



west virginia department of environmental protection

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

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

Wednesday, November 6, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for GOUDY 1N-12HU
47-051-02261-00-00

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

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

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

James A. Martin
Chief

A blue ink signature of James A. Martin, written in a cursive style, is positioned to the right of his name and title.

Operator's Well Number: GOUDY 1N-12HU
Farm Name: TH EXPLORATION III, LLC
U.S. WELL NUMBER: 47-051-02261-00-00
Horizontal 6A New Drill
Date Issued: 11/6/2019

PERMIT CONDITIONS

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

CONDITIONS

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

PERMIT CONDITIONS

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



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

October 2, 2019

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

RE: Application for Deep Well Permit – API #47-051-02261

COMPANY: Tug Hill Operating, LLC

FARM: TH Exploration III, LLC Goudy 1N-12HU

COUNTY: Marshall DISTRICT: Franklin QUAD: New Martinsville

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

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes; Docket 287-283 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 400 feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

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

Susan Rose
Administrator

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

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Goudy 1N-12HU Well Pad Name: Goudy

3) Farm Name/Surface Owner: TH Exploration III, LLC Public Road Access: Wells Hill Road (Route 22)

4) Elevation, current ground: 1242' Elevation, proposed post-construction: 1242'

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

(b) If Gas Shallow _____ Deep _____
Horizontal _____

JW
3/14/19

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 10,998' - 11,109' thickness of 111' and anticipated pressure of approx. 9500 psi

8) Proposed Total Vertical Depth: 11,259'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 22,178'

11) Proposed Horizontal Leg Length: 10,353.47'

12) Approximate Fresh Water Strata Depths: 70', 856'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 756' and Pittsburgh Coal - 851'

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

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

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

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WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	950'	950'	1538ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,800'	2,800'	1984ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	47#	10,306'	10,306'	3367ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	22,178'	22,178'	52561ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,395'	
Liners							

*M
3/14/19*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE#24	1.18
Tubing	2 3/8"			14,530	11,624		
Liners							

PACKERS

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

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WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

[Handwritten signature]
3/14/19

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

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

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

Well to be completed with approximately 25,880,000 lb proppant and 400,124 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.56

22) Area to be disturbed for well pad only, less access road (acres): 5.81

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

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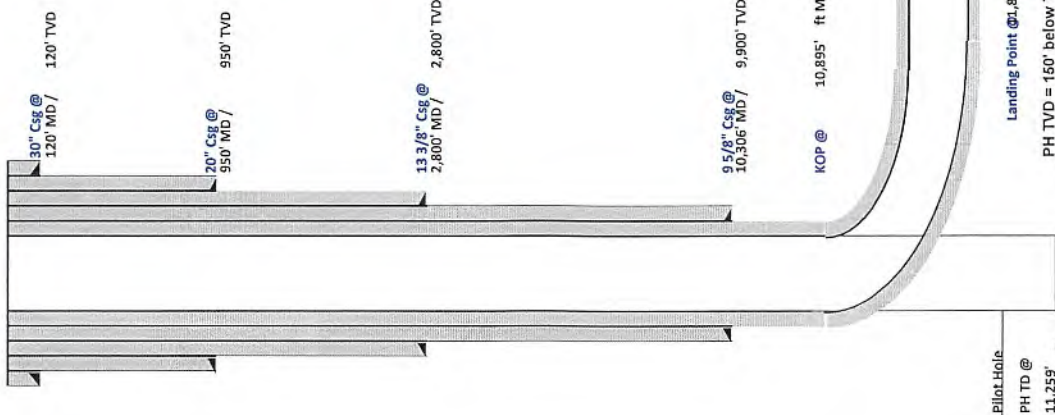
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*Note: Attach additional sheets as needed.



WELL NAME: Goudy 1N-12HU
STATE: West Virginia
DISTRICT: Franklin
DF Elev: 1,241'
TD: 22,178'
TH Latitude: 39.7370826
TH Longitude: -80.82867846
BH Latitude: 39.7576193
BH Longitude: -80.85729952

COUNTY: Marshall
GL Elev: 1,241'



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	856'
Sewickley Coal	756'
Pittsburgh Coal	851'
Big Lime	1,957'
Berea	2,536'
Tully	6,325'
Marcellus	6,371'
Onondaga	6,427'
Salina	7,109'
Lockport	8,140'
Utica	10,759'
Point Pleasant	10,998'
Landing Depth	11,011'
Trenton	11,109'
Pilot Hole TD	11,259'

CASING SUMMARY						
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade
Conductor	36	30	120'	120'	BW	Surface
Surface	26	20	950'	950'	94	J55
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55
Intermediate 2	12 1/4	9 5/8	10,306'	9,900'	47	HPP110
Production	8 1/2	5 1/2	22,178'	10,830'	23	P110

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer Notes	
338	A	15.6	Air	None	
1,661	A	15.6	Air	3 Centralizers at equal distance	
2,148	A	15	Air	1 Centralizer every other jt	
2,836	A	14.5	Air	1 Centralizer every other jt	
4,649	A	15	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc	

Handwritten signature and date: 6/14/19

Landing Point @ 7,827' MD / 11,011' TVD
 PH TVD = 150' below Trenton Top
 KOP @ 10,895' ft MD
 Lateral TD @ 22,178' ft MD
 10,830' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Goudy 1N-12HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	950'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,306'	CTS
Production	5 1/2"	P110	8 1/2"	22,178'	CTS

Cement

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

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

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

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

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Well Site Safety Plan

Tug Hill Operating, LLC

JW
3/24/19

Well Name: Goudy 1N-12HU

Pad Location: Goudy

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING - 4,398,590.65

EASTING - 514,679.89

March 2019

No. Producing Marcellus Horizontal well. Proper cementing techniques employed on the well will prevent movement of fluids to the surface

4705101601 Tug Hill Operating 6400 TVD Marcellus Unknown

No. Producing Marcellus Horizontal well. Proper cementing techniques employed on the well will prevent movement of fluids to the surface

4705101610 Tug Hill Operating 6400 TVD Marcellus Unknown

WV Geological & Economic Survey **Well: County = 51 Permit = 00135** Report Time: Tuesday, August 22, 2017 8:31:00

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100135	Marshall	135	Franklin	New Martinsville	New Martinsville	39.749771	-80.846177	613029.9	4399884.9

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	TFM_EST_PR
4705100135	12/21/1942		Original Log	Completed	Defense Plant Corp			2		Pittsburgh Pl			
4705100135	10/8/1990		Worked Over	Completed	Defense Plant Corp			2		PPG Industries, Inc.			
4705100135	10/8/1990	10/8/1990	Plugging	Cancelled	PPG Industries Inc				PPG Industries Inc	PPG Industries, Inc.			
4705100135	10/8/1990	10/8/1990	Plugging	Completed	PPG Industries Inc				PPG Industries Inc	PPG Industries, Inc.			

