG HILL OPERATING**

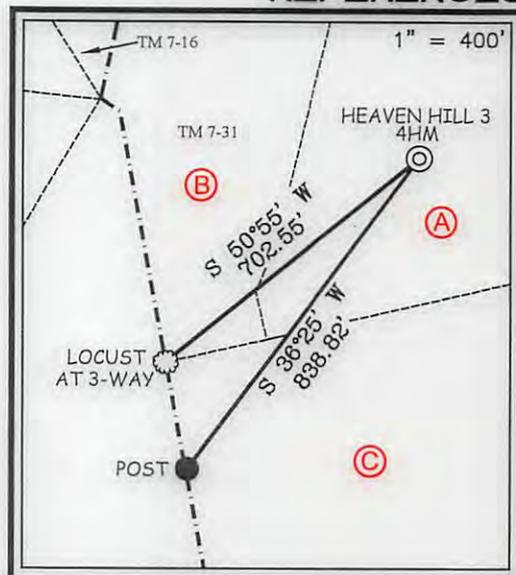
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 478,850.79	E. 1,633,308.44	
NAD'83 GEO.	LAT-(N) 39.808577	LONG-(W) 80.693191	
NAD'83 UTM (M)	N. 4,406,556.46	E. 526,262.12	
LANDING POINT			
NAD'83 S.P.C.(FT)	N. 478,700.2	E. 1,633,300.2	
NAD'83 GEO.	LAT-(N) 39.808163	LONG-(W) 80.693213	
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BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 467,973.0	E. 1,639,256.8	
NAD'83 GEO.	LAT-(N) 39.778931	LONG-(W) 80.671514	
NAD'83 UTM (M)	N. 4,403,272.8	E. 528,129.7	



REFERENCES



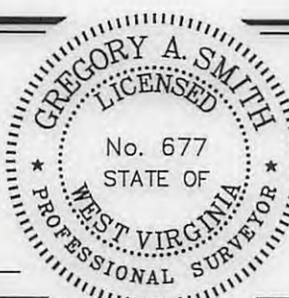
NOTES ON SURVEY

1. 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.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

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I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE 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 JUNE 30, 20 17
REVISED _____, 20 _____
OPERATORS WELL NO. HEAVEN HILL 3-4HM
API WELL NO. 47 - 051 - 01947
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P4HM.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 LIQUID INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X

LOCATION: GROUND = 1,344.50' 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 ON PGS. 3,4,5 & 6 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: 19,414'

COUNTY NAME PERMIT

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

HEAVEN HILL 3 LEASE
WELL 4HM
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Deed Book/Page
1	10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	780 226
2	10*15557	B	9-7-31	RICKY L WHITLATCH ET AL	780 226
3	10*15557	C	9-7-21	RICKY L WHITLATCH ET AL	780 226
4	10*47051.256.22	D	9-7-23	BEVERLY J HOPSON	913 581
5	10*47051.256.1	D	9-7-23	BRENDA J WHETZEL	881 145
6	10*15746	D	9-7-23	BRUCE D SCHURR	921 478
7	10*16247	D	9-7-23	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	925 327
8	10*47051.256.24	D	9-7-23	CATHERINE BONAR PETTIT BILLIE	904 628
9	10*47051.256.16	D	9-7-23	CHARLOTTE B HUMMELL	905 45
10	10*47051.256.15	D	9-7-23	CHARLOTTE J BONAR YOHO	904 455
11	10*17506	D	9-7-23	CHASKIA F HARRIS AND JAMES M HARRIS	919 239
12	10*17507	D	9-7-23	DEZRAY METCALF	919 235
13	10*17415	D	9-7-23	DILLON PITSENBARGER	919 241
14	10*16115	D	9-7-23	EARL W HARRIS	925 329
15	10*47051.256.10	D	9-7-23	GRACE LAURA BONAR	905 35
16	10*47051.256.14	D	9-7-23	HUGH R BUZZARD	905 43
17	10*47051.256.21	D	9-7-23	JACK L MASON AND JEAN M MASON	904 626
18	10*47051.256.20	D	9-7-23	JEFFREY THOMAS PYLES AND TERESA A PYLES	907 209
19	10*47051.256.11	D	9-7-23	JOHN L MASON	905 37
20	10*47051.256.18	D	9-7-23	JOHN WILLIAM BONAR AND SHIRLEY BONAR	913 522
21	10*47051.256.7	D	9-7-23	MARILYN SUE BUMER	905 29
22	10*47051.256.17	D	9-7-23	MAXINE G JOHNSON	904 457
23	10*47051.256.19	D	9-7-23	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	907 207
24	10*47051.256.8	D	9-7-23	PAMELA ANN MASON	905 31
25	10*47051.256.23	D	9-7-23	ROBERT L BONAR	913 556
26	10*47051.256.12	D	9-7-23	STEVEN A BOHRER	905 39
27	10*16021	D	9-7-23	TOMMY BONAR AND TANYA S BONAR	925 325
28	10*47051.256.9	D	9-7-23	WANDA MASON SUNSHINE	905 33
29	10*47051.256.13	D	9-7-23	WILLIAM W CRAIG AND GLENDA L CRAIG	905 41
30	10*47051.256.22	E	9-11-7	BEVERLY J HOPSON	913 581
31	10*47051.256.1	E	9-11-7	BRENDA J WHETZEL	881 145
32	10*15746	E	9-11-7	BRUCE D SCHURR	921 478
33	10*16247	E	9-11-7	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	925 327
34	10*47051.256.24	E	9-11-7	CATHERINE BONAR PETTIT BILLIE	904 628
35	10*47051.256.16	E	9-11-7	CHARLOTTE B HUMMELL	905 45
36	10*47051.256.15	E	9-11-7	CHARLOTTE J BONAR YOHO	904 455
37	10*17506	E	9-11-7	CHASKIA F HARRIS AND JAMES M HARRIS	919 239
38	10*17507	E	9-11-7	DEZRAY METCALF	919 235
39	10*17415	E	9-11-7	DILLON PITSENBARGER	919 241
40	10*16115	E	9-11-7	EARL W HARRIS	925 329
41	10*47051.256.10	E	9-11-7	GRACE LAURA BONAR	905 35
42	10*47051.256.14	E	9-11-7	HUGH R BUZZARD	905 43
43	10*47051.256.21	E	9-11-7	JACK L MASON AND JEAN M MASON	904 626
44	10*47051.256.20	E	9-11-7	JEFFREY THOMAS PYLES AND TERESA A PYLES	907 209
45	10*47051.256.11	E	9-11-7	JOHN L MASON	905 37
46	10*47051.256.18	E	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	913 522
47	10*47051.256.7	E	9-11-7	MARILYN SUE BUMER	905 29
48	10*47051.256.17	E	9-11-7	MAXINE G JOHNSON	904 457
49	10*47051.256.19	E	9-11-7	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	907 207
50	10*47051.256.8	E	9-11-7	PAMELA ANN MASON	905 31
51	10*47051.256.23	E	9-11-7	ROBERT L BONAR	913 556
52	10*47051.256.12	E	9-11-7	STEVEN A BOHRER	905 39
53	10*16021	E	9-11-7	TOMMY BONAR AND TANYA S BONAR	925 325
54	10*47051.256.9	E	9-11-7	WANDA MASON SUNSHINE	905 33
55	10*47051.256.13	E	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	905 41
56	10*16514	F	9-11-8	ALEX RUSSELL AND JOYCE A CAMPBELL	908 248
57	10*47051.223.12	F	9-11-8	ALICE GORBY MARTIN	908 52
58	10*17416	F	9-11-8	ANDREW M ORTIZ	921 346
59	10*16515	F	9-11-8	ANNA MARIE JACKSON	908 251
60	10*47051.223.20	F	9-11-8	BARBARA A BUZZARD	908 24
61	10*17276	F	9-11-8	BERTHA EZELL WYATT	921 526
62	10*47051.223.16	F	9-11-8	BETTY LOU STERN AND WILLIAM KEITH STERN	908 64
63	10*16880	F	9-11-8	BEVERLY ANN STORTS	921 498
64	10*16989	F	9-11-8	BRITTANY RICHARDSON	921 376
65	10*47051.223.18	F	9-11-8	BRITTNEY MENEAR	908 57
66	10*15463	F	9-11-8	CHARLES A RINE	908 274
67	10*16667	F	9-11-8	CHARLES F AND GAIL ANN PYLE	908 266
68	10*16686	F	9-11-8	CHERYLE M TRACEY	927 475
69	10*16802	F	9-11-8	CHRISTOPHER AND TAMMY RICHARDSON	921 495
70	10*17130	F	9-11-8	CINDY L BARGER	921 137
71	10*16416	F	9-11-8	CYNTHIA HUDSON	908 219
72	10*17274	F	9-11-8	DAVID H WILSON	921 474
73	10*47051.223.8	F	9-11-8	DAVID M WILSON	907 649
74	10*16807	F	9-11-8	DAVID TULLER AND SUSAN STORTS TULLER	921 513
75	10*15481	F	9-11-8	DEAN P RIGBY AND SUSAN RIGBY	908 197
76	10*47051.223.35	F	9-11-8	DEBRA L CIAFFAGLIONE	908 190
77	10*17438	F	9-11-8	DENNIS M WILSON	921 476
78	10*16962	F	9-11-8	DENNIS P AND BARBARA EZELL FLORY	921 70
79	10*16720	F	9-11-8	DONNA ELAINE BRASKETT	921 152
80	10*47051.223.11	F	9-11-8	ELIZABETH ESTEP	908 37
81	10*47051.223.21	F	9-11-8	GARY T WARD AND SHARON D WARD	908 19
82	10*16298	F	9-11-8	GEOFFREY A SHIEFER AND STEPHANIE L SCHIEFER	908 238
83	10*17677	F	9-11-8	GEORGE M GONTA JR	921 89
84	10*47051.223.5	F	9-11-8	HAROLD S BROWN II AND MARIA A BROWN	907 641
85	10*16815	F	9-11-8	HAROLD W PYLE	921 357
86	10*17156	F	9-11-8	HENRI NELL JACKSON KENT BARNES	921 139
87	10*16668	F	9-11-8	JACK I AND MERRILEE PYLE	908 257
88	10*47051.223.7	F	9-11-8	JACK R WILSON JR AND JANE A WILSON	908 4
89	10*47051.223.13	F	9-11-8	JAMES A GORBY	908 42
90	10*16839	F	9-11-8	JAMES B FOUNDS AND LYNN M MOWERY	921 73
91	10*16800	F	9-11-8	JAMES KENNETH JACKSON AND JULIE JACKSON	921 93
92	10*17588	F	9-11-8	JAMES M JACKSON	921 325
93	10*17527	F	9-11-8	JAMES MICHAEL EZELL AND LUCILLE D EZELL	921 111
94	10*17157	F	9-11-8	JAMES N REEVES JR AND RITA M REEVES	921 367
95	10*17564	F	9-11-8	JAMES R & TRACEY E NICKOLSON	921 340
96	10*47051.223.31	F	9-11-8	JANICE M GONTA GAVALIK	908 180
97	10*47051.223.19	F	9-11-8	JASON RINE AND HEATHER RINE	907 629
98	10*47051.223.1	F	9-11-8	JEAN ANNE GORBY STORCH	877 216
99	10*17526	F	9-11-8	JEFFREY L REEVES AND JODY L REEVES	921 370
100	10*16977	F	9-11-8	JEREMY COCHENOUR	921 102

FILE NO. 8654P4HM.dwg

DATE JUNE 30, 20 17

REVISED _____, 20 _____

OPERATORS WELL NO. HEAVEN HILL 3-4HM

API WELL NO. 47 — 051 — 01947
STATE COUNTY PERMIT



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



COUNTY NAME PERMIT

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 4HM
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
101	10*17565	F	9-11-8	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	921 327
102	10*17155	F	9-11-8	JESSE LEON JR AND TERESA GAIL EZELLE	921 118
103	10*47051.223.24	F	9-11-8	JO DEE K DAVIS	908 136
104	10*47051.223.25	F	9-11-8	JOANNE WELCH	908 141
105	10*17552	F	9-11-8	JOHN BEVACQUA AND PATRICIA A BEVACQUA	921 144
106	10*16689	F	9-11-8	JOHN C FOUNDS	927 490
107	10*47051.223.34	F	9-11-8	JOHN CIAFFAGNONE	908 170
108	10*15686	F	9-11-8	JOHN OMER BOLTZ	908 160
109	10*17275	F	9-11-8	JOHN R REEVES AND MONA G REEVES	921 373
110	10*16669	F	9-11-8	JOHN S AND PATRICIA S DADO	906 269
111	10*47051.223.32	F	9-11-8	JOSEPH GORBY DAKAN	908 175
112	10*17339	F	9-11-8	JOSEPH W FOUNDS	921 75
113	10*47051.223.6	F	9-11-8	JOSHUA RINE AND REBECCA RINE	907 634
114	10*47051.223.14	F	9-11-8	JUSTIN RINE AND BECKY RINE	907 639
115	10*47051.223.28	F	9-11-8	KAREN S GAST	908 150
116	10*17561	F	9-11-8	KATHRYN L & ROGER L TYRELL	921 519
117	10*17444	F	9-11-8	KELLY FOUNDS CAMPBELL	921 99
118	10*17440	F	9-11-8	KENDRA WALUSA	927 484
119	10*47051.223.15	F	9-11-8	LARRY D TAUNT AND NANCY L TAUNT	908 14
120	10*47051.223.30	F	9-11-8	LAURIE DRIGGERS MANDERSON	908 165
121	10*16987	F	9-11-8	LAURIE EZELL PERRY	921 355
122	10*16976	F	9-11-8	LESTER G AND CONSTANCE B NICKOLSON	921 343
123	10*47051.223.9	F	9-11-8	LUNDA DELBERT	908 32
124	10*17485	F	9-11-8	MARGIE ANN JACKSON ROBBINS GRAHAM	921 91
125	10*16478	F	9-11-8	MARION L AND EMILY CAMPBELL	908 245
126	10*16879	F	9-11-8	MARK E AND LESLEY A STORTS	921 501
127	10*16902	F	9-11-8	MARY BARCAW DUKE	921 105
128	10*17589	F	9-11-8	MARY CHRISTINE MCKENNA	921 332
129	10*16414	F	9-11-8	MARY ELIZABETH DRIGGERS	908 208
130	10*16991	F	9-11-8	MARVELLEN FOUNDS AND LAUREN FOUNDS	921 79
131	10*16058	F	9-11-8	MATTIE RUTH JACKSON PRESCOTT	908 231
132	10*17278	F	9-11-8	MICHAEL L EZELLE	921 121
133	10*16808	F	9-11-8	MICHAEL L ORTIZ	921 349
134	10*16666	F	9-11-8	MICHAEL P PYLE	908 255
135	10*17554	F	9-11-8	MICHAEL T RANKIN	921 361
136	10*16868	F	9-11-8	MICHAEL W STORTS AND JESSICA M STORTS	921 504
137	10*17443	F	9-11-8	MICHELLE MORROW-BACK	921 337
138	10*17377	F	9-11-8	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	921 123
139	10*47051.223.33	F	9-11-8	NANCY CIAFFAGNONE HOUSLEY	908 185
140	10*17566	F	9-11-8	NATHAN P & BARBARA T ERDOSSY	921 108
141	10*17484	F	9-11-8	NELDA S JACKSON	921 330
142	10*16798	F	9-11-8	PATRICK A RANKIN AND ROBIN A RANKIN	921 364
143	10*17208	F	9-11-8	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	921 86
144	10*47051.223.29	F	9-11-8	PATSY JO RAJU	908 155
145	10*16742	F	9-11-8	PAUL C WILSON	927 490
146	10*17449	F	9-11-8	PHYLLIS J BLAKE	921 150
147	10*47051.223.17	F	9-11-8	RALPH E HUNTER JR AND CHARLOTTE HUNTER	908 9
148	10*17441	F	9-11-8	RALPH J WILSON	921 522
149	10*16448	F	9-11-8	RALPH L AND JUANITA L CRIM	908 584
150	10*16690	F	9-11-8	RICARDO ORTIZ	921 352
151	10*17483	F	9-11-8	RICHARD I PYLE	921 359
152	10*16662	F	9-11-8	RICHARD THOMAS AND VICKI J MIMS	908 863
153	10*16836	F	9-11-8	RICK A AND LENORE A STORTS	921 507
154	10*16297	F	9-11-8	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	908 235
155	10*47051.223.10	F	9-11-8	ROBERT E GORBY	908 47
156	10*16545	F	9-11-8	ROBERT G & ELLEN FOUNDS	908 260
157	10*16838	F	9-11-8	ROBERT G FUNARI	921 82
158	10*16424	F	9-11-8	ROBERT J RIGBY	908 241
159	10*16383	F	9-11-8	ROBERT STEPHEN DRIGGERS	908 224
160	10*47051.223.23	F	9-11-8	RONALD S CRIM	908 79
161	10*16118	F	9-11-8	RUBY RIDDLE JACKSON	908 233
162	10*47051.223.22	F	9-11-8	SALLY COLE	908 74
163	10*17744	F	9-11-8	SAM PRESLEY EZELL	921 116
164	10*17205	F	9-11-8	SANDRA JEAN WILSON	921 524
165	10*15750	F	9-11-8	SANDRA K TRULL	908 229
166	10*17442	F	9-11-8	SHANE ALLEN AND MENDY JEAN ALLEN	921 134
167	10*16821	F	9-11-8	SHEILA BRASKETT WEICHEY	921 516
168	10*16638	F	9-11-8	SHERYLL PYLE BAIR	927 481
169	10*15482	F	9-11-8	SUSAN NELSON	908 203
170	10*16415	F	9-11-8	TERENCE J & NANCY J ANDERSON	908 231
171	10*17482	F	9-11-8	TERESA EZELLE RALYA AND DAVID L RALYA	927 487
172	10*16810	F	9-11-8	TERESA ORTIZ BIGGS	921 147
173	10*16837	F	9-11-8	TERRY L AND THELMA A POFF	927 472
174	10*17198	F	9-11-8	THOMAS G AND DIANE W BAYLESS	921 141
175	10*16996	F	9-11-8	THOMAS RANKIN	917 75
176	10*47051.223.27	F	9-11-8	TIMI J HOBBS	908 277
177	10*16863	F	9-11-8	TINA MOORE	921 334
178	10*16806	F	9-11-8	VIRGINIA I WHITMAN	921 528
179	10*47051.223.26	F	9-11-8	WENDY L SMARKEL	908 69
180	10*16747	F	9-11-8	WILLIAM DALE BRASKETT	921 96
181	10*16804	F	9-11-8	WILLIAM N AND SHERRY D TAYLOR	921 510
182	10*16516	F	9-11-8	WILSON ANDREW JACKSON	908 253
183	10*15606	G	9-12-2	CHK-MAC LLC	798 150
184	10*47051.309.3	G	9-12-2	GERALD W QUIGLEY AND VICKI L QUIGLEY	905 12
185	10*16932	G	9-12-2	HAYMAKER PROPERTIES LP	902 447
186	10*47051.309.1	G	9-12-2	LESLIE E QUIGLEY	905 8
187	10*47051.309.2	G	9-12-2	LEWIS M QUIGLEY AND MAXINE V QUIGLEY	907 217
188	10*16238	G	9-12-2	SUSAN MARIE JOHNSON AKA SUSAN MARIE HUBER	924 614
189	10*16344	H	9-12-1	EMILY ANN NICIFOROS	924 617
190	10*16149	H	9-12-1	THOMAS MICHAEL WALLACE	924 610
191	10*47051.333.1	H	9-12-1	THOMAS S RIGGS III	904 556
192	10*47051.333.2	H	9-12-1	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	907 220
193	10*16244	I	9-12-31	EMILY ANN NICIFOROS	924 617
194	10*15603	I	9-12-31	HAYHURST COMPANY A FLORIDA PARTNERSHIP	727 253
195	10*16149	I	9-12-31	THOMAS MICHAEL WALLACE	924 610
196	10*47051.333.1	I	9-12-31	THOMAS S RIGGS III	904 556
197	10*47051.333.2	I	9-12-31	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	907 220
198	10*17555	J	9-14-18	AARON AND JANA K PARRY	924 113
199	10*17452	J	9-14-18	ALAN H & MARY K DEGARMO	924 164
200	10*17139	J	9-14-18	ALICE G WEINER AND GERALD S WEINER	915 131

FILE NO. 8654P4HM.dwg
DATE JUNE 30, 20 17
REVISED _____, 20 ____
OPERATORS WELL NO. HEAVEN HILL 3-4HM
API WELL NO. 47 — 051 — 01947
STATE COUNTY PERMIT



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



COUNTY NAME
PERMIT

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

HEAVEN HILL 3 LEASE
WELL 4HM
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
201	10*16183	J	9-14-18	ALLEN R L DAVIS AND DIANA LEE PATTERSON	906 285
202	10*17436	J	9-14-18	ANDREW M HOOVER AND DINAH R HOOVER	924 156
203	10*16239	J	9-14-18	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	906 287
204	10*17880	J	9-14-18	ANNA M WRIGHT	924 586
205	10*16443	J	9-14-18	BARBARA BROWN CHAMBERS	924 621
206	10*16018	J	9-14-18	BARBARA MCFADDEN ALBRIGHT	906 262
207	10*17708	J	9-14-18	BETTY LOU NOBLE	923 127
208	10*17612	J	9-14-18	BEVERLY A LEDBETTER	923 480
209	10*16240	J	9-14-18	BONNIE SUE PATTERSON SWISHER	906 289
210	10*17830	J	9-14-18	BRIAN AND MELINDA MASTERS	925 319
211	10*16031	J	9-14-18	CARL J CHMIELEWSKI AND KATHLEEN A CHMIELEWSKI	906 266
212	10*17613	J	9-14-18	CARLTON DOBBS JR AND MIKHAIL PROKOPENKO	924 120
213	10*16444	J	9-14-18	CATHERINE ELLEN CHAMBERS	924 623
214	10*16083	J	9-14-18	CECIL HARRY LILLY, III AND PAMELA KAY KNIGHT LILLY	912 47
215	10*17771	J	9-14-18	CHARLES AND LISA WARRICK	923 477
216	10*16535	J	9-14-18	CHARLES E CARSON AND MARY KAY CARSON	906 420
217	10*17356	J	9-14-18	CHRISTINE L KIDD	924 158
218	10*15486	J	9-14-18	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	924 180
219	10*17614	J	9-14-18	DAVID DOBBS	923 489
220	10*17528	J	9-14-18	DEAN E GARRISON	923 535
221	10*17487	J	9-14-18	DEBORAH R MOKOSH	924 166
222	10*17711	J	9-14-18	DEBRA A WENNEMAN AND KURT J WENNEMAN	923 520
223	10*16995	J	9-14-18	DIANE ELSIE RAMSEY	924 146
224	10*17579	J	9-14-18	DON COFFIELD & GLENDA DOBBS	923 525
225	10*17563	J	9-14-18	DONALD L WOOD	923 523
226	10*16953	J	9-14-18	DONALD T AND JEAN K HOGAN	924 140
227	10*16582	J	9-14-18	DORA BROCK BRAMMER	907 429
228	10*15445	J	9-14-18	DOUGLAS C AND GWENDLYN D LEWTON	925 123
229	10*16511	J	9-14-18	DOUGLAS R BOWEN	906 475
230	10*17766	J	9-14-18	EDWARD S & NANCY A ROSENTHAL	923 495
231	10*16131	J	9-14-18	ERIC S DOBBS	902 68
232	10*16835	J	9-14-18	ERNEST CARL AUGUSTINE JR	924 188
233	10*16182	J	9-14-18	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	906 283
234	10*16017	J	9-14-18	FLOYD A MCFADDEN	906 260
235	10*15730	J	9-14-18	FRANCES V CARPENTER	906 256
236	10*16442	J	9-14-18	FRED T AND JERRY L CHAMBERS	924 174
237	10*17448	J	9-14-18	FREDERICK L HERVEY AND CATHY J HERVEY	924 162
238	10*16948	J	9-14-18	FREDERICK M LEWTON	924 136
239	10*17209	J	9-14-18	GAYLE S SHANNON	924 168
240	10*16441	J	9-14-18	GEORGE FRANKLIN AND NANCY ANN REED	924 619
241	10*17515	J	9-14-18	GLADYS E DOBBS	923 541
242	10*17769	J	9-14-18	GLADYS FRAZIER KING	923 492
243	10*17504	J	9-14-18	GREGG ALAN MILLER AND BETH ANN MILLER	924 118
244	10*17675	J	9-14-18	GREGORY D & CAROLYN J WIBLE	923 507
245	10*16580	J	9-14-18	HAROLD C MCFADDEN	907 480
246	10*17289	J	9-14-18	HAROLD R HUNT JR AND EUZABETH A HUNT	924 170
247	10*17879	J	9-14-18	HARRY R WRIGHT JR	924 588
248	10*16581	J	9-14-18	HELEN L SCHILLING	907 489
249	10*17674	J	9-14-18	HOWARD L & BETH E WOOD	923 505
250	10*16540	J	9-14-18	JAMES A WINTER AND CONNIE G WINTER	924 184
251	10*17676	J	9-14-18	JAMES C & DEIDRE G DORIA	923 513
252	10*47051.325.4	J	9-14-18	JAMES H WHITE AND RITA FRANKS WHITE	906 230
253	10*17731	J	9-14-18	JAMES J MCGHEE AND JEANNINE CHAMBERS MCGHEE	914 519
254	10*17671	J	9-14-18	JAMES L STOUT	923 484
255	10*16882	J	9-14-18	JAMES LEROY AND DARLENE DOBBS OWENS	924 190
256	10*16569	J	9-14-18	JANICE C BALE	907 425
257	10*17503	J	9-14-18	JANICE L KUHN	924 122
258	10*16950	J	9-14-18	JAY E AND CECILIA E LEWTON	924 134
259	10*16532	J	9-14-18	JEAN ANN MCFADDEN	906 459
260	10*16285	J	9-14-18	JOHN A SHUTZ AND CYNTHIA J SHUTZ	906 291
261	10*16483	J	9-14-18	JOHN C AND BARBARA H WINTER	924 178
262	10*16966	J	9-14-18	JOHN GILLETTE AND BARBARA GILLETTE	913 377
263	10*17885	J	9-14-18	JOHN RUSSELL BECKER	924 540
264	10*17582	J	9-14-18	JOHN THOMAS ERAZMUS AND JEAN R ERAZMUS	924 124
265	10*16030	J	9-14-18	JOSEPH F CHMIELEWSKI AND SANDRA CHMIELEWSKI	906 264
266	10*47051.325.1	J	9-14-18	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	906 225
267	10*16993	J	9-14-18	JULIA HOOVER	924 150
268	10*17517	J	9-14-18	JULIO ENRIQUE & DEBRA K TORRES	923 537
269	10*16085	J	9-14-18	KATHARYN ANNETTE LILLY LAING AND FREDDIE JOE LAING	912 43
270	10*16086	J	9-14-18	KATHARYN DAY LILLY	906 272
271	10*16531	J	9-14-18	KATHY DOBBS WELLS	906 472
272	10*17668	J	9-14-18	KENNETH R DOBBS	923 503
273	10*16537	J	9-14-18	KIM D BOWEN AND MADONNA M BOWEN	907 415
274	10*15752	J	9-14-18	KIM O CHAMBERS AND DEBRA CHAMBERS	906 258
275	10*16180	J	9-14-18	LARRY L CHAMBERS	906 280
276	10*17131	J	9-14-18	LAURA E TOTTEN AND LONNIE R TOTTEN	924 154
277	10*16726	J	9-14-18	LESLEY K WHITE	924 182
278	10*16576	J	9-14-18	LUNDA A MINER AND MICHAEL W MINER	907 484
279	10*16992	J	9-14-18	LUNDA C ABRAHAM	924 148
280	10*17520	J	9-14-18	LUCY P SULLIVAN	923 533
281	10*17559	J	9-14-18	MARVIN JERRY BLAKE AND LINDA D BLAKE	923 528
282	10*16087	J	9-14-18	MARY PENELOPE LILLY MURPHY	912 41
283	10*17516	J	9-14-18	MARY V DOBBS	923 539
284	10*17505	J	9-14-18	MICHAEL R & LEANNE DOBBS	924 116
285	10*47051.325.3	J	9-14-18	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	906 228
286	10*16181	J	9-14-18	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	906 281
287	10*16144	J	9-14-18	PATTIE S MADRID	906 278
288	10*17580	J	9-14-18	PAUL CRAIG CUNNINGHAM	923 530
289	10*17615	J	9-14-18	PAULA JO WRIGHT	923 482
290	10*17581	J	9-14-18	PAULA WEIRES	923 486
291	10*47051.325.8	J	9-14-18	RICK PAVLIK	906 239
292	10*16570	J	9-14-18	ROBERT D BOWEN AND MARCIA M R BOWEN	907 420
293	10*17878	J	9-14-18	ROBERT E & SARAH M ROUSH	924 590
294	10*17413	J	9-14-18	ROBERT M CHAMBERS AND CHARLOTTE A CHAMBERS	924 160
295	10*17129	J	9-14-18	ROBERTA JANE PARKINSON	924 142
296	10*17700	J	9-14-18	ROGER L & MARILYN L GARRISON	923 472
297	10*17616	J	9-14-18	RONALD & ELIZABETH DOBBS	924 107
298	10*15477	J	9-14-18	RONALD A WYCINSKI	906 241
299	10*16680	J	9-14-18	RONALD J AND JENNIFER CHAMBERS FICCA	924 186
300	10*16990	J	9-14-18	ROSEMARY H BEAVERS	924 152