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	O_BEF	O_AFT
4705100135	12/21/1942	10/3/1942	710	Ground Level	Cameron-Garner	Salina	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Nat/Open H	6375	6375	0	0
4705100135	10/8/1990	10/8/1990	710	Ground Level	Cameron-Garner	Salina	Salina	Service Well	Unsuccessful	Ind Waste Disp	unknown	unknown	6375	0	0	0
4705100135	10/8/1990	10/8/1990	710	Ground Level	Cameron-Garner	Salina	Salina	Service Well	Unsuccessful	Ind Waste Disp	unknown	unknown	6375	0	0	0
4705100135	10/8/1990	10/8/1990	710	Ground Level	Cameron-Garner	Salina	Salina	Service Well	Unsuccessful	Ind Waste Disp	unknown	unknown	6375	0	0	0

Comment: 10/5/1990 converted to mud disposal well
 Comment: 10/8/1990 Plugging may have not been cancelled. If affidavit arrives cancellation will be modified.
 Comment: 10/8/1990 Plugging permit in 2013 was cancelled in error. The well has been plugged (info from WVDEP) though no WR-38 has been received by WVGES

Pav/ShowWater Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	O_AFT	O_BEF	O_AFT	WATER_QNTY
4705100135	12/21/1942	Horizon	Salt Brine(Salina)	Vertical			0300	Salina					
4705100135	10/8/1990	Horizon	Industrial Waste	Vertical	8760	Salina	8892	Salina					

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 Production Water data for this well

WV Geological & Economic Survey **Well: County = 51 Permit = 00131** Report Time: Tuesday, August 22, 2017 8:31:00

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100131	Marshall	131	Franklin	New Martinsville	New Martinsville	39.749825	-80.846115	612926.5	4399893.7

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	TFM_EST_PR
4705100131	8/15/1942		Original Log	Completed	Defense Plant Corp			1		Pittsburgh Pl			

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	O_BEF	O_AFT
4705100131	8/15/1942	8/15/1942	859	Ground Level	Cameron-Garner	Salina	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Nat/Open H	8843	8843	0	0

Pav/ShowWater Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	O_AFT	O_BEF	O_AFT	WATER_QNTY
4705100131	8/15/1942	Horizon	Salt Brine(Salina)	Vertical			8938	Salina					

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 Production Water data for this well

WV Geological & Economic Survey **Well: County = 51 Permit = 00169** Report Time: Tuesday, August 22, 2017 8:42:13

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100169	Marshall	169	Franklin	New Martinsville	New Martinsville	39.750241	-80.840583	615144	4399871

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	TFM_EST_PR
4705100169	8/6/1940		Original Log	Completed	Pittsburgh Plate Corp			6	Defense Plant Corp	Wells Bottom Fuel Co			
4705100169	7/1/2014		Plugging	Completed	Eagle Natrum LLC/Asell Corp			6	Brine Well/Eagle Natrum LLC/Asell Corp	Eagle Natrum LLC			
4705100169	8/6/1940	8/6/1940	Plugging	Cancelled	PPG Industries Inc				PPG Industries Inc	PPG Industries, Inc.			

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	O_BEF	O_AFT
4705100169	8/6/1940	8/21/1940	678	Ground Level	Cameron-Garner	Salina	Wills Creek	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Nat/Open H	6538	6538	0	0
4705100169	7/1/2014	8/22/2014	688	Ground Level												
4705100169	8/6/1940	8/6/1940	688	Ground Level												

Pav/ShowWater Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	O_AFT	O_BEF	O_AFT	WATER_QNTY
4705100169	8/6/1940	Horizon	Salt Brine(Salina)	Vertical			8822	Salina					

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 Production Water data for this well

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WV Geological & Economic Survey: **Well: County = 51 Permit = 00902** Report Time: Tuesday, August 22, 2017 8:43:45 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725100902	Marshall	922	Franklin	New Martinsville	New Martinsville	39.735237	-80.845597	513209.3	4390493.1

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	TFM_EST_PR
4725100902	4/24/2003		Original Loc	Completed	PPG Industries Inc	17	Relief		PPG Industries	PPG Industries, Inc.		4000	
4725100902	8/7/2015	Plugging	Completed	PPG Industries Inc		17			Eagle Nantium LLC	Eagle Nantium LLC			

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_FTO	G_BEF	O_AFT	O_BEF	O_AFT	NGL	
4725100902	4/24/2003	4/24/2003	881	Ground Level	Unnamed	Devonian				Unsuccessful	Other	Rotary								4410
4725100902	8/7/2015	8/3/2015	881	Ground Level																

Comment: 4/24/2003 Well drilled to de-pressurize #17 Brine Well (4705100534) which had faulty casing. #17 Brine Well subsequently plugged. Well info for associated well MARS-534 include

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 Production Water data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 00380** Report Time: Tuesday, August 22, 2017 8:50:44 PM

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	41	51	380

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100380	Marshall	380	Wesley	Majorville	Cameron	39.635648	-80.637914	539206	4420760.1

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	TFM_EST_PR
4705100380	9/6/1922		Drilled	Complete	unknown	15	B S Eder Estate (May Elder Acres)		Manufacturers Light & Heat Co.	Natural Gas of West Virginia			
4705100380	1/12/1951		Worked Over	Completed	May Elder			4687	19447	Manufacturers Light & Heat Co.			
4705100380	10/30/2014		Plugging	Completed	Brian V. Milliken			2000-128		Consolidation Coal Co.			
4705100380			Original Loc	unknown						www.gmndwv.com			

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_FTO	G_BEF	O_AFT	O_BEF	O_AFT	NGL
4705100380	9/6/1922	JUL	1245	Ground Level	Majorville	Fourth	Development Well	Development Well	Gas	unknown	Nat/Open H	3056		1140	25	0	0	0	
4705100380	1/12/1951		500-1980	Ground Level	Majorville	Big Injun (PriceGas)	Development Well	Unsuccessful	Storage	unknown	Nat/Open H	1695		0	0	0	0	0	0
4705100380	10/30/2014		100002014	Ground Level			Development Well	Unsuccessful	Dry	unknown	Nat/Open H	1916		1916	0	0	0	0	