FILE NO. 8654P4HM.dwg

DATE JUNE 30, 20 17

REVISED _____, 20 _____

OPERATORS WELL NO. HEAVEN HILL 3-4HM

API WELL NO. 47 — 051 — 01947
STATE COUNTY PERMIT



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



COUNTY NAME PERMIT

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

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

HEAVEN HILL 3 LEASE
WELL 4HM
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
301	10*17664	J	9-14-18	RUDOLPH H PARSONS	923 511
302	10*16952	J	9-14-18	RUSSELL D HERVEY	924 132
303	10*47051.325.5	J	9-14-18	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	906 232
304	10*16733	J	9-14-18	SARAH L BISHOP	924 172
305	10*47051.325.7	J	9-14-18	SHERON JONES	906 237
306	10*16533	J	9-14-18	SHIRLEY ANN DOBBS	906 469
307	10*17703	J	9-14-18	SHIRLEY N COX	923 498
308	10*16949	J	9-14-18	STEVEN R AND BRIANNE L LUTT	924 138
309	10*17701	J	9-14-18	SUE ANN WORD	923 470
310	10*17702	J	9-14-18	TAMMY BETH RAMSEY	925 500
311	10*16967	J	9-14-18	TARA JEANNE MINOR AND JENNIFER A KNAPP	914 612
312	10*16534	J	9-14-18	TERRY LEE LASAVAGE	906 443
313	10*17667	J	9-14-18	THOMAS BRIAN WARRICK	923 509
314	10*47051.325.6	J	9-14-18	THOMAS O MCCORD	906 235
315	10*47051.325.2	J	9-14-18	TIMMY LEE STOUT AND DOROTHY MARIE STOUT	906 222
316	10*17560	J	9-14-18	TREVOR HOOKS	924 110
317	10*17134	J	9-14-18	UNITED CHRISTIAN MISSIONARY SOCIETY	924 144
318	10*17617	J	9-14-18	UNITED DISCIPLES OF CHRIST CHURCH	924 129
319	10*17881	J	9-14-18	WAYLON L & ANGELA J MURPHEE	924 555
320	10*16490	J	9-14-18	WILLIAM H AND MERRY C COTTON	924 176
321	10*17767	J	9-14-18	WILLIAM K & LUNDA J MERRITT	923 474
322	10*16965	J	9-14-18	WILLIAM L WRIGHT AND CAROLINA WRIGHT	914 524
323	10*17452	K	9-15-3	ALAN H & MARY K DEGARMO	924 164
324	10*17436	K	9-15-3	ANDREW M HOOVER AND DIANAH R HOOVER	924 156
325	10*16239	K	9-15-3	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	906 287
326	10*16443	K	9-15-3	BARBARA BROWN CHAMBERS	924 621
327	10*16018	K	9-15-3	BARBARA MCFADDEN ALBRIGHT	906 262
328	10*16444	K	9-15-3	CATHERINE ELLEN CHAMBERS	924 623
329	10*16535	K	9-15-3	CHARLES E CARSON AND MARY KAY CARSON	906 420
330	10*17396	K	9-15-3	CHRISTINE L KIDD	924 158
331	10*16486	K	9-15-3	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	924 180
332	10*17487	K	9-15-3	DEBORAH R MOKOSH	924 166
333	10*16995	K	9-15-3	DIANE ELSIE RAMSEY	924 146
334	10*17563	K	9-15-3	DONALD L WOOD	923 523
335	10*16953	K	9-15-3	DONALD T AND JEAN K HOGAN	924 140
336	10*16582	K	9-15-3	DORA BROCK BRAMMER	907 429
337	10*16445	K	9-15-3	DOUGLAS C AND GWENDLYN D LEWTON	925 123
338	10*16511	K	9-15-3	DOUGLAS R BOWEN	906 475
339	10*16835	K	9-15-3	ERNEST CARLAUGUSTINE JR	924 188
340	10*16182	K	9-15-3	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	906 283
341	10*16017	K	9-15-3	FLOYD A MCFADDEN	906 260
342	10*16442	K	9-15-3	FRED T AND JERRY L CHAMBERS	924 174
343	10*17448	K	9-15-3	FREDERICK L HERVEY AND CATHY J HERVEY	924 162
344	10*16948	K	9-15-3	FREDERICK M LEWTON	924 136
345	10*17209	K	9-15-3	GAYLE S SHANNON	924 168
346	10*16441	K	9-15-3	GEORGE FRANKLIN AND NANCY ANN REED	924 619
347	10*17675	K	9-15-3	GREGORY D & CAROLYN J WIBLE	923 507
348	10*16580	K	9-15-3	HAROLD C MCFADDEN	907 480
349	10*17289	K	9-15-3	HAROLD R HUNT JR AND ELIZABETH A HUNT	924 170
350	10*16581	K	9-15-3	HELEN L SCHILLING	907 489
351	10*17674	K	9-15-3	HOWARD L & BETH E WOOD	923 505
352	10*16540	K	9-15-3	JAMES A WINTER AND CONNIE G WINTER	924 184
353	10*47051.325.4	K	9-15-3	JAMES H WHITE AND RITA FRANKS WHITE	906 230
354	10*17731	K	9-15-3	JAMES J MCGHEE AND JEANNINE CHAMBERS MCGHEE	914 519
355	10*16569	K	9-15-3	JANICE C BALE	907 425
356	10*16950	K	9-15-3	JAY E AND CECILIA E LEWTON	924 134
357	10*16532	K	9-15-3	JEAN ANN MCFADDEN	906 459
358	10*16285	K	9-15-3	JOHN A SHUTZ AND CYNTHIA J SHUTZ	906 291
359	10*16483	K	9-15-3	JOHN C AND BARBARA H WINTER	924 178
360	10*47051.325.1	K	9-15-3	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	906 225
361	10*16993	K	9-15-3	JULIA HOOVER	924 150
362	10*16537	K	9-15-3	KIM D BOWEN AND MADONNA M BOWEN	907 415
363	10*15752	K	9-15-3	KIM O CHAMBERS AND DEBRA CHAMBERS	906 258
364	10*16180	K	9-15-3	LARRY L CHAMBERS	906 280
365	10*17131	K	9-15-3	LAURA E TOTTEN AND LONNIE R TOTTEN	924 154
366	10*16726	K	9-15-3	LESLY K WHITE	924 182
367	10*16576	K	9-15-3	LINDA A MINER AND MICHAEL W MINER	907 484
368	10*16992	K	9-15-3	LINDA C ABRAHAM	924 148
369	10*47051.325.3	K	9-15-3	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	906 228
370	10*16181	K	9-15-3	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	906 281
371	10*16144	K	9-15-3	PATTIE S MADRID	906 278
372	10*47051.325.8	K	9-15-3	RICK PAVLIK	906 239
373	10*16570	K	9-15-3	ROBERT D BOWEN AND MARCIA M R BOWEN	907 420
374	10*17413	K	9-15-3	ROBERT M CHAMBERS AND CHARLOTTE A CHAMBERS	924 160
375	10*17129	K	9-15-3	ROBERTA JANE PARKINSON	924 142
376	10*16680	K	9-15-3	RONALD J AND JENNIFER CHAMBERS FICCA	924 186
377	10*16990	K	9-15-3	ROSEMARY H BEAVERS	924 152
378	10*16952	K	9-15-3	RUSSELL D HERVEY	924 132
379	10*47051.325.5	K	9-15-3	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	906 232
380	10*16733	K	9-15-3	SARAH L BISHOP	924 172
381	10*47051.325.7	K	9-15-3	SHERON JONES	906 237
382	10*16949	K	9-15-3	STEVEN R AND BRIANNE L LUTT	924 138
383	10*17701	K	9-15-3	SUE ANN WORD	923 470
384	10*17702	K	9-15-3	TAMMY BETH RAMSEY	925 500
385	10*16534	K	9-15-3	TERRY LEE LASAVAGE	906 443
386	10*47051.325.6	K	9-15-3	THOMAS O MCCORD	906 235
387	10*17134	K	9-15-3	UNITED CHRISTIAN MISSIONARY SOCIETY	924 144
388	10*17617	K	9-15-3	UNITED DISCIPLES OF CHRIST CHURCH	924 129
389	10*16490	K	9-15-3	WILLIAM H AND MERRY C COTTON	924 176

FILE NO. 8654P4HM.dwg

DATE JUNE 30, 20 17

REVISED _____, 20 _____

OPERATORS WELL NO. HEAVEN HILL 3-4HM

API WELL NO. 47 — 051 — 01947
STATE COUNTY PERMIT



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



COUNTY NAME PERMIT

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

WW-6A1
(5/13)

Operator's Well No. Heaven Hill 3-4HM

**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
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*See attached sheets

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

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

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

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

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

OFFICE OF OIL AND GAS JUL 17 2017

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	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	9-7-31	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	C	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*47051.256.22	D	9-7-23	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A
10*47051.256.1	D	9-7-23	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*15746	D	9-7-23	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A
10*16247	D	9-7-23	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A
10*47051.256.24	D	9-7-23	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A
10*47051.256.16	D	9-7-23	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A
10*47051.256.15	D	9-7-23	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A
10*17506	D	9-7-23	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A
10*17507	D	9-7-23	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A
10*17415	D	9-7-23	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A
10*16115	D	9-7-23	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A
10*47051.256.10	D	9-7-23	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A
10*47051.256.14	D	9-7-23	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A
10*47051.256.21	D	9-7-23	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A
10*47051.256.20	D	9-7-23	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A
10*47051.256.11	D	9-7-23	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A
10*47051.256.18	D	9-7-23	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A
10*47051.256.7	D	9-7-23	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A
10*47051.256.17	D	9-7-23	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A
10*47051.256.19	D	9-7-23	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A
10*47051.256.8	D	9-7-23	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A
10*47051.256.23	D	9-7-23	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A
10*47051.256.12	D	9-7-23	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A
10*16021	D	9-7-23	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A
10*47051.256.9	D	9-7-23	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A
10*47051.256.13	D	9-7-23	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A
10*47051.256.22	E	9-11-7	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A
10*47051.256.1	E	9-11-7	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*15746	E	9-11-7	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A
10*16247	E	9-11-7	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A
10*47051.256.24	E	9-11-7	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A
10*47051.256.16	E	9-11-7	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A
10*47051.256.15	E	9-11-7	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A
10*17506	E	9-11-7	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A
10*17507	E	9-11-7	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A
10*17415	E	9-11-7	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A
10*16115	E	9-11-7	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A
10*47051.256.10	E	9-11-7	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A
10*47051.256.14	E	9-11-7	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A
10*47051.256.21	E	9-11-7	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A
10*47051.256.20	E	9-11-7	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A
10*47051.256.11	E	9-11-7	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A
10*47051.256.18	E	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A
10*47051.256.7	E	9-11-7	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A
10*47051.256.17	E	9-11-7	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A
10*47051.256.19	E	9-11-7	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A
10*47051.256.8	E	9-11-7	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A
10*47051.256.23	E	9-11-7	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A
10*47051.256.12	E	9-11-7	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A
10*16021	E	9-11-7	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A
10*47051.256.9	E	9-11-7	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A
10*47051.256.13	E	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A
10*16514	F	9-11-8	ALEX RUSSELL AND JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A
10*47051.223.12	F	9-11-8	ALICE GORBY MARTIN	TH EXPLORATION LLC	1/8+	908 52	N/A	N/A	N/A
10*17416	F	9-11-8	ANDREW M. ORTIZ	TH EXPLORATION, LLC	1/8+	921 346	N/A	N/A	N/A
10*16515	F	9-11-8	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A
10*47051.223.20	F	9-11-8	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A
10*17276	F	9-11-8	BERTHA EZELL WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A