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 Production Water data for this well

Stratigraphic Information:

WV Geological & Economic Survey: **Well: County = 51 Permit = 00381** Report Time: Tuesday, August 22, 2017 8:54:59 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100381	Marshall	381	Wesley	Majorville	Cameron	39.63144	-80.640669	539247.9	4420248.7

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	TFM_EST_PR
4705100381	5/10/1991		Worked Over	Completed	May Elder			11	L-4568	19447			
4705100381	10/13/1991		Worked Over	Completed	May Elder			11	L-4568	19447			

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_FTO	G_BEF	O_AFT	O_BEF	O_AFT	NGL
4705100381	5/10/1991		1027	Ground Level						not available	unknown	unknown							
4705100381	10/13/1991		619-1990	Ground Level	Majorville	1st Salt Sand	1st Salt Sand	Development Well	Unsuccessful	Dry	unknown	Nat/Open H	1416		0	0	0	0	0

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 Production Water data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 00534** Report Time: Tuesday, August 22, 2017 8:57:19 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725100534	Marshall	534	Franklin	New Martinsville	New Martinsville	39.743981	-80.844192	513297.3	4500358.2

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_VD	PROP_TRGT_FM	TFM_EST_PR
4725100534	7/24/1967		Dist Origin Loc	Completed	PPG Industries	17			Reconstruction Finance Corp	PPG Industries	PPG Industries, Inc.		
4725100534	8/23/2003		Plugging	Completed	PPG Industries					PPG Industries	PPG Industries, Inc.		

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_FTO	G_BEF	O_AFT	O_BEF	O_AFT	NGL
4725100534	7/24/1967	5/10/1967	503	Ground Level	Unnamed	Saine			Miscellaneous Well	Miscellaneous Well	Salt Water/Prod	Rotary	Nat/Open H	6223	6273	6273	0	0	0
4725100534	8/23/2003	2/5/2003	680	Ground Level															

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4725100534	7/24/1967	Horizon	Salt Brine/Saine	Devonian					6219	Saine			

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 Production Water data for this well

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WV Geological & Economic Survey: **Well: County = 51 Permit = 00659** Report Time: Tuesday, August 22, 2017 8:40:33 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
470510059	Marshall	552	Franklin	New Martinsville	New Martinsville	39.743116	-80.844765	813297.7	4302027.7

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	TFM_EST_PR
470510059	---	---	Original Loc. Canceled	PPG Industries Inc.	19	19	19	19	PPG Industries	PPG Industries Inc.			

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_FTD	O_BEF	G_AFT	O_BEF	G_AFT	NGL_M
470510059	---	---	---	---	unclassified	unclassified	unclassified	unclassified	unclassified	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 Production Water data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 00739** Report Time: Tuesday, August 22, 2017 9:01:37 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100739	Marshall	739	Franklin	New Martinsville	New Martinsville	39.739401	-80.841059	813345.8	4308504.5

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	TFM_EST_PR
4705100739	12/15/1992	---	Original Loc. Completed	PPG Industries	19	19	Bone Well	19	PPG Industries	PPG Industries Inc.			
4705100739	8/15/2015	---	Plugging	Eagle Natsum LLC/Ascal Corp	19	19	Bone Well	19	Eagle Natsum LLC/Ascal Corp	Eagle Natsum LLC			
4705100739	---	---	Worked Over	Permitted - PPG Industries	19	19		19	PPG Industries	PPG Industries Inc.			

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_FTD	O_BEF	G_AFT	O_BEF	G_AFT	NGL_M
4705100739	12/15/1992	8/22/1992	543 Ground Level	Unnamed Salina	Salina	100	Miscellaneous Well	Unsuccessful	Salt Water Prod	Rotary	unknown	6776	0	0	0	0	0	0	0
4705100739	8/10/2015	8/16/2015	543 Ground Level	Salina	Salina	100	Miscellaneous Well	Unsuccessful	Salt Water Prod	Rotary	unknown	6776	0	0	0	0	0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	O_BEF	G_AFT	O_BEF	G_AFT	WATER_QNTY
4705100739	12/15/1992	Water	Fresh Water	Vertical			23						0
4705100739	12/15/1992	Water	Salt Water	Vertical			9932	Salina					0

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100739	Perkins Oil and Gas, Inc.	1997	1,313	0	0	0	0	0	0	0	0	0	0	150	558
4705100739	Perkins Oil and Gas, Inc.	1998	0,983	255	195	454	338	351	271	151	320	438	414	302	284
4705100739	Perkins Oil and Gas, Inc.	1999	1,855	354	253	372	137	84	9	151	160	56	122	83	40
4705100739	Perkins Oil and Gas, Inc.	2001	3,851	870	453	646	290	160	205	17	307	244	152	162	355
4705100739	PPG Industries, Inc.	2002	2,704	450	350	291	82	100	10	195	150	107	413	195	355
4705100739	Perkins Oil and Gas, Inc.	2003	2,041	343	233	387	198	107	131	122	14	14	154	9	225
4705100739	PPG Industries, Inc.	2004	2,505	357	241	379	410	173	89	72	85	130	211	328	354
4705100739	Perkins Oil and Gas, Inc.	2005	6,180	517	371	470	459	537	362	485	422	497	480	339	332
4705100739	Perkins Oil and Gas, Inc.	2007	4,262	387	317	372	313	342	353	353	407	403	420	371	183
4705100739	Perkins Oil and Gas, Inc.	2008	4,559	407	378	365	74	481	454	421	370	387	451	431	352

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705100739	Perkins Oil and Gas, Inc.	1997	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	1998	14	0	0	0	0	14	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	1999	10	0	0	0	0	10	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100739	PPG Industries, Inc.	2002	27	0	0	0	0	27	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100739	PPG Industries, Inc.	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100739	Perkins Oil and Gas, Inc.	2008	18	0	0	0	0	0	0	0	0	0	0	0	10
4705100739	Perkins Oil and Gas, Inc.	2008	0	0	0	0	0	0	0	0	0	0	0	0	0

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

There is no Production Water data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 00019** Report Time: Tuesday, August 22, 2017 9:05:30 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
470510019	Marshall	19	Lobby	Union	Union	39.734505	-80.520326	813594.1	4368395.1