1102 JO TUN SAS AND T10 JO ECT JFO
 047-051-01947

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.223.16	F	9-11-8	BETTY LOU STERN AND WILLIAM KEITH STERN	TH EXPLORATION LLC	1/8+	908 64	N/A	N/A	N/A
10*16880	F	9-11-8	BEVERLY ANN STORTS	TH EXPLORATION LLC	1/8+	921 498	N/A	N/A	N/A
10*16989	F	9-11-8	BRITTANY RICHARDSON	TH EXPLORATION LLC	1/8+	921 376	N/A	N/A	N/A
10*47051.223.18	F	9-11-8	BRITTNEY MENEAR	TH EXPLORATION LLC	1/8+	908 57	N/A	N/A	N/A
10*15463	F	9-11-8	CHARLES A RINE	TH EXPLORATION LLC	1/8+	908 274	N/A	N/A	N/A
10*16667	F	9-11-8	CHARLES F AND GAIL ANN PYLE	TH EXPLORATION LLC	1/8+	908 266	N/A	N/A	N/A
10*16686	F	9-11-8	CHERYLE M TRACEY	TH EXPLORATION LLC	1/8+	927 475	N/A	N/A	N/A
10*16802	F	9-11-8	CHRISTOPHER AND TAMMY RICHARDSON	TH EXPLORATION LLC	1/8+	921 495	N/A	N/A	N/A
10*17130	F	9-11-8	CINDY L BARGER	TH EXPLORATION LLC	1/8+	921 137	N/A	N/A	N/A
10*16416	F	9-11-8	CYNTHIA HUDSON	TH EXPLORATION, LCC	1/8+	908 219	N/A	N/A	N/A
10*17274	F	9-11-8	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A
10*47051.223.8	F	9-11-8	DAVID M WILSON	TH EXPLORATION LLC	1/8+	907 649	N/A	N/A	N/A
10*16807	F	9-11-8	DAVID TULLER AND SUSAN STORTS TULLER	TH EXPLORATION LLC	1/8+	921 513	N/A	N/A	N/A
10*15481	F	9-11-8	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A
10*47051.223.35	F	9-11-8	DEBRA L CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 190	N/A	N/A	N/A
10*17438	F	9-11-8	DENNIS M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A
10*16962	F	9-11-8	DENNIS P AND BARBARA EZELL FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A
10*16720	F	9-11-8	DONNA ELAINE BRASKETT	TH EXPLORATION LLC	1/8+	921 152	N/A	N/A	N/A
10*47051.223.11	F	9-11-8	ELIZABETH ESTEP	TH EXPLORATION LLC	1/8+	908 37	N/A	N/A	N/A
10*47051.223.21	F	9-11-8	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A
10*16298	F	9-11-8	GEOFFREY A SHIEFER AND STEPHANIE L SCHIEFER	TH EXPLORATION LLC	1/8+	908 238	N/A	N/A	N/A
10*17677	F	9-11-8	GEORGE M GONTA JR	TH EXPLORATION, LLC	1/8+	921 89	N/A	N/A	N/A
10*47051.223.5	F	9-11-8	HAROLD S BROWN II AND MARIA A BROWN	TH EXPLORATION LLC	1/8+	907 641	N/A	N/A	N/A
10*16815	F	9-11-8	HAROLD W PYLE	TH EXPLORATION LLC	1/8+	921 357	N/A	N/A	N/A
10*17156	F	9-11-8	HENRI NELL JACKSON KENT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A
10*16668	F	9-11-8	JACK I AND MERRILEE PYLE	TH EXPLORATION LLC	1/8+	908 257	N/A	N/A	N/A
10*47051.223.7	F	9-11-8	JACK R WILSON JR AND JANE A WILSON	TH EXPLORATION LLC	1/8+	908 4	N/A	N/A	N/A
10*47051.223.13	F	9-11-8	JAMES A GORBY	TH EXPLORATION LLC	1/8+	908 42	N/A	N/A	N/A
10*16839	F	9-11-8	JAMES B FOUNDS AND LYNN M MOWERY	TH EXPLORATION LLC	1/8+	921 73	N/A	N/A	N/A
10*16800	F	9-11-8	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A
10*17588	F	9-11-8	JAMES M JACKSON	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A
10*17527	F	9-11-8	JAMES MICHAEL EZELL AND LUCILLE D EZELL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A
10*17157	F	9-11-8	JAMES N REEVES JR AND RITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A
10*17564	F	9-11-8	JAMES R & TRACEY E NICKOLSON	TH EXPLORATION, LLC	1/8+	921 340	N/A	N/A	N/A
10*47051.223.31	F	9-11-8	JANICE M GONTA GAVALIK	TH EXPLORATION LLC	1/8+	908 180	N/A	N/A	N/A
10*47051.223.19	F	9-11-8	JASON RINE AND HEATHER RINE	TH EXPLORATION LLC	1/8+	907 629	N/A	N/A	N/A
10*47051.223.1	F	9-11-8	JEAN ANNE GORBY STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A
10*17526	F	9-11-8	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A
10*16977	F	9-11-8	JEREMY COCHENOUR	TH EXPLORATION LLC	1/8+	921 102	N/A	N/A	N/A
10*17565	F	9-11-8	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A
10*17155	F	9-11-8	JESSE LEON JR AND TERESA GAIL EZELLE	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A
10*47051.223.24	F	9-11-8	JO DEE K DAVIS	TH EXPLORATION LLC	1/8+	908 136	N/A	N/A	N/A
10*47051.223.25	F	9-11-8	JOANNE WELCH	TH EXPLORATION LLC	1/8+	908 141	N/A	N/A	N/A
10*17552	F	9-11-8	JOHN BEVACQUA AND PATRICIA A BEVACQUA	TH EXPLORATION LLC	1/8+	921 144	N/A	N/A	N/A
10*16689	F	9-11-8	JOHN C FOUNDS	TH EXPLORATION LLC	1/8+	927 490	N/A	N/A	N/A
10*47051.223.34	F	9-11-8	JOHN CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 170	N/A	N/A	N/A
10*15686	F	9-11-8	JOHN OMER BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	N/A
10*17275	F	9-11-8	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A
10*16669	F	9-11-8	JOHN S AND PATRICIA S DADO	TH EXPLORATION LLC	1/8+	908 269	N/A	N/A	N/A
10*47051.223.32	F	9-11-8	JOSEPH GORBY DAKAN	TH EXPLORATION LLC	1/8+	908 175	N/A	N/A	N/A
10*17339	F	9-11-8	JOSEPH W FOUNDS	TH EXPLORATION LLC	1/8+	921 75	N/A	N/A	N/A
10*47051.223.6	F	9-11-8	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A
10*47051.223.14	F	9-11-8	JUSTIN RINE AND BECKY RINE	TH EXPLORATION LLC	1/8+	907 639	N/A	N/A	N/A
10*47051.223.28	F	9-11-8	KAREN S GAST	TH EXPLORATION LLC	1/8+	908 150	N/A	N/A	N/A
10*17561	F	9-11-8	KATHRYN L & ROGER L TYRELL	TH EXPLORATION, LLC	1/8+	921 519	N/A	N/A	N/A
10*17444	F	9-11-8	KELLY FOUNDS CAMPBELL	TH EXPLORATION LLC	1/8+	921 99	N/A	N/A	N/A
10*17440	F	9-11-8	KENDRA WALISA	TH EXPLORATION LLC	1/8+	927 484	N/A	N/A	N/A
10*47051.223.15	F	9-11-8	LARRY D TAUNT AND NANCY L TAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A
10*47051.223.30	F	9-11-8	Laurie Driggers Manderson	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A
10*16987	F	9-11-8	Laurie Ezell Perry	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A
10*16976	F	9-11-8	LESTER G AND CONSTANCE B NICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.223.9	F	9-11-8	LINDA DELBERT	TH EXPLORATION LLC	1/8+	908 32	N/A	N/A	N/A
10*17485	F	9-11-8	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A
10*16478	F	9-11-8	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A
10*16879	F	9-11-8	MARK E AND LESLEY A STORTS	TH EXPLORATION LLC	1/8+	921 501	N/A	N/A	N/A
10*16902	F	9-11-8	MARY BARCAW DUKE	TH EXPLORATION LLC	1/8+	921 105	N/A	N/A	N/A
10*17589	F	9-11-8	MARY CHRISTINE MCKENNA	TH EXPLORATION, LLC	1/8+	921 332	N/A	N/A	N/A
10*16414	F	9-11-8	MARY ELIZABETH DRIGGERS	TH EXPLORATION, LCC	1/8+	908 208	N/A	N/A	N/A
10*16991	F	9-11-8	MARYELLEN FOUNDS AND LAUREN FOUNDS	TH EXPLORATION LLC	1/8+	921 79	N/A	N/A	N/A
10*16058	F	9-11-8	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A
10*17278	F	9-11-8	MICHAEL L EZELLE	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A
10*16808	F	9-11-8	MICHAEL L ORTIZ	TH EXPLORATION LLC	1/8+	921 349	N/A	N/A	N/A
10*16666	F	9-11-8	MICHAEL P PYLE	TH EXPLORATION LLC	1/8+	908 255	N/A	N/A	N/A
10*17554	F	9-11-8	MICHAEL T RANKIN	TH EXPLORATION LLC	1/8+	921 361	N/A	N/A	N/A
10*16868	F	9-11-8	MICHAEL W STORTS AND JESSICA M STORTS	TH EXPLORATION LLC	1/8+	921 504	N/A	N/A	N/A
10*17443	F	9-11-8	MICHELLE MORROW-BACK	TH EXPLORATION LLC	1/8+	921 337	N/A	N/A	N/A
10*17377	F	9-11-8	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A
10*47051.223.33	F	9-11-8	NANCY CIAFFAGLIONE HOUSLEY	TH EXPLORATION LLC	1/8+	908 185	N/A	N/A	N/A
10*17566	F	9-11-8	NATHAN P & BARBARA T ERDOSSY	TH EXPLORATION, LLC	1/8+	921 108	N/A	N/A	N/A
10*17484	F	9-11-8	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A
10*16798	F	9-11-8	PATRICK A RANKIN AND ROBIN A RANKIN	TH EXPLORATION LLC	1/8+	921 364	N/A	N/A	N/A
10*17208	F	9-11-8	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	TH EXPLORATION LLC	1/8+	921 86	N/A	N/A	N/A
10*47051.223.29	F	9-11-8	PATSY JO RAJU	TH EXPLORATION LLC	1/8+	908 155	N/A	N/A	N/A
10*16742	F	9-11-8	PAUL C WILSON	TH EXPLORATION LLC	1/8+	927 490	N/A	N/A	N/A
10*17449	F	9-11-8	PHYLLIS J BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A
10*47051.223.17	F	9-11-8	RALPH E HUNTER JR AND CHARLOTTE HUNTER	TH EXPLORATION LLC	1/8+	908 9	N/A	N/A	N/A
10*17441	F	9-11-8	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A
10*16448	F	9-11-8	RALPH L AND JUANITA L CRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A
10*16690	F	9-11-8	RICARDO ORTIZ	TH EXPLORATION LLC	1/8+	921 352	N/A	N/A	N/A
10*17483	F	9-11-8	RICHARD I PYLE	TH EXPLORATION LLC	1/8+	921 359	N/A	N/A	N/A
10*16662	F	9-11-8	RICHARD THOMAS AND VICKI J MIMS	TH EXPLORATION LLC	1/8+	908 863	N/A	N/A	N/A
10*16836	F	9-11-8	RICK A AND LENORE A STORTS	TH EXPLORATION LLC	1/8+	921 507	N/A	N/A	N/A
10*16297	F	9-11-8	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	908 235	N/A	N/A	N/A
10*47051.223.10	F	9-11-8	ROBERT E GORBY	TH EXPLORATION LLC	1/8+	908 47	N/A	N/A	N/A
10*16545	F	9-11-8	ROBERT G & ELLEN FOUNDS	TH EXPLORATION LLC	1/8+	908 260	N/A	N/A	N/A
10*16838	F	9-11-8	ROBERT G FUNARI	TH EXPLORATION LLC	1/8+	921 82	N/A	N/A	N/A
10*16424	F	9-11-8	ROBERT J RIGBY	TH EXPLORATION, LLC	1/8+	908 241	N/A	N/A	N/A
10*16383	F	9-11-8	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A
10*47051.223.23	F	9-11-8	RONALD S CRIM	TH EXPLORATION LLC	1/8+	908 79	N/A	N/A	N/A
10*16118	F	9-11-8	RUBY RIDDLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A
10*47051.223.22	F	9-11-8	SALLY COLE	TH EXPLORATION LLC	1/8+	908 74	N/A	N/A	N/A
10*17744	F	9-11-8	SAM PRESLEY EZELL	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A
10*17205	F	9-11-8	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A
10*15750	F	9-11-8	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A
10*17442	F	9-11-8	SHANE ALLEN AND MENDY JEAN ALLEN	TH EXPLORATION LLC	1/8+	921 134	N/A	N/A	N/A
10*16821	F	9-11-8	SHEILA BRASKETT WEICHEY	TH EXPLORATION LLC	1/8+	921 516	N/A	N/A	N/A
10*16688	F	9-11-8	SHERRYL PYLE BAIR	TH EXPLORATION LLC	1/8+	927 481	N/A	N/A	N/A
10*15482	F	9-11-8	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A
10*16415	F	9-11-8	TERENCE J & NANCY J ANDERSON	TH EXPLORATION, LCC	1/8+	908 231	N/A	N/A	N/A
10*17482	F	9-11-8	TERESA EZELLE RALYA AND DAVID L RALYA	TH EXPLORATION LLC	1/8+	927 487	N/A	N/A	N/A
10*16819	F	9-11-8	TERESA ORTIZ BIGGS	TH EXPLORATION LLC	1/8+	921 147	N/A	N/A	N/A
10*16837	F	9-11-8	TERRY L AND THELMA A POFF	TH EXPLORATION LLC	1/8+	927 472	N/A	N/A	N/A
10*17198	F	9-11-8	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A
10*16996	F	9-11-8	THOMAS RANKIN	TH EXPLORATION LLC	1/8+	917 75	N/A	N/A	N/A
10*47051.223.27	F	9-11-8	TIMI J HOBBS	TH EXPLORATION LLC	1/8+	908 277	N/A	N/A	N/A
10*16863	F	9-11-8	TINA MOORE	TH EXPLORATION LLC	1/8+	921 334	N/A	N/A	N/A
10*16806	F	9-11-8	VIRGINIA I WHITMAN	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A
10*47051.223.26	F	9-11-8	WENDY L SMARKEL	TH EXPLORATION LLC	1/8+	908 69	N/A	N/A	N/A
10*16747	F	9-11-8	WILLIAM DALE BRASKETT	TH EXPLORATION LLC	1/8+	921 96	N/A	N/A	N/A
10*16804	F	9-11-8	WILLIAM N AND SHERRY D TAYLOR	TH EXPLORATION LLC	1/8+	921 510	N/A	N/A	N/A
10*16516	F	9-11-8	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A
10*15606	G	9-12-2	CHK-MAC LLC	CHESAPEAKE APPALACHIA LLC	1/8+	798 150	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.309.3	G	9-12-2	GERALD W QUIGLEY AND VICKI L QUIGLEY	TH EXPLORATION LLC	1/8+	905 12	N/A	N/A	N/A
10*16932	G	9-12-2	HAYMAKER PROPERTIES LP	CHEVRON U.S.A. INC.	1/8+	902 447	N/A	N/A	Chevron to Tug Hill: 37/437
10*47051.309.1	G	9-12-2	LESLIE E QUIGLEY	TH EXPLORATION LLC	1/8+	905 8	N/A	N/A	N/A
10*47051.309.2	G	9-12-2	LEWIS M QUIGLEY AND MAXINE V QUIGLEY	TH EXPLORATION LLC	1/8+	907 217	N/A	N/A	N/A
10*16238	G	9-12-2	SUSAN MARIE JOHNSON AKA SUSAN MARIE HUBER	TH EXPLORATION LLC	1/8+	924 614	N/A	N/A	N/A
10*16244	H	9-12-1	EMILY ANN NICIFOROS	TH EXPLORATION LLC	1/8+	924 617	N/A	N/A	N/A
10*16149	H	9-12-1	THOMAS MICHAEL WALLACE	TH EXPLORATION LLC	1/8+	924 610	N/A	N/A	N/A
10*47051.333.1	H	9-12-1	THOMAS S RIGGS III	TH EXPLORATION LLC	1/8+	904 556	N/A	N/A	N/A
10*47051.333.2	H	9-12-1	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	TH EXPLORATION LLC	1/8+	907 220	N/A	N/A	N/A
10*16244	I	9-12-31	EMILY ANN NICIFOROS	TH EXPLORATION LLC	1/8+	924 617	N/A	N/A	N/A
10*15603	I	9-12-31	HAYHURST COMPANY A FLORIDA PARTNERSHIP	CHESAPEAKE APPALACHIA LLC	1/8+	727 253	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*16149	I	9-12-31	THOMAS MICHAEL WALLACE	TH EXPLORATION LLC	1/8+	924 610	N/A	N/A	N/A
10*47051.333.1	I	9-12-31	THOMAS S RIGGS III	TH EXPLORATION LLC	1/8+	904 556	N/A	N/A	N/A
10*47051.333.2	I	9-12-31	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	TH EXPLORATION LLC	1/8+	907 220	N/A	N/A	N/A
10*17555	J	9-14-18	AARON AND JANA K PARRY	TH EXPLORATION LLC	1/8+	924 113	N/A	N/A	N/A
10*17452	J	9-14-18	ALAN H & MARY K DEGARMO	TH EXPLORATION, LLC	1/8+	924 164	N/A	N/A	N/A
10*17139	J	9-14-18	ALICE G WEINER AND GERALD S WEINER	TH EXPLORATION LLC	1/8+	915 131	N/A	N/A	N/A
10*16183	J	9-14-18	ALLEN R L DAVIS AND DIANA LEE PATTERSON	TH EXPLORATION LLC	1/8+	906 285	N/A	N/A	N/A
10*17436	J	9-14-18	ANDREW M HOOVER AND DINAH R HOOVER	TH EXPLORATION LLC	1/8+	924 156	N/A	N/A	N/A
10*16239	J	9-14-18	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	TH EXPLORATION LLC	1/8+	906 287	N/A	N/A	N/A
10*17880	J	9-14-18	ANNA M WRIGHT	TH EXPLORATION, LLC	1/8+	924 586	N/A	N/A	N/A
10*16443	J	9-14-18	BARBARA BROWN CHAMBERS	TH EXPLORATION LLC	1/8+	924 621	N/A	N/A	N/A
10*16018	J	9-14-18	BARBARA MCFADDEN ALBRIGHT	TH EXPLORATION LLC	1/8+	906 262	N/A	N/A	N/A
10*17708	J	9-14-18	BETTY LOU NOBLE	TH EXPLORATION LLC	1/8+	923 127	N/A	N/A	N/A
10*17612	J	9-14-18	BEVERLY A LEDBETTER	TH EXPLORATION, LLC	1/8+	923 480	N/A	N/A	N/A
10*16240	J	9-14-18	BONNIE SUE PATTERSON SWISHER	TH EXPLORATION LLC	1/8+	906 289	N/A	N/A	N/A
10*17830	J	9-14-18	BRIAN AND MELINDA MASTERS	TH EXPLORATION LLC	1/8+	925 319	N/A	N/A	N/A
10*16031	J	9-14-18	CARL J CHMIELEWSKI AND KATHLEEN A CHMIELEWSKI	TH EXPLORATION LLC	1/8+	906 266	N/A	N/A	N/A
10*17613	J	9-14-18	CARLTON DOBBS JR AND MIKHAIL PROKOPENKO	TH EXPLORATION LLC	1/8+	924 120	N/A	N/A	N/A
10*16444	J	9-14-18	CATHERINE ELLEN CHAMBERS	TH EXPLORATION LLC	1/8+	924 623	N/A	N/A	N/A
10*16083	J	9-14-18	CECIL HARRY LILLY, III AND PAMELA KAY KNIGHT LILLY	TH EXPLORATION LLC	1/8+	912 47	N/A	N/A	N/A
10*17771	J	9-14-18	CHARLES AND LISA WARRICK	TH EXPLORATION, LLC	1/8+	923 477	N/A	N/A	N/A
10*16535	J	9-14-18	CHARLES E CARSON AND MARY KAY CARSON	TH EXPLORATION LLC	1/8+	906 420	N/A	N/A	N/A
10*17396	J	9-14-18	CHRISTINE L KIDD	TH EXPLORATION LLC	1/8+	924 158	N/A	N/A	N/A
10*16486	J	9-14-18	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	TH EXPLORATION LLC	1/8+	924 180	N/A	N/A	N/A
10*17614	J	9-14-18	DAVID DOBBS	TH EXPLORATION, LLC	1/8+	923 489	N/A	N/A	N/A
10*17528	J	9-14-18	DEAN E GARRISON	TH EXPLORATION LLC	1/8+	923 535	N/A	N/A	N/A
10*17487	J	9-14-18	DEBORAH R MOKOSH	TH EXPLORATION LLC	1/8+	924 166	N/A	N/A	N/A
10*17711	J	9-14-18	DEBRA A WENNEMAN AND KURT J WENNEMAN	TH EXPLORATION LLC	1/8+	923 520	N/A	N/A	N/A
10*16995	J	9-14-18	DIANE ELSIE RAMSEY	TH EXPLORATION LLC	1/8+	924 146	N/A	N/A	N/A
10*17579	J	9-14-18	DON COFFIELD & GLENDA DOBBS	TH EXPLORATION, LLC	1/8+	923 525	N/A	N/A	N/A
10*17563	J	9-14-18	DONALD L WOOD	TH EXPLORATION LLC	1/8+	923 523	N/A	N/A	N/A
10*16953	J	9-14-18	DONALD T AND JEAN K HOGAN	TH EXPLORATION LLC	1/8+	924 140	N/A	N/A	N/A
10*16582	J	9-14-18	DORA BROCK BRAMMER	TH EXPLORATION LLC	1/8+	907 429	N/A	N/A	N/A
10*16445	J	9-14-18	DOUGLAS C AND GWENDLYN D LEWTON	TH EXPLORATION LLC	1/8+	925 123	N/A	N/A	N/A
10*16511	J	9-14-18	DOUGLAS R BOWEN	TH EXPLORATION LLC	1/8+	906 475	N/A	N/A	N/A
10*17766	J	9-14-18	EDWARD S & NANCY A ROSENTHAL	TH EXPLORATION, LLC	1/8+	923 495	N/A	N/A	N/A
10*16131	J	9-14-18	ERIC S DOBBS	TH EXPLORATION LLC	1/8+	902 68	N/A	N/A	N/A
10*16835	J	9-14-18	ERNEST CARL AUGUSTINE JR	TH EXPLORATION LLC	1/8+	924 188	N/A	N/A	N/A
10*16182	J	9-14-18	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	906 283	N/A	N/A	N/A
10*16017	J	9-14-18	FLOYD A MCFADDEN	TH EXPLORATION LLC	1/8+	906 260	N/A	N/A	N/A
10*15730	J	9-14-18	FRANCES V CARPENTER	TH EXPLORATION LLC	1/8+	906 256	N/A	N/A	N/A
10*16442	J	9-14-18	FRED T AND JERRY L CHAMBERS	TH EXPLORATION LLC	1/8+	924 174	N/A	N/A	N/A
10*17448	J	9-14-18	FREDERICK L HERVEY AND CATHY J HERVEY	TH EXPLORATION LLC	1/8+	924 162	N/A	N/A	N/A
10*16948	J	9-14-18	FREDERICK M LEWTON	TH EXPLORATION LLC	1/8+	924 136	N/A	N/A	N/A
10*17209	J	9-14-18	GAYLE S SHANNON	TH EXPLORATION LLC	1/8+	924 168	N/A	N/A	N/A
10*16441	J	9-14-18	GEORGE FRANKLIN AND NANCY ANN REED	TH EXPLORATION LLC	1/8+	924 619	N/A	N/A	N/A
10*17515	J	9-14-18	GLADYS E DOBBS	TH EXPLORATION LLC	1/8+	923 541	N/A	N/A	N/A
10*17769	J	9-14-18	GLADYS FRAZIER KING	TH EXPLORATION, LLC	1/8+	923 492	N/A	N/A	N/A
10*17504	J	9-14-18	GREGG ALAN MILLER AND BETH ANN MILLER	TH EXPLORATION LLC	1/8+	924 118	N/A	N/A	N/A
10*17675	J	9-14-18	GREGORY D & CAROLYN J WIBLE	TH EXPLORATION, LLC	1/8+	923 507	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16580	J	9-14-18	HAROLD C MCFADDEN	TH EXPLORATION LLC	1/8+	907 480	N/A	N/A	N/A
10*17289	J	9-14-18	HAROLD R HUNT JR AND ELIZABETH A HUNT	TH EXPLORATION LLC	1/8+	924 170	N/A	N/A	N/A
10*17879	J	9-14-18	HARRY R WRIGHT JR	TH EXPLORATION, LLC	1/8+	924 588	N/A	N/A	N/A
10*16581	J	9-14-18	HELEN L SCHILLING	TH EXPLORATION LLC	1/8+	907 489	N/A	N/A	N/A
10*17674	J	9-14-18	HOWARD L & BETH E WOOD	TH EXPLORATION, LLC	1/8+	923 505	N/A	N/A	N/A
10*16540	J	9-14-18	JAMES A WINTER AND CONNIE G WINTER	TH EXPLORATION LLC	1/8+	924 184	N/A	N/A	N/A
10*17676	J	9-14-18	JAMES C & DEIDRE G DORIA	TH EXPLORATION, LLC	1/8+	923 513	N/A	N/A	N/A
10*47051.325.4	J	9-14-18	JAMES H WHITE AND RITA FRANKS WHITE	TH EXPLORATION LLC	1/8+	906 230	N/A	N/A	N/A
10*17731	J	9-14-18	JAMES J MCGHEE AND JEANNINE CHAMBERS MCGHEE	TH EXPLORATION LLC	1/8+	914 519	N/A	N/A	N/A
10*17671	J	9-14-18	JAMES L STOUT	TH EXPLORATION LLC	1/8+	923 484	N/A	N/A	N/A
10*16882	J	9-14-18	JAMES LEROY AND DARLENE DOBBS OWENS	TH EXPLORATION LLC	1/8+	924 190	N/A	N/A	N/A
10*16569	J	9-14-18	JANICE C BALE	TH EXPLORATION LLC	1/8+	907 425	N/A	N/A	N/A
10*17503	J	9-14-18	JANICE L KUHN	TH EXPLORATION LLC	1/8+	924 122	N/A	N/A	N/A
10*16950	J	9-14-18	JAY E AND CECILIA E LEWTON	TH EXPLORATION LLC	1/8+	924 134	N/A	N/A	N/A
10*16532	J	9-14-18	JEAN ANN MCFADDEN	TH EXPLORATION LLC	1/8+	906 459	N/A	N/A	N/A
10*16285	J	9-14-18	JOHN A SHUTZ AND CYNTHIA J SHUTZ	TH EXPLORATION LLC	1/8+	906 291	N/A	N/A	N/A
10*16483	J	9-14-18	JOHN C AND BARBARA H WINTER	TH EXPLORATION LLC	1/8+	924 178	N/A	N/A	N/A
10*16966	J	9-14-18	JOHN GILLETTE AND BARBARA GILLETTE	TH EXPLORATION LLC	1/8+	913 377	N/A	N/A	N/A
10*17885	J	9-14-18	JOHN RUSSELL BECKER	TH EXPLORATION, LLC	1/8+	924 540	N/A	N/A	N/A
10*17582	J	9-14-18	JOHN THOMAS ERAZMUS AND JEAN R ERAZMUS	TH EXPLORATION LLC	1/8+	924 124	N/A	N/A	N/A
10*16030	J	9-14-18	JOSEPH F CHMIELEWSKI AND SANDRA CHMIELEWSKI	TH EXPLORATION LLC	1/8+	906 264	N/A	N/A	N/A