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	TFM_EST_PR
470510019	11/19/2000	---	Original Loc. Completed	George N Evans	2434	A L & Raabe Evans	2434	2434	M L&H Co	Manufacturers Light & Heat Co.			
470510019	11/19/2000	---	Worked Over	Completed A L Evans	2434					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	NEW_FTD	O_BEF	G_AFT	O_BEF	G_AFT	NGL_M
470510019	11/19/2000	11/19/2000	1170 Ground Level	Kauston	Big Inj (FreeSec)	Big Inj (FreeSec)	Development Well	Development Well	Gas	unknown	Nat/Coen-H	2251	2051	0	0	0	0	0	0
470510019	11/19/2000	8/2/2004	1170 Ground Level	Kauston	Big Inj (FreeSec)	Big Inj (FreeSec)	Miscellaneous Well	Unsuccessful	Storage	unknown	Nat/Coen-H	2271	150	0	0	0	0	0	

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	O_BEF	G_AFT	O_BEF	G_AFT	WATER_QNTY
470510019	11/19/2000	Water	Fresh Water	Vertical			185						0
470510019	11/19/2000	Water	Fresh Water	Vertical			630						0
470510019	11/19/2000	Water	Salt Water	Vertical			1824						0
470510019	11/19/2000	Pay	Gas	Vertical			2091	Big Inj (Gmb)	0	0			0

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 Production Water data for this well

WV Geological & Economic Survey: **Well: County = 51 Permit = 01919** Report Time: Wednesday, August 23, 2017 8:17:06 AM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101919	Marshall	1919	Franklin	New Martinsville	New Martinsville	39.73943	-80.842622	813467.5	4368543.9

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	TFM_EST_PR
4705101919	---	---	Original Loc. Permitted	Eagle Natsum LLC/Ascal Corporation	19	19	19	19	Eagle Natsum LLC/Ascal Corporation	Eagle Natsum LLC			

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_FTD	O_BEF	G_AFT	O_BEF	G_AFT	NGL_M
4705101919	---	---	643 Ground Level																

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 Production Water data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705104381	Marshall	1381	Franklin	New Martinsville	New Martinsville	39.724017	-80.830534	513836	4368245.9

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	TF
4705104381	3/21/2011	Original Loc.	Completed	PPG Industries Inc	8/1.75		PPG		PPG Industries Inc	PPG Industries Inc	6820	Salina	

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
4705104381	3/21/2011	6/24/2010	634	Ground Level	Proctor	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Unkn	Cass	6735	6735

Comment: 3/21/2011 target formation-Salina. Perforation, fracturing, and stimulating not performed. Log for geological record not performed.

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705104381	3/21/2011	Horizon	Salt Brine(Salina)	Vertical	Salina		6663	Salina					

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 Production Water data for this well

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100443	Marshall	443	Franklin	New Martinsville	New Martinsville	39.721603	-80.835342	514112.1	4397681.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_T
4705100443	6/9/1962	Original Loc	Completed	Pittsburgh Plate Glass Co	10		J N Wells		Pittsburgh Plate Glass Co	Pittsburgh Pl		
4705100443	10/25/2013	Worked Over	Completed	Avial Corporation	10		Ernie Well		Avial Corporation	Eagle Petroleum LLC	6836	Salina

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
4705100443	6/9/1962	4/27/1962	634	Ground Level	Proctor	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	unknown	NotOpen H	6841	6841	
4705100443	10/25/2013	9/30/2013	636	Ground Level	Unnamed	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	NotOpen H	6841	0	

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100443	10/25/2013	Water	Fresh Water	Vertical				60	Pennsylvania System				
4705100443	10/25/2013	Water	Salt Water	Vertical				1050					
4705100443	10/25/2013	Water	Salt Water	Vertical				1760					
4705100443	6/9/1962	Horizon	Salt Brine(Salina)	Vertical				6523	Salina				
4705100443	10/25/2013	Horizon	Salt Brine(Salina)	Vertical				6523	Salina				

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 Production Water data for this well

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100521	Marshall	521	Franklin	New Martinsville	New Martinsville	39.733073	-80.835613	514056.5	4398145.1

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	TF
4705100521	3/21/1964	Original Loc	Completed	Pittsburgh Plate Glass Co	12		J N Wells		Pittsburgh Plate Glass Co	PPG Industries Inc			
4705100521	7/4/2006	Plugging	Completed	PPG Industries Inc	12		No 12 Brine Well		PPG Industries Inc	PPG Industries Inc			

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	G_AFT
4705100521	3/21/1964	2/8/1964	637	Ground Level	Unnamed	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	NotOpen H	6953	6953	0	
4705100521	7/4/2006	6/25/2006	638	Ground Level	Unnamed	Wills Creek	Salina	unclassified	unclassified	not available	unknown	unknown				

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100521	3/21/1964	Horizon	Salt Brine(Salina)	Vertical				6636	Salina				

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 Production Water data for this well

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705100443	Marshall	443	Franklin	New Martinsville	New Martinsville	39.721603	-80.835342	514112.1	4397681.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_T
4705100443	6/9/1962	Original Loc	Completed	Pittsburgh Plate Glass Co	10		J N Wells		Pittsburgh Plate Glass Co	Pittsburgh Pl		
4705100443	10/25/2013	Worked Over	Completed	Avial Corporation	10		Ernie Well		Avial Corporation	Eagle Petroleum LLC	6836	Salina

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
4705100443	6/9/1962	4/27/1962	634	Ground Level	Proctor	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	unknown	NotOpen H	6841	6841	
4705100443	10/25/2013	9/30/2013	636	Ground Level	Unnamed	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	NotOpen H	6841	0	

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100443	10/25/2013	Water	Fresh Water	Vertical				60	Pennsylvania System				
4705100443	10/25/2013	Water	Salt Water	Vertical				1050					
4705100443	10/25/2013	Water	Salt Water	Vertical				1760					
4705100443	6/9/1962	Horizon	Salt Brine(Salina)	Vertical				6523	Salina				
4705100443	10/25/2013	Horizon	Salt Brine(Salina)	Vertical				6523	Salina				

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 Production Water data for this well

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Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705100313 Marshall 513 Franklin New Martinsville New Martinsville 38.731849 -80.837145 512955.5 4287975

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
4705100313	5/7/1959		Original Loc	Completed Columbia Southern Chemical Corp	9		J N Wells		Columbia Southern Chemical Corp	Columbia Southern		
4705100313	6/15/2012		Worked Over	Completed PFG Industries Inc	9		Brine Well		PFG Industries Inc	PFG Industries Inc	6705	Salina
4705100313	2/21/2014		Worked Over	Completed Axial Corp	9				Axial Corp	Exple Natium LLC	6836	Salina

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	G_AFT	
4705100313	5/7/1959	5/7/1957	633	Ground Level	Unnamed	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	unknown	Not/Open H	6820		6820	0	0
4705100313	6/15/2012	6/9/2012	635	Ground Level	Unnamed	Wills Creek	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Not/Open H	6824		4		
4705100313	2/21/2014	1/2/2014	635	Ground Level	Unnamed	Wills Creek	Salina	Service Well	Unsuccessful	Water Injection	Rotary	Not/Open H	6824		0		

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100313	2/21/2014	Water	Fresh Water	Vertical			50	Pennsylvanian System					
4705100313	2/21/2014	Water	Salt Water	Vertical			1050						
4705100313	5/7/1959	Water	Salt Water	Vertical			1475	Big Injun (PriceSet)					
4705100313	2/21/2014	Water	Salt Water	Vertical			1750						
4705100313	6/15/2012	Horizon	Salt Brine(Salina)	Vertical			6975	Salina					
4705100313	5/7/1959	Horizon	Salt Brine(Salina)	Vertical			6975	Salina					
4705100313	2/21/2014	Horizon	Salt Brine(Salina)	Vertical			6975	Salina					

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 Production Water data for this well

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705100523 Marshall 523 Franklin New Martinsville New Martinsville 39.731858 -80.834355 514194.6 4395009.9

Comment: Location from workover plat
 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
4705100523	7/4/1964		Original Loc	Completed Pittsburgh Plate Glass Co	11		J N Wells		Pittsburgh Plate Glass Co	PFG Industries, Inc		
4705100523	11/19/2013		Worked Over	Completed Axial Corporation	11				Axial Corporation	Exple Natium LLC	6836	Salina

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	G_AFT	
4705100523	7/4/1964	4/19/1964	636	Ground Level	Unnamed	Queenston Sh	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Not/Open H	6470		6470	0	0
4705100523	11/19/2013	10/25/2013	633	Ground Level	Unnamed	Queenston Sh	Salina	Miscellaneous Well	Miscellaneous Well	Salt Water Prod	Rotary	Not/Open H	6470		0		

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705100523	11/19/2013	Water	Fresh Water	Vertical			50	Pennsylvanian System					
4705100523	11/19/2013	Water	Salt Water	Vertical			1050						
4705100523	11/19/2013	Water	Salt Water	Vertical			1750						
4705100523	7/4/1964	Horizon	Salt Brine(Salina)	Vertical			7482	Salina					
4705100523	11/19/2013	Horizon	Salt Brine(Salina)	Vertical			7482	Salina					

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 Production Water data for this well

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705101588 Marshall 1588 Franklin New Martinsville New Martinsville 38.738838 -80.820373 514875.5 4385663.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD	
4705101588	1	As Drilled	513823.9	4402091.3	-80.840897	38.752423
4705101588	1	As Proposed	513832.2	4402079.6	-80.840871	38.752316

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP	
4705101588	5/5/2013		Duts Civl Loc	Completed PFG Industries Inc	7th		Goudy	WV16-0076-0011WV16-0095-006		PFG Industries Inc et al	Gesteq Exploration USA, Inc	6400	Marcella Sh

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	G_AFT	O_BEF	O_AFT
4705101588	5/5/2013	4/18/2013	1226	Ground Level	Marcella Sh	Marcella Sh	Development Well	Development Well	Oil and Gas	Rotary	Fracture	1295		1295		1588		

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705101589 Marshall 1589 Franklin New Martinsville New Martinsville 38.738862 -80.820733 514875.5 4385662.2

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD	
4705101589	1	As Proposed	513858.9	4387849	-80.856202	38.720356

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP	
4705101589	7/20/2013		Duts Civl Loc	Completed PFG Industries Inc	6th		Goudy	WV16-0095-0011-0001-004-006-008		PFG Industries Inc et al	Gesteq Exploration USA, Inc	6400	Marcella Sh

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	G_AFT	O_BEF	O_AFT
4705101589	7/20/2013	1/4/2013	1228	Ground Level	Carnest-Gesteq	Marcella Sh	Marcella Sh	Development Well	Development Well	Oil and Gas	Rotary	Acid-Frac	8461	12725	12725		2445	

Comment: 7/20/2013 Additional Lease Nos: WV16-0076-0011WV16-0115-009/WV16-0013-003/WV16-0127-001/002-003

Location Information: [View Map](#)
 API COUNTY PERMIT TAX_DISTRICT QUAD_75 QUAD_15 LAT_DD LON_DD UTM_E UTM_N
 4705101590 Marshall 1590 Franklin New Martinsville New Martinsville 38.737965 -80.82083 514687.4 4385658.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD	
4705101590	1	As Drilled	513422.7	440157.8	-80.843019	38.751221
4705101590	1	As Proposed	513423	440158.4	-80.843267	38.751211

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP	
4705101590	4/13/2015		Duts Civl Loc	Completed PFG Industries Inc	8th		Goudy	WV16-0076-001		PFG Industries Inc	Gesteq Exploration USA, Inc	6400	Marcella Sh

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	G_AFT	O_BEF	O_AFT
4705101590	4/13/2015	4/13/2015	1228	Ground Level	Carnest-Gesteq	Marcella Sh	Marcella Sh	Development Well	Development Well	Oil and Gas	Rotary	Fracture	6395	13141	13141		1462	

Comment: 4/13/2015, KOP 5989

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_76	LAT_DD	LONG_DD	UTME	UTMN
4725101591	Marshall	1591	Franklin	New Martinsville	New Martinsville	35 73729	-93 02875	514675.1	4326551.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4725101591	1	As Proposed	518553.9	4707716.7	-93 02868

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
4725101591	7/23/2013	Driv Opn Loc	Completed	PPG industries inc	2H	Geody	WV16-0095-005/WV16-0115-0090/WV16-0095-003	PPG industries inc	Geostar Exploration USA, Inc.	6403	Marcellus Sh	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	IVD	TMD	NEW_FIG	G_BEF	G_AFT	O_BEF	O_AFT	NGI
4725101591	7/23/2013	7/16/2013	1256	Ground Level	Cameron-Banner	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Oil and Gas Rotary	Asst-Prod	6456	12300	12300					