10*47051.325.1	J	9-14-18	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	TH EXPLORATION LLC	1/8+	906 225	N/A	N/A	N/A
10*16993	J	9-14-18	JULIA HOOVER	TH EXPLORATION LLC	1/8+	924 150	N/A	N/A	N/A
10*17517	J	9-14-18	JULIO ENRIQUE & DEBRA K TORRES	TH EXPLORATION, LLC	1/8+	923 537	N/A	N/A	N/A
10*16085	J	9-14-18	KATHARYN ANNETTE LILLY LAING AND FREDDIE JOE LAING	TH EXPLORATION LLC	1/8+	912 43	N/A	N/A	N/A
10*16086	J	9-14-18	KATHARYN DAY LILLY	TH EXPLORATION LLC	1/8+	906 272	N/A	N/A	N/A
10*16531	J	9-14-18	KATHY DOBBS WELLS	TH EXPLORATION LLC	1/8+	906 472	N/A	N/A	N/A
10*17668	J	9-14-18	KENNETH R DOBBS	TH EXPLORATION, LLC	1/8+	923 503	N/A	N/A	N/A
10*16537	J	9-14-18	KIM D BOWEN AND MADONNA M BOWEN	TH EXPLORATION LLC	1/8+	907 415	N/A	N/A	N/A
10*15752	J	9-14-18	KIM O CHAMBERS AND DEBRA CHAMBERS	TH EXPLORATION LLC	1/8+	906 258	N/A	N/A	N/A
10*16180	J	9-14-18	LARRY L CHAMBERS	TH EXPLORATION LLC	1/8+	906 280	N/A	N/A	N/A
10*17131	J	9-14-18	LAURA E TOTTEN AND LONNIE R TOTTEN	TH EXPLORATION LLC	1/8+	924 154	N/A	N/A	N/A
10*16726	J	9-14-18	LESLEY K WHITE	TH EXPLORATION LLC	1/8+	924 182	N/A	N/A	N/A
10*16576	J	9-14-18	LINDA A MINER AND MICHAEL W MINER	TH EXPLORATION LLC	1/8+	907 484	N/A	N/A	N/A
10*16992	J	9-14-18	LINDA C ABRAHAM	TH EXPLORATION LLC	1/8+	924 148	N/A	N/A	N/A
10*17520	J	9-14-18	LUCY P SULLIVAN	TH EXPLORATION LLC	1/8+	923 533	N/A	N/A	N/A
10*17559	J	9-14-18	MARVIN JERRY BLAKE AND LINDA D BLAKE	TH EXPLORATION LLC	1/8+	923 528	N/A	N/A	N/A
10*16087	J	9-14-18	MARY PENELOPE LILLY MURPHY	TH EXPLORATION LLC	1/8+	912 41	N/A	N/A	N/A
10*17516	J	9-14-18	MARY V DOBBS	TH EXPLORATION LLC	1/8+	923 539	N/A	N/A	N/A
10*17505	J	9-14-18	MICHAEL R & LEANNE DOBBS	TH EXPLORATION, LLC	1/8+	924 116	N/A	N/A	N/A
10*47051.325.3	J	9-14-18	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	TH EXPLORATION LLC	1/8+	906 228	N/A	N/A	N/A
10*16181	J	9-14-18	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	TH EXPLORATION LLC	1/8+	906 281	N/A	N/A	N/A
10*16144	J	9-14-18	PATTIE S MADRID	TH EXPLORATION LLC	1/8+	906 278	N/A	N/A	N/A
10*17580	J	9-14-18	PAUL CRAIG CUNNINGHAM	TH EXPLORATION LLC	1/8+	923 530	N/A	N/A	N/A
10*17615	J	9-14-18	PAULA JO WRIGHT	TH EXPLORATION, LLC	1/8+	923 482	N/A	N/A	N/A
10*17581	J	9-14-18	PAULA WEIRES	TH EXPLORATION LLC	1/8+	923 486	N/A	N/A	N/A
10*47051.325.8	J	9-14-18	RICK PAVLIK	TH EXPLORATION LLC	1/8+	906 239	N/A	N/A	N/A
10*16570	J	9-14-18	ROBERT D BOWEN AND MARCIA M R BOWEN	TH EXPLORATION LLC	1/8+	907 420	N/A	N/A	N/A
10*17878	J	9-14-18	ROBERT E & SARAH M ROUSH	TH EXPLORATION, LLC	1/8+	924 590	N/A	N/A	N/A
10*17413	J	9-14-18	ROBERT M CHAMBERS AND CHARLOTTE A CHAMBERS	TH EXPLORATION LLC	1/8+	924 160	N/A	N/A	N/A
10*17129	J	9-14-18	ROBERTA JANE PARKINSON	TH EXPLORATION LLC	1/8+	924 142	N/A	N/A	N/A
10*17700	J	9-14-18	ROGER L & MARILYN L GARRISON	TH EXPLORATION, LLC	1/8+	923 472	N/A	N/A	N/A
10*17616	J	9-14-18	RONALD & ELIZABETH DOBBS	TH EXPLORATION, LLC	1/8+	924 107	N/A	N/A	N/A
10*15477	J	9-14-18	RONALD A WYCINSKI	TH EXPLORATION LLC	1/8+	906 241	N/A	N/A	N/A
10*16680	J	9-14-18	RONALD J AND JENNIFER CHAMBERS FICCA	TH EXPLORATION LLC	1/8+	924 186	N/A	N/A	N/A
10*16990	J	9-14-18	ROSEMARY H BEAVERS	TH EXPLORATION LLC	1/8+	924 152	N/A	N/A	N/A
10*17664	J	9-14-18	RUDOLPH H PARSONS	TH EXPLORATION, LLC	1/8+	923 511	N/A	N/A	N/A
10*16952	J	9-14-18	RUSSELL D HERVEY	TH EXPLORATION LLC	1/8+	924 132	N/A	N/A	N/A
10*47051.325.5	J	9-14-18	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	TH EXPLORATION LLC	1/8+	906 232	N/A	N/A	N/A
10*16733	J	9-14-18	SARAH L BISHOP	TH EXPLORATION LLC	1/8+	924 172	N/A	N/A	N/A
10*47051.325.7	J	9-14-18	SHERON JONES	TH EXPLORATION LLC	1/8+	906 237	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16533	J	9-14-18	SHIRLEY ANN DOBBS	TH EXPLORATION LLC	1/8+	906 469	N/A	N/A	N/A
10*17703	J	9-14-18	SHIRLEY N COX	TH EXPLORATION, LLC	1/8+	923 498	N/A	N/A	N/A
10*16949	J	9-14-18	STEVEN R AND BRIANNE L UTT	TH EXPLORATION LLC	1/8+	924 138	N/A	N/A	N/A
10*17701	J	9-14-18	SUE ANN WORD	TH EXPLORATION, LLC	1/8+	923 470	N/A	N/A	N/A
10*17702	J	9-14-18	TAMMY BETH RAMSEY	TH EXPLORATION, LLC	1/8+	925 500	N/A	N/A	N/A
10*16967	J	9-14-18	TARA JEANNE MINOR AND JENNIFER A KNAPP	TH EXPLORATION LLC	1/8+	914 612	N/A	N/A	N/A
10*16534	J	9-14-18	TERRY LEE LASAVAGE	TH EXPLORATION LLC	1/8+	906 443	N/A	N/A	N/A
10*17667	J	9-14-18	THOMAS BRIAN WARRICK	TH EXPLORATION, LLC	1/8+	923 509	N/A	N/A	N/A
10*47051.325.6	J	9-14-18	THOMAS O MCCORD	TH EXPLORATION LLC	1/8+	906 235	N/A	N/A	N/A
10*47051.325.2	J	9-14-18	TIMMY LEE STOUT AND DOROTHY MARIE STOUT	TH EXPLORATION LLC	1/8+	906 222	N/A	N/A	N/A
10*17560	J	9-14-18	TREVOR HOOKS	TH EXPLORATION LLC	1/8+	924 110	N/A	N/A	N/A
10*17134	J	9-14-18	UNITED CHRISTIAN MISSIONARY SOCIETY	TH EXPLORATION LLC	1/8+	924 144	N/A	N/A	N/A
10*17617	J	9-14-18	UNITED DISCIPLES OF CHRIST CHURCH	TH EXPLORATION LLC	1/8+	924 129	N/A	N/A	N/A
10*17881	J	9-14-18	WAYLON L & ANGELA J MURPHEE	TH EXPLORATION, LLC	1/8+	924 555	N/A	N/A	N/A
10*16490	J	9-14-18	WILLIAM H AND MERRY C COTTON	TH EXPLORATION LLC	1/8+	924 176	N/A	N/A	N/A
10*17767	J	9-14-18	WILLIAM K & LINDA J MERRITT	TH EXPLORATION, LLC	1/8+	923 474	N/A	N/A	N/A
10*16965	J	9-14-18	WILLIAM L WRIGHT AND CAROLINA WRIGHT	TH EXPLORATION LLC	1/8+	914 524	N/A	N/A	N/A
10*17452	K	9-15-3	ALAN H & MARY K DEGARMO	TH EXPLORATION, LLC	1/8+	924 164	N/A	N/A	N/A
10*17436	K	9-15-3	ANDREW M HOOVER AND DINAH R HOOVER	TH EXPLORATION LLC	1/8+	924 156	N/A	N/A	N/A
10*16239	K	9-15-3	ANGELA L OLDFIELD AND KENNETH W OLDFIELD	TH EXPLORATION LLC	1/8+	906 287	N/A	N/A	N/A
10*16443	K	9-15-3	BARBARA BROWN CHAMBERS	TH EXPLORATION LLC	1/8+	924 621	N/A	N/A	N/A
10*16018	K	9-15-3	BARBARA MCFADDEN ALBRIGHT	TH EXPLORATION LLC	1/8+	906 262	N/A	N/A	N/A
10*16444	K	9-15-3	CATHERINE ELLEN CHAMBERS	TH EXPLORATION LLC	1/8+	924 623	N/A	N/A	N/A
10*16535	K	9-15-3	CHARLES E CARSON AND MARY KAY CARSON	TH EXPLORATION LLC	1/8+	906 420	N/A	N/A	N/A
10*17396	K	9-15-3	CHRISTINE L KIDD	TH EXPLORATION LLC	1/8+	924 158	N/A	N/A	N/A
10*16486	K	9-15-3	DAVID ALAN WILKINSON AND PATRICIA LYNN WILKINSON	TH EXPLORATION LLC	1/8+	924 180	N/A	N/A	N/A
10*17487	K	9-15-3	DEBORAH R MOKOSH	TH EXPLORATION LLC	1/8+	924 166	N/A	N/A	N/A
10*16995	K	9-15-3	DIANE ELSIE RAMSEY	TH EXPLORATION LLC	1/8+	924 146	N/A	N/A	N/A
10*17563	K	9-15-3	DONALD L WOOD	TH EXPLORATION LLC	1/8+	923 523	N/A	N/A	N/A
10*16953	K	9-15-3	DONALD T AND JEAN K HOGAN	TH EXPLORATION LLC	1/8+	924 140	N/A	N/A	N/A
10*16582	K	9-15-3	DORA BROCK BRAMMER	TH EXPLORATION LLC	1/8+	907 429	N/A	N/A	N/A
10*16445	K	9-15-3	DOUGLAS C AND GWENDLYN D LEWTON	TH EXPLORATION LLC	1/8+	925 123	N/A	N/A	N/A
10*16511	K	9-15-3	DOUGLAS R BOWEN	TH EXPLORATION LLC	1/8+	906 475	N/A	N/A	N/A
10*16835	K	9-15-3	ERNEST CARL AUGUSTINE JR	TH EXPLORATION LLC	1/8+	924 188	N/A	N/A	N/A
10*16182	K	9-15-3	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	906 283	N/A	N/A	N/A
10*16017	K	9-15-3	FLOYD A MCFADDEN	TH EXPLORATION LLC	1/8+	906 260	N/A	N/A	N/A
10*16442	K	9-15-3	FRED T AND JERRY L CHAMBERS	TH EXPLORATION LLC	1/8+	924 174	N/A	N/A	N/A
10*17448	K	9-15-3	FREDERICK L HERVEY AND CATHY J HERVEY	TH EXPLORATION LLC	1/8+	924 162	N/A	N/A	N/A
10*16948	K	9-15-3	FREDERICK M LEWTON	TH EXPLORATION LLC	1/8+	924 136	N/A	N/A	N/A
10*17209	K	9-15-3	GAYLE S SHANNON	TH EXPLORATION LLC	1/8+	924 168	N/A	N/A	N/A
10*16441	K	9-15-3	GEORGE FRANKLIN AND NANCY ANN REED	TH EXPLORATION LLC	1/8+	924 619	N/A	N/A	N/A
10*17675	K	9-15-3	GREGORY D & CAROLYN J WIBLE	TH EXPLORATION, LLC	1/8+	923 507	N/A	N/A	N/A
10*16580	K	9-15-3	HAROLD C MCFADDEN	TH EXPLORATION LLC	1/8+	907 480	N/A	N/A	N/A
10*17289	K	9-15-3	HAROLD R HUNT JR AND ELIZABETH A HUNT	TH EXPLORATION LLC	1/8+	924 170	N/A	N/A	N/A
10*16581	K	9-15-3	HELEN L SCHILLING	TH EXPLORATION LLC	1/8+	907 489	N/A	N/A	N/A
10*17674	K	9-15-3	HOWARD L & BETH E WOOD	TH EXPLORATION, LLC	1/8+	923 505	N/A	N/A	N/A
10*16540	K	9-15-3	JAMES A WINTER AND CONNIE G WINTER	TH EXPLORATION LLC	1/8+	924 184	N/A	N/A	N/A
10*47051.325.4	K	9-15-3	JAMES H WHITE AND RITA FRANKS WHITE	TH EXPLORATION LLC	1/8+	906 230	N/A	N/A	N/A
10*17731	K	9-15-3	JAMES J MCGHEE AND JEANNINE CHAMBERS MCGHEE	TH EXPLORATION LLC	1/8+	914 519	N/A	N/A	N/A
10*16569	K	9-15-3	JANICE C BALE	TH EXPLORATION LLC	1/8+	907 425	N/A	N/A	N/A
10*16950	K	9-15-3	JAY E AND CECILIA E LEWTON	TH EXPLORATION LLC	1/8+	924 134	N/A	N/A	N/A
10*16532	K	9-15-3	JEAN ANN MCFADDEN	TH EXPLORATION LLC	1/8+	906 459	N/A	N/A	N/A
10*16285	K	9-15-3	JOHN A SHUTZ AND CYNTHIA J SHUTZ	TH EXPLORATION LLC	1/8+	906 291	N/A	N/A	N/A
10*16483	K	9-15-3	JOHN C AND BARBARA H WINTER	TH EXPLORATION LLC	1/8+	924 178	N/A	N/A	N/A
10*47051.325.1	K	9-15-3	JUDITH A LEWANDOSKY AND ALAN E LEWANDOSKY	TH EXPLORATION LLC	1/8+	906 225	N/A	N/A	N/A
10*16993	K	9-15-3	JULIA HOOVER	TH EXPLORATION LLC	1/8+	924 150	N/A	N/A	N/A
10*16537	K	9-15-3	KIM D BOWEN AND MADONNA M BOWEN	TH EXPLORATION LLC	1/8+	907 415	N/A	N/A	N/A
10*15752	K	9-15-3	KIM O CHAMBERS AND DEBRA CHAMBERS	TH EXPLORATION LLC	1/8+	906 258	N/A	N/A	N/A
10*16180	K	9-15-3	LARRY L CHAMBERS	TH EXPLORATION LLC	1/8+	906 280	N/A	N/A	N/A
10*17131	K	9-15-3	LAURA E TOTTEN AND LONNIE R TOTTEN	TH EXPLORATION LLC	1/8+	924 154	N/A	N/A	N/A
10*16726	K	9-15-3	LESLEY K WHITE	TH EXPLORATION LLC	1/8+	924 182	N/A	N/A	N/A