Comment: 7/23/2013 Additional Lease Numbers: WV16-0095-004/WV16-0095-005/WV16-0076-001/WV16-0095-001/WV16-0095-002

WV Geological & Economic Survey Well: County = 51 Permit = 01593 Report Time: Wednesday, August 23, 2017 7:35:34 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_76	LAT_DD	LONG_DD	UTME	UTMN
4725101593	Marshall	1593	Franklin	New Martinsville	New Martinsville	35 73727	-93 02877	514671.9	4326552.2

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4725101593	1	As Proposed	613228.1	4400202	-93 04562

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	TRM_EST_PR
4725101593	7/23/2013	Driv Opn Loc	Permitted	PPG industries inc	2H	Geody	WV16-0076-001	PPG industries inc	Geostar Exploration USA, Inc.	6403	Marcellus Sh		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	IVD	TMD	NEW_FIG	G_BEF	G_AFT	O_BEF	O_AFT	NGI
4725101593	7/23/2013	7/23/2013	1256	Ground Level	Cameron-Banner	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Oil and Gas Rotary	Asst-Prod	6456	12300	12300					

There is no Pay data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01601 Report Time: Wednesday, August 23, 2017 1:51:20 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_75	LAT_DD	LONG_DD	UTME	UTMN
4725101601	Marshall	1601	Franklin	New Martinsville	New Martinsville	35 73647	-93 02727	514657.7	4326542.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4725101601	1	As Proposed	516374	4327423.9	-93 02655

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
4725101601	7/27/2013	Driv Opn Loc	Completed	PPG industries inc	2H	Geody	WV16-0116-001/WV16-0095-003/WV16-0115-000	PPG industries inc et al	Geostar Exploration USA, Inc.	6403	Marcellus Sh	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	IVD	TMD	NEW_FIG	G_BEF	G_AFT	O_BEF	O_AFT	NGI
4725101601	7/27/2013	7/24/2013	1256	Ground Level	Cameron-Banner	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Oil and Gas Rotary	Asst-Prod	6456	12345	12345					

Comment: 7/27/2013 Additional Lease Numbers: WV16-0127-001/WV16-0095-003/WV16-0095-004/WV16-0095-005/WV16-0076-001/WV16-0095-001/WV16-0095-002

WV Geological & Economic Survey Well: County = 51 Permit = 01610 Report Time: Wednesday, August 23, 2017 1:30:00 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_76	LAT_DD	LONG_DD	UTME	UTMN
4725101610	Marshall	1610	Franklin	New Martinsville	New Martinsville	35 73693	-93 02322	514656.6	4326536.2

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4725101610	1	As Proposed	516577.1	4327457.9	-93 02656

Owner Information:

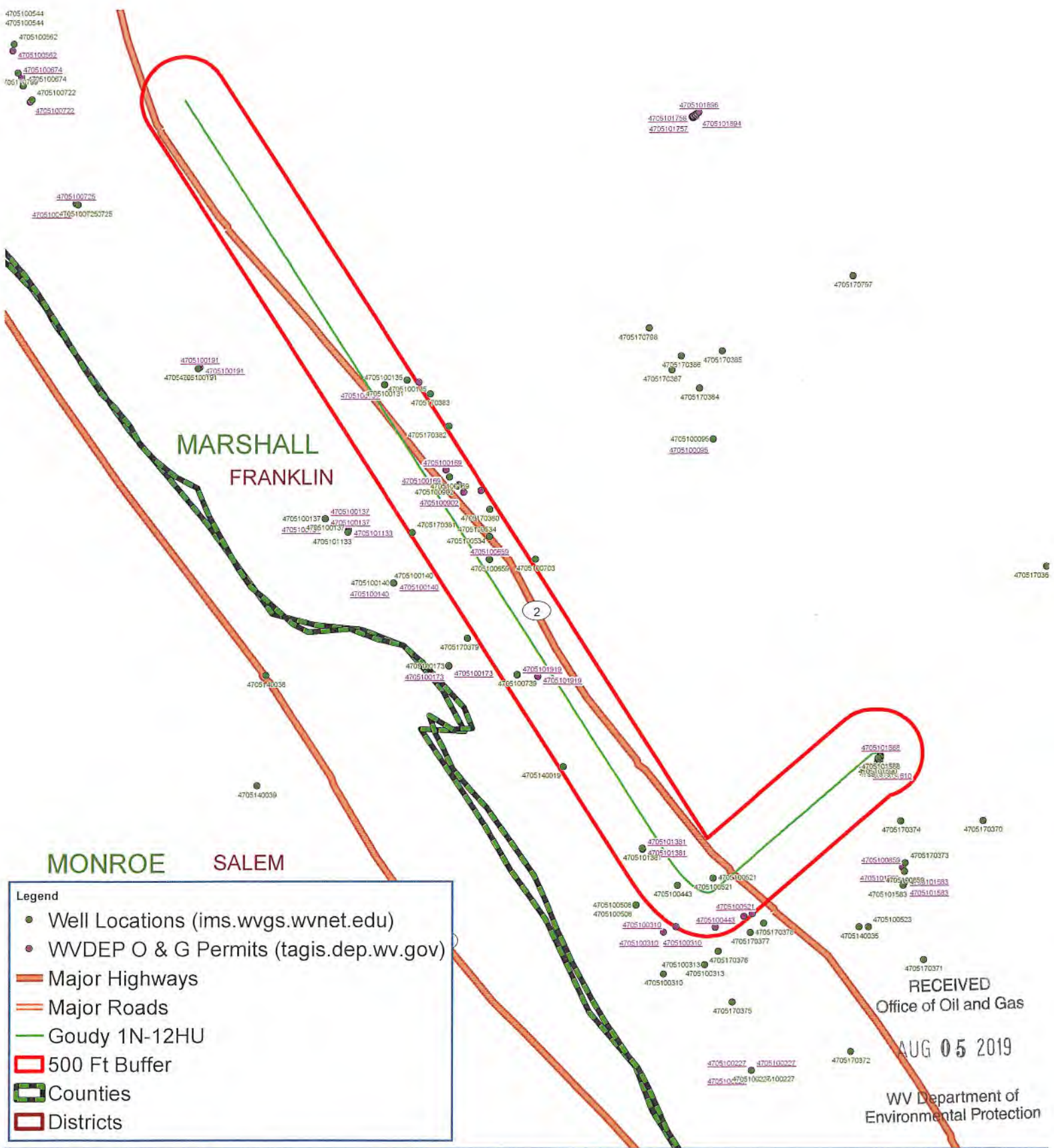
API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM
4725101610	8/22/2013	Driv Opn Loc	Completed	PPG industries inc	1H	Geody	WV16-0135-001/WV16-0095-008/WV16-0115-003	PPG industries inc et al	Geostar Exploration USA, Inc.	6403	Marcellus Sh	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	IVD	TMD	NEW_FIG	G_BEF	G_AFT	O_BEF	O_AFT	NGI
4725101610	8/22/2013	8/17/2013	1256	Ground Level	Cameron-Banner	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Oil and Gas Rotary	Asst-Prod	6456	12447	12447					

Comment: 8/22/2013 Additional Lease Numbers: WV16-0127-001/WV16-0095-003/WV16-0095-004/WV16-0095-005/WV16-0076-001/WV16-0095-001/WV16-0095-002

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- Legend**
- Well Locations (ims.wvgs.wvnet.edu)
 - WVDEP O & G Permits (tagis.dep.wv.gov)
 - Major Highways
 - Major Roads
 - Goudy 1N-12HU
 - 500 Ft Buffer
 - ▭ Counties
 - ▭ Districts

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Goudy 1N-12HU Franklin District Marshall County, WV



Map Created: August 18, 2017
Map Current As Of: August 18, 2017

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



August 1, 2019

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

RE: Goudy 1N-12HU

Subject: Proposed Voluntary Pooling and Unitization

Dear Cindy:

Tug Hill Operating, LLC is authorized through, either lease or other agreement, to unitize and pool all lands falling within the boundaries of the proposed voluntary unit included with this submission.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 724-749-8388, or by email at amiller@tug-hilop.com.

Sincerely,

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

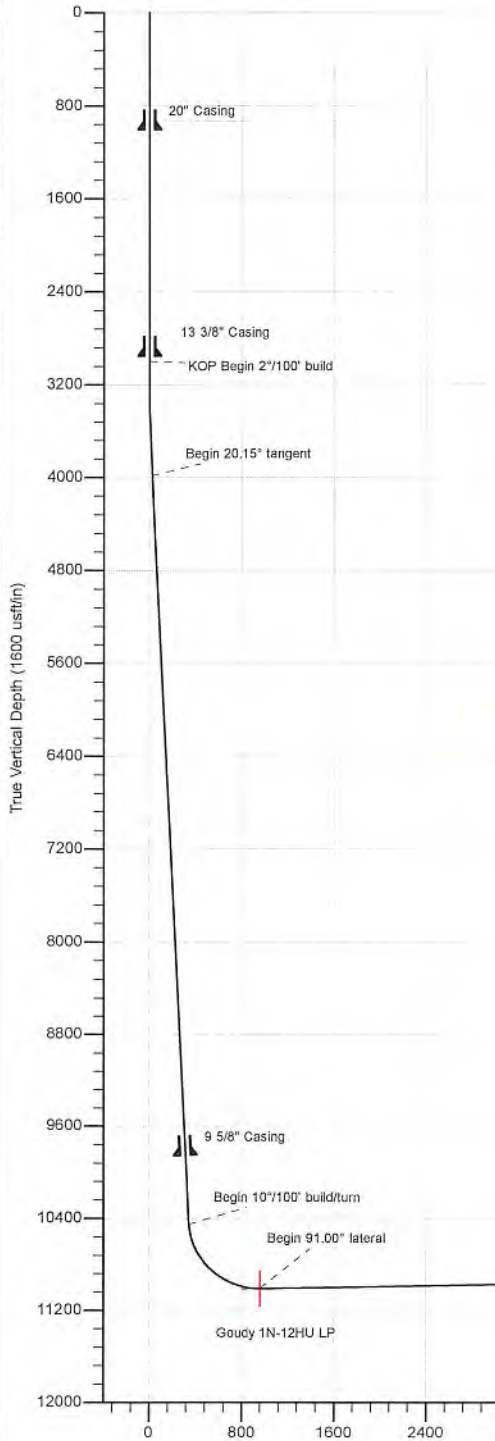
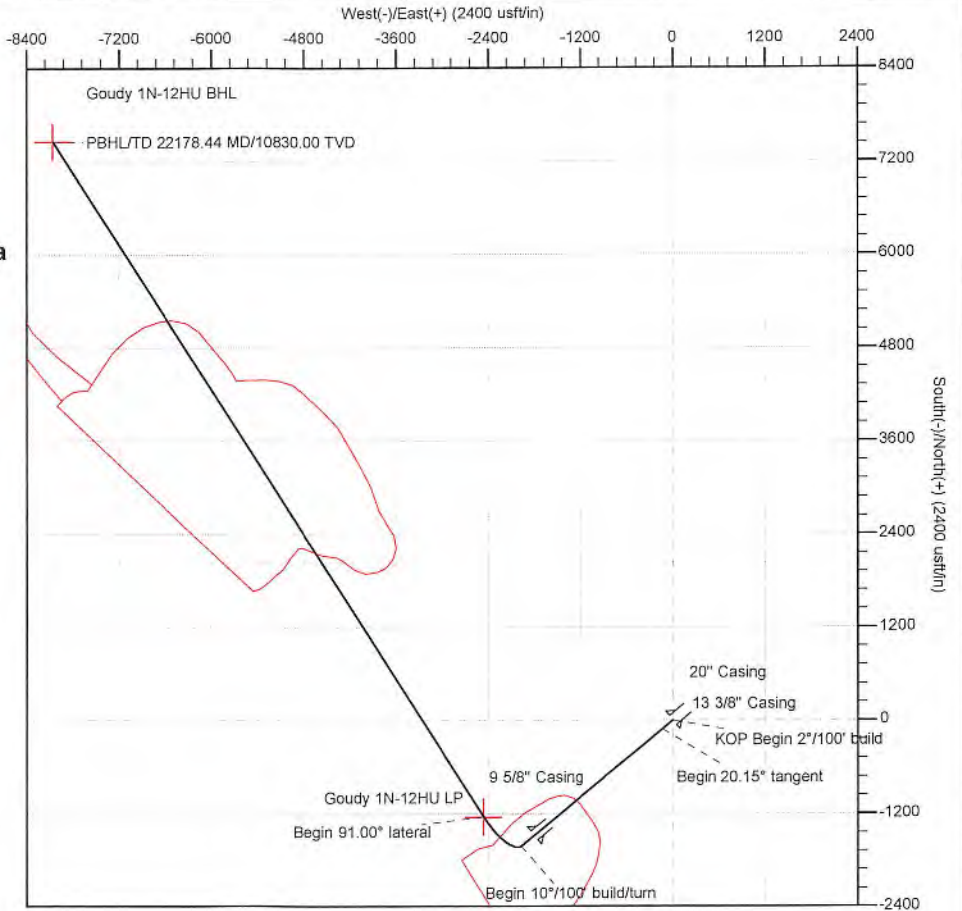
Amy L. Miller
Permitting Specialist
Tug Hill Operating