OFFICE OF OIL AND GAS JUL 07 2017

047-051-01947

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16576	K	9-15-3	LINDA A MINER AND MICHAEL W MINER	TH EXPLORATION LLC	1/8+	907 484	N/A	N/A	N/A
10*16992	K	9-15-3	LINDA C ABRAHAM	TH EXPLORATION LLC	1/8+	924 148	N/A	N/A	N/A
10*47051.325.3	K	9-15-3	NICHOLAS D PAVLIK AND GLORIA K PAVLIK	TH EXPLORATION LLC	1/8+	906 228	N/A	N/A	N/A
10*16181	K	9-15-3	NORMA CHRISTINE WHIPP AND GERALD WAYNE BLACK	TH EXPLORATION LLC	1/8+	906 281	N/A	N/A	N/A
10*16144	K	9-15-3	PATTIE S MADRID	TH EXPLORATION LLC	1/8+	906 278	N/A	N/A	N/A
10*47051.325.8	K	9-15-3	RICK PAVLIK	TH EXPLORATION LLC	1/8+	906 239	N/A	N/A	N/A
10*16570	K	9-15-3	ROBERT D BOWEN AND MARCIA M R BOWEN	TH EXPLORATION LLC	1/8+	907 420	N/A	N/A	N/A
10*17413	K	9-15-3	ROBERT M CHAMBERS AND CHARLOTTE A CHAMBERS	TH EXPLORATION LLC	1/8+	924 160	N/A	N/A	N/A
10*17129	K	9-15-3	ROBERTA JANE PARKINSON	TH EXPLORATION LLC	1/8+	924 142	N/A	N/A	N/A
10*16680	K	9-15-3	RONALD J AND JENNIFER CHAMBERS FICCA	TH EXPLORATION LLC	1/8+	924 186	N/A	N/A	N/A
10*16990	K	9-15-3	ROSEMARY H BEAVERS	TH EXPLORATION LLC	1/8+	924 152	N/A	N/A	N/A
10*16952	K	9-15-3	RUSSELL D HERVEY	TH EXPLORATION LLC	1/8+	924 132	N/A	N/A	N/A
10*47051.325.5	K	9-15-3	SAMUEL ALAN MCCORD AND WINIFRED A MCKEE	TH EXPLORATION LLC	1/8+	906 232	N/A	N/A	N/A
10*16733	K	9-15-3	SARAH L BISHOP	TH EXPLORATION LLC	1/8+	924 172	N/A	N/A	N/A
10*47051.325.7	K	9-15-3	SHERON JONES	TH EXPLORATION LLC	1/8+	906 237	N/A	N/A	N/A
10*16949	K	9-15-3	STEVEN R AND BRIANNE L UTT	TH EXPLORATION LLC	1/8+	924 138	N/A	N/A	N/A
10*17701	K	9-15-3	SUE ANN WORD	TH EXPLORATION, LLC	1/8+	923 470	N/A	N/A	N/A
10*17702	K	9-15-3	TAMMY BETH RAMSEY	TH EXPLORATION, LLC	1/8+	925 500	N/A	N/A	N/A
10*16534	K	9-15-3	TERRY LEE LASAVAGE	TH EXPLORATION LLC	1/8+	906 443	N/A	N/A	N/A
10*47051.325.6	K	9-15-3	THOMAS O MCCORD	TH EXPLORATION LLC	1/8+	906 235	N/A	N/A	N/A
10*17134	K	9-15-3	UNITED CHRISTIAN MISSIONARY SOCIETY	TH EXPLORATION LLC	1/8+	924 144	N/A	N/A	N/A
10*17617	K	9-15-3	UNITED DISCIPLES OF CHRIST CHURCH	TH EXPLORATION LLC	1/8+	924 129	N/A	N/A	N/A
10*16490	K	9-15-3	WILLIAM H AND MERRY C COTTON	TH EXPLORATION LLC	1/8+	924 176	N/A	N/A	N/A

OFFICE OF OIL AND GAS JUL 07 2017

047-051-01947

AFFIDAVIT

JUL 07 2017

WV Department of
Environmental Protection

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 MIS
Pages Recorded 1
Book-Page 28-62
Recording Fee \$5.00
Additional \$6.00

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

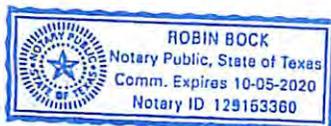
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

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



047-051-01947



June 28, 2017

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

RE: Heaven Hill 3-4HM

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 3-4HM 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 304-376-0111, or by email at amiller@tug-hilop.com.

Sincerely,

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

Amy Miller
Permit Specialist – Appalachia Region
Cell 304-376-0111
Email: amiller@tug-hilop.com

RECEIVED
Office of Oil and Gas

JUL 07 2017

WV Department of
Environmental Protection

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

Date of Notice Certification: 07/06/2017

API No. 47- 051 - _____
Operator's Well No. Heaven Hill 3-4HM
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>526,262.12</u>
County: <u>Marshall</u>		Northing: <u>4,406,556.46</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>		

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

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

Required Attachments:

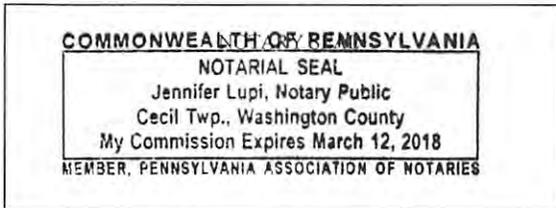
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

OFFICE OF OIL AND GAS JUL 07 2017
09/15/2017

Certification of Notice is hereby given:

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

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Blvd, Southpointe Plaza II, Suite 200</u>
By:	<u>Amy L. Miller</u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permit Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hillop.com</u>



Subscribed and sworn before me this 6th day of July, 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.

OFFICE OF OIL AND GAS JUL 07 2017

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: 6/6/2017 **Date Permit Application Filed:** 6/7/2017

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. Whitlatch
 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 Whitlatch ✓
 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: _____

*Please attach additional forms if necessary

WW-6A
(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-4HM
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 restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration 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

OFFICE OF OIL AND GAS JUL 07 2017

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

OFFICE OF OIL AND GAS JUL 07 2017

WW-6A
(8-13)

047-051-01947

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3-4HM
Well Pad Name: Heaven Hill 3

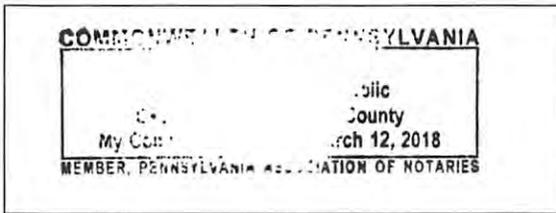
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 6th day of July, 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

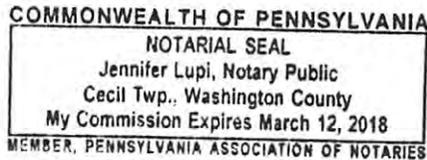


Exhibit WW-6A**Supplement Pg. 1A**

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

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

Well: Heaven Hill 3 - 4HM
 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
--	---

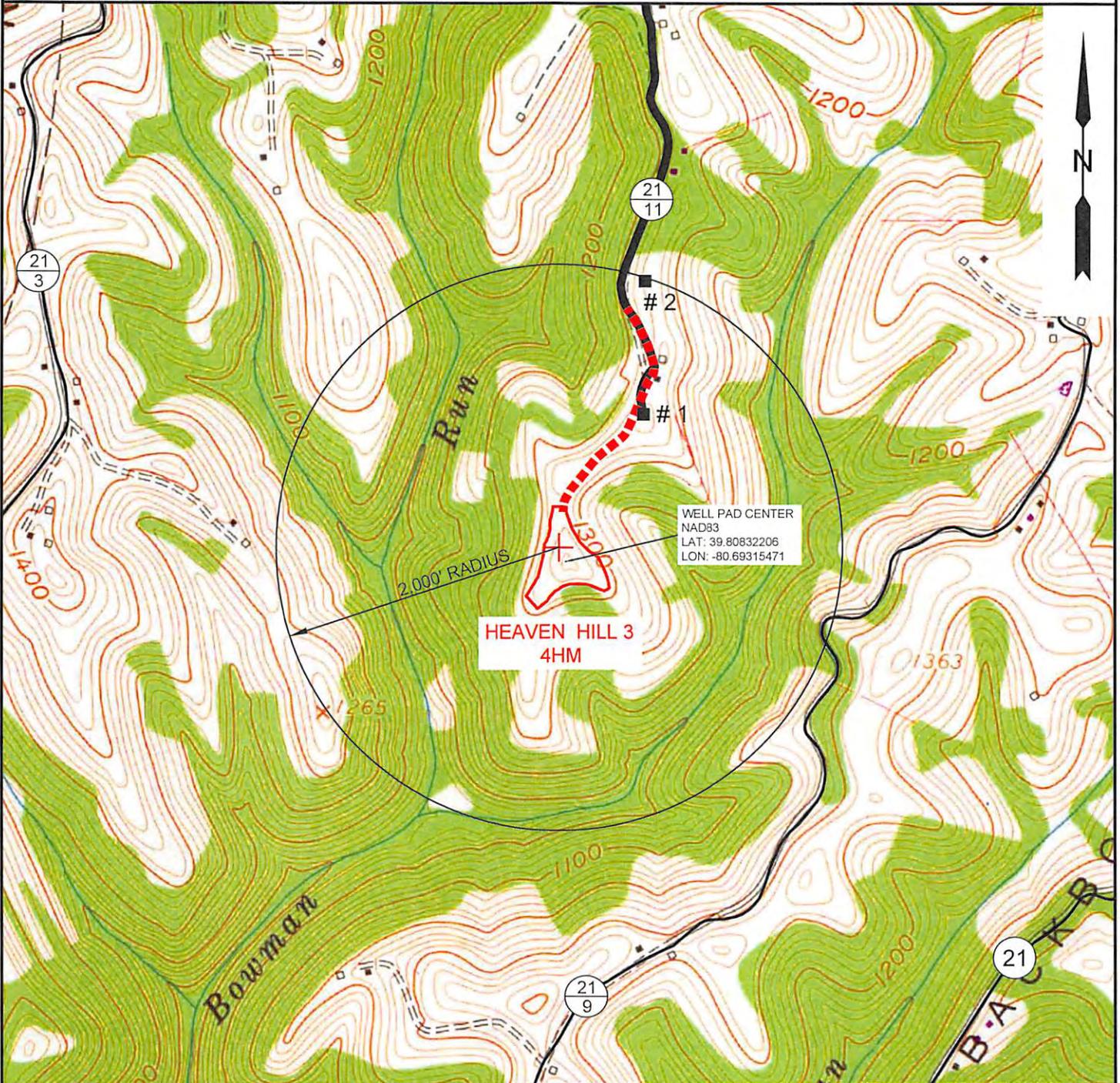
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WV Department of
 Environmental Protection

09/15/2017

PROPOSED HEAVEN HILL 3 - 4HM



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

OFFICE OF OIL AND GAS JUL 01 2017

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slssurveys.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	06/29/2017	1" = 1000'



TUG HILL
OPERATING

09/15/2017

047-051-01947

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>HJC-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 as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

Operator Well No. Heaven Hill Unit 3-4HM

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

OFFICE OF OIL AND GAS JUL 07 2017

047-051-01947

Operator Well No. Heaven Hill Unit 3-4HM

WW-6A5 Notice of Entry for Planned Operation 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



09/15/2017



047-051-01947

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

May 16, 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 3-4HM Well site

47-051-01947

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2016-0284 & 0287 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 21/3 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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OFFICE OF OIL AND GAS JUL 07 2017

JUL 07 2017



TUG HILL

047-051-01947

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill 3-4HM

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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WV Department of
Environmental Protection

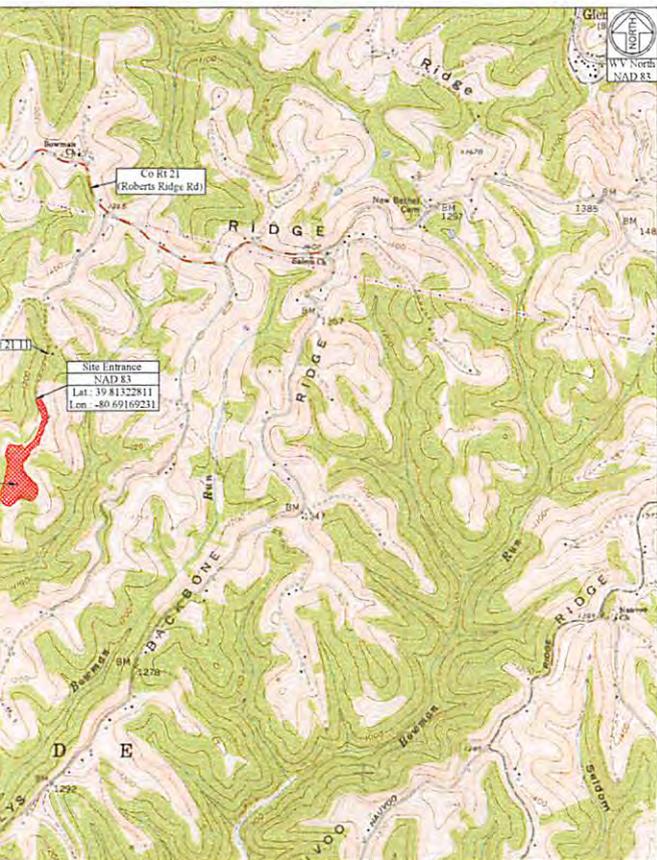
OFFICE OF OIL AND GAS JUL 07 2017

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

047-051-01947

Design Issue for Permitting



WV State Plane Coordinate System
 North Zone, NAD 83
 Elevations Based on NAV 88
 Established By Survey Grade GPS
 and OPUS Post-Processing

Property Owner Information - Heaven Hill 3 Site
 Meade District - Marshall County

Owner	TM-Parcel	Well Pad	Access Road	Topsoil Excess	Add. Clearing	Total Disturbed
Andrew Wrlatch	7-30	0.00	0.44	0.00	0.31	0.75
Ricky Wrlatch	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 Wrlatch	7-15	0.00	0.00	0.00	0.01	0.01
Ricky Wrlatch	7-31	0.00	0.00	0.00	0.20	0.20
Ricky Wrlatch	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

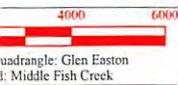
Surface Owner	TM-Parcel	Road Length	Type
Andrew Wrlatch	7-30	1.111'	New Access Road Construction
Ricky Wrlatch	7-30	1.93574'	New Access Road Construction

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'

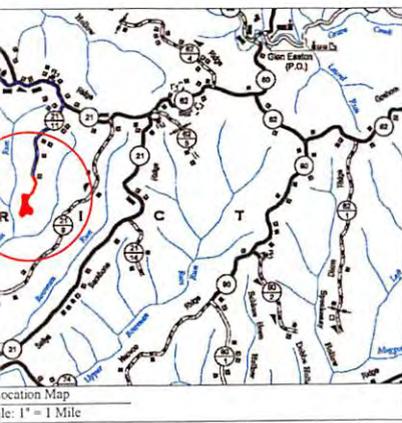
Heaven Hill 3 Site Quantities

Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope	Length of Slope
Well Pad	47,581.18	2,583.95	14,997.23		N/A	N/A
Well Pad Access Road	3,279.76	2,892.75	387.01		10.75%	55.14'
Existing Gas Well Road Tie	36.05	42.74		6.69	10.83%	29.13'
Driveway Tie #1	23.57	1.65	21.92		10.36%	28.37'
Driveway Tie #2	61.41	6.81	54.60		7.31%	55.38'
Topsoil Excess Material Stockpile	0.00	18,000.94		18,000.94	N/A	N/A
Totals	51,181.97	27,528.84	15,660.76	18,007.63		
Total Spoil (CY) =			-2,346.87			(Excess Spoil Capacity)



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, Chapter of Oil and Gas 15C33-08
 All Plans, Sheets, and/or Reference Diagrams included in this design constitute 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 PLLC
 C/OA, 074232-00
 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

Revision
 Design
 Design: Access Road Modification

Date
 02-24-2017
 02-24-2017

TUG HILL
 OPERATING



THIS DOCUMENT
 PREPARED FOR
 TUG HILL
 OPERATING

Kelly Surveying
 P.O. Box 234
 Delroy, WV 26039
 304.338.0982

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 Office of Oil and Gas

JUL 27 2017

WV Department of
 Environmental Protection

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

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

09/15/2017

Heaven

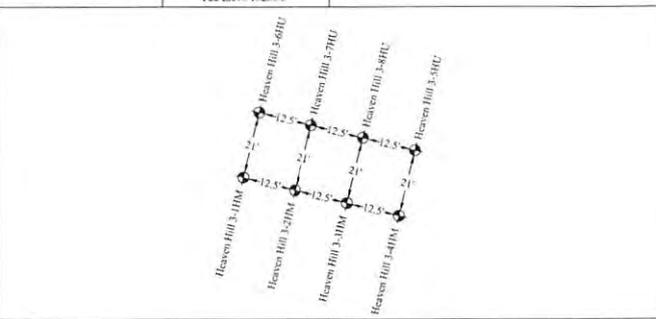
Site Design, C
Erosion and Se
Tug H
Mars
Mea
Latitude
Longitud
Middle Fish

Exhibit A: Final De

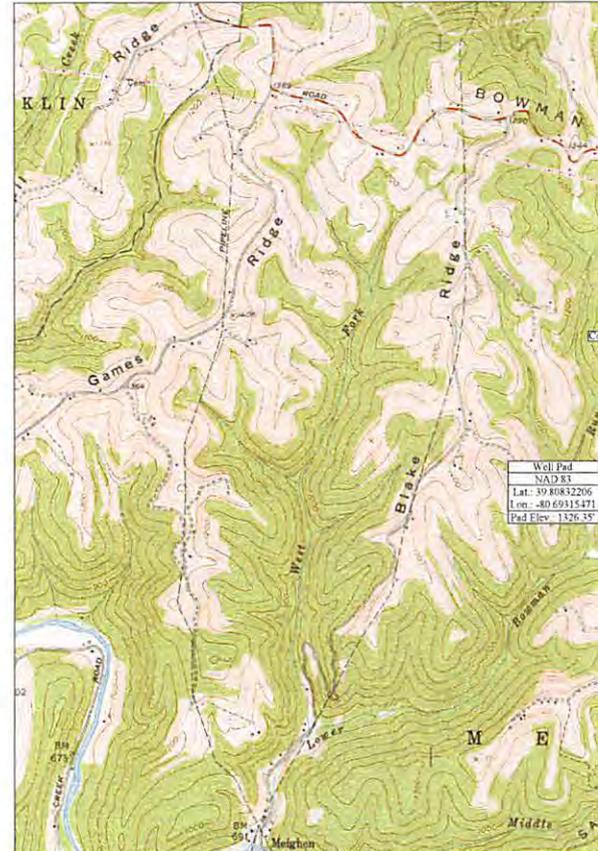
WEST VIRGINIA COUNTY MAP



Site Entrance	Centre of Well Pad
WV-N NAD 83 N: 480539.40	WV-N NAD 83 N: 478757.96
WV-N NAD 83 E: 1633751.92	WV-N NAD 83 E: 1633317.42
WV-N NAD 27 N: 480502.65	WV-N NAD 27 N: 478721.22
WV-N NAD 27 E: 1665188.63	WV-N NAD 27 E: 1664754.17
Lat. NAD 83: 39.81322811	Lat. NAD 83: 39.80832206
Lon. NAD 83: -80.69169231	Lon. NAD 83: -80.69315471
Lat. NAD 27: 39.81315051	Lat. NAD 27: 39.80824418
Lon. NAD 27: -80.69188513	Lon. NAD 27: -80.69344733
UTM 17 NAD 83 N: 4407073.18	UTM 17 NAD 83 N: 4406528.22
UTM 17 NAD 83 E: 526388.64	UTM 17 NAD 83 E: 526265.33
	Pad Elev.: 1326.35



Well Table			
Heaven Hill 3-6HU	Heaven Hill 3-7HU	Heaven Hill 3-8HU	Heaven Hill 3-9HU
WV-N NAD 83 N: 478880.11	WV-N NAD 83 N: 478877.13	WV-N NAD 83 N: 478874.16	WV-N NAD 83 N: 478871.18
WV-N NAD 83 E: 1633277.01	WV-N NAD 83 E: 1633289.16	WV-N NAD 83 E: 1633301.30	WV-N NAD 83 E: 1633313.44
WV-N NAD 27 N: 478843.37	WV-N NAD 27 N: 478840.39	WV-N NAD 27 N: 478837.41	WV-N NAD 27 N: 478834.44
WV-N NAD 27 E: 1664713.76	WV-N NAD 27 E: 1664725.90	WV-N NAD 27 E: 1664738.04	WV-N NAD 27 E: 1664750.18
Lat. NAD 83: 39.80865590	Lat. NAD 83: 39.80864817	Lat. NAD 83: 39.80864044	Lat. NAD 83: 39.80863271
Lon. NAD 83: -80.69304321	Lon. NAD 83: -80.69326096	Lon. NAD 83: -80.69321760	Lon. NAD 83: -80.69317425
Lat. NAD 27: 39.80857823	Lat. NAD 27: 39.80857050	Lat. NAD 27: 39.80856277	Lat. NAD 27: 39.80855504
Lon. NAD 27: -80.69346993	Lon. NAD 27: -80.69345558	Lon. NAD 27: -80.69344023	Lon. NAD 27: -80.69336688
UTM 17 NAD 83 (m) N: 4406565.23	UTM 17 NAD 83 (m) N: 4406564.39	UTM 17 NAD 83 (m) N: 4406563.54	UTM 17 NAD 83 (m) N: 4406562.70
UTM 17 NAD 83 (m) E: 526252.40	UTM 17 NAD 83 (m) E: 526256.11	UTM 17 NAD 83 (m) E: 526259.83	UTM 17 NAD 83 (m) E: 526263.54
Heaven Hill 3-1HM	Heaven Hill 3-2HM	Heaven Hill 3-3HM	Heaven Hill 3-4HM
WV-N NAD 83 N: 478859.71	WV-N NAD 83 N: 478856.74	WV-N NAD 83 N: 478853.76	WV-N NAD 83 N: 478850.78
WV-N NAD 83 E: 1633272.01	WV-N NAD 83 E: 1633284.15	WV-N NAD 83 E: 1633296.30	WV-N NAD 83 E: 1633308.44
WV-N NAD 27 N: 478822.97	WV-N NAD 27 N: 478820.00	WV-N NAD 27 N: 478817.02	WV-N NAD 27 N: 478814.04
WV-N NAD 27 E: 1664708.76	WV-N NAD 27 E: 1664720.90	WV-N NAD 27 E: 1664733.04	WV-N NAD 27 E: 1664745.18
Lat. NAD 83: 39.80859973	Lat. NAD 83: 39.80859200	Lat. NAD 83: 39.80858427	Lat. NAD 83: 39.80857654
Lon. NAD 83: -80.69312114	Lon. NAD 83: -80.69327779	Lon. NAD 83: -80.69324444	Lon. NAD 83: -80.69319109
Lat. NAD 27: 39.80852206	Lat. NAD 27: 39.80851433	Lat. NAD 27: 39.80850660	Lat. NAD 27: 39.80849887
Lon. NAD 27: -80.69351376	Lon. NAD 27: -80.69347401	Lon. NAD 27: -80.69342706	Lon. NAD 27: -80.69338371
UTM 17 NAD 83 (m) N: 4406558.99	UTM 17 NAD 83 (m) N: 4406558.15	UTM 17 NAD 83 (m) N: 4406557.30	UTM 17 NAD 83 (m) N: 4406556.46
UTM 17 NAD 83 (m) E: 526250.98	UTM 17 NAD 83 (m) E: 526254.69	UTM 17 NAD 83 (m) E: 526258.41	UTM 17 NAD 83 (m) E: 526262.12



Site Locations (NAD 27)		
Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.81315051	-80.69188513
Center of Well Pad	39.80824418	-80.69334733

Project Contacts

Tug Hill Operating	Survey and Engineer
Jonathan White - Regulatory Analyst 724-485-2000 Off. 304-689-7676 Cell	Kenneth Kelly 304-338-6983 Off.
Geoff Radler - V.P. Production 817-632-5200 Off.	John P. See 304-442-0220 Off.
	Zachary Summerville 304-338-6987 Off.
	Geotechnical Engineer
	American Geotech, Inc. Kanti Patel 304-340-4277 Off.

Environmental:

Wetland Delineations as provided by Allstar Ecology dated January 27, 2017

Topographic Information:

The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Burton, WV

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
West Virginia State Law
Section XIV, Chapter 24-C requires that you call one business day before you dig in the state of West Virginia.
IT'S THE LAW

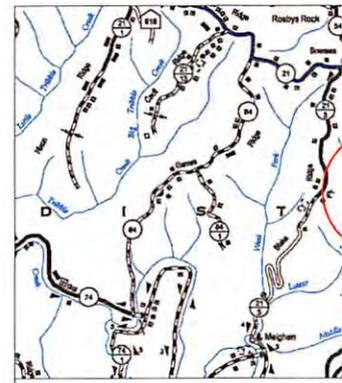


Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities

The WV Mines Website was consulted. Current mining activities are within the AOI (underground mining).

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

Floodplain Conditions	
Do site construction activities take place in a floodplain	NO
Permit needed from county floodplain coordinator	NO
Flood Hazard Zone	X
HFCAS Study completed	NA
Floodplain shown on drawings	NA
FIRM Map Number(s) for site	5405(C)0175E
Acres of construction in floodplain	N/A



09/15/2017

Environmental Protection
 WV Department of
 Office of Oil and Gas
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