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Well: Goudy 1N-12HU (L)
 Site: Goudy
 Project: Marshall County, West Virginia
 Design: rev1



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	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	4007.43	20.15	230.59	3986.80	-111.30	-135.46	2.00	230.59	23.75	Begin 20.15° tangent
4	10894.64	20.15	230.59	10452.52	-1617.31	-1968.48	0.00	0.00	345.12	Begin 10°/100' build/turn
5	11826.91	91.00	327.24	11011.00	-1240.16	-2457.76	10.00	95.90	950.35	Begin 91.00° lateral
6	22178.44	91.00	327.24	10830.00	7463.82	-8057.93	0.00	0.00	0983.57	PBH/TD 22178.44 MD/10830.00 TVD



Azimuths to Grid North
 True North: -0.11°
 Magnetic North: -8.73°
 Magnetic Field
 Strength: 52058.8nT
 Dip Angle: 66.86°
 Date: 5/10/2018
 Model: IGRF2015

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level
 Depth Reference: GL=1241 @ 1241.00usft
 Northing: 14431042.83 Easting: 1688578.94 Latitude: 39.73708260 Longitude: -80.82867846

To convert a Magnetic Direction to a Grid Direction, Subtract 8.73°
 Total Corr (M->G):



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Goudy 1N-12HU (L)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1241 @ 1241.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1241 @ 1241.00usft
Site:	Goudy	North Reference:	Grid
Well:	Goudy 1N-12HU (L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Goudy				
Site Position:		Northing:	14,430,942.40 usft	Latitude:	39.73680688
From:	Lat/Long	Easting:	1,688,559.77 usft	Longitude:	-80.82867432
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well	Goudy 1N-12HU (L)					
Well Position	+N/-S	0.00 usft	Northing:	14,431,042.84 usft	Latitude:	39.73708260
	+E/-W	0.00 usft	Easting:	1,688,578.94 usft	Longitude:	-80.82867846
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,241.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/10/2018	-8.62	66.86	52,058.75771594

Design	rev1			
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	312.81

Plan Survey Tool Program	Date	5/10/2018			RECEIVED Office of Oil and Gas AUG 05 2019 WV Department of Environmental Protection
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	22,178.44 rev1 (Original Hole)	MWD MWD - Standard		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,007.43	20.15	230.59	3,986.80	-111.30	-135.46	2.00	2.00	0.00	230.59	
10,894.64	20.15	230.59	10,452.52	-1,617.31	-1,968.48	0.00	0.00	0.00	0.00	
11,826.91	91.00	327.24	11,011.00	-1,240.16	-2,457.76	10.00	7.60	10.37	95.90	Goudy 1N-12HU LP
22,178.44	91.00	327.24	10,830.00	7,463.82	-8,057.93	0.00	0.00	0.00	0.00	Goudy 1N-12HU BHL



Planning Report - Geographic

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WV Department of
Environmental Protection

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Goudy
Well: Goudy 1N-12HU (L)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Goudy 1N-12HU (L)
TVD Reference: GL=1241 @ 1241.00usft
MD Reference: GL=1241 @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
100.00	0.00	0.00	100.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
200.00	0.00	0.00	200.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
300.00	0.00	0.00	300.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
400.00	0.00	0.00	400.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
500.00	0.00	0.00	500.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
600.00	0.00	0.00	600.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
700.00	0.00	0.00	700.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
800.00	0.00	0.00	800.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
900.00	0.00	0.00	900.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,599.99	0.00	0.00	2,599.99	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,699.99	0.00	0.00	2,699.99	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,799.99	0.00	0.00	2,799.99	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,899.99	0.00	0.00	2,899.99	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
2,999.99	0.00	0.00	2,999.99	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,431,042.84	1,688,578.94	39.73708260	-80.82867846
KOP Begin 2°/100' build									
3,099.99	2.00	230.59	3,099.97	-1.11	-1.35	14,431,041.73	1,688,577.59	39.73707957	-80.82868326
3,199.99	4.00	230.59	3,199.83	-4.43	-5.39	14,431,038.41	1,688,573.55	39.73707046	-80.82869787
3,299.99	6.00	230.59	3,299.45	-9.96	-12.13	14,431,032.87	1,688,566.82	39.73705531	-80.82872166
3,399.99	8.00	230.59	3,398.69	-17.70	-21.54	14,431,025.14	1,688,557.40	39.73703411	-80.82875521
3,499.99	10.00	230.59	3,497.46	-27.63	-33.63	14,431,015.21	1,688,545.31	39.73700690	-80.82879827
3,599.99	12.00	230.59	3,595.62	-39.74	-48.37	14,431,003.10	1,688,530.57	39.73697372	-80.82885079
3,699.99	14.00	230.59	3,693.05	-54.02	-65.75	14,430,988.82	1,688,513.19	39.73693459	-80.82891271
3,799.99	16.00	230.59	3,789.64	-70.45	-85.75	14,430,972.39	1,688,493.19	39.73688958	-80.82898395
3,899.99	18.00	230.59	3,885.26	-89.01	-108.34	14,430,953.83	1,688,470.61	39.73683873	-80.82906443
3,999.99	20.00	230.59	3,979.81	-109.67	-133.49	14,430,933.16	1,688,445.45	39.73678210	-80.82915405
4,007.43	20.15	230.59	3,986.80	-111.30	-135.46	14,430,931.54	1,688,443.48	39.73677766	-80.82916108
Begin 20.15° tangent									
4,099.99	20.15	230.59	4,073.69	-131.54	-160.10	14,430,911.30	1,688,418.84	39.73672220	-80.82924884
4,199.99	20.15	230.59	4,167.57	-153.40	-186.71	14,430,889.43	1,688,392.23	39.73666229	-80.82934366
4,299.99	20.15	230.59	4,261.45	-175.27	-213.33	14,430,867.57	1,688,365.61	39.73660238	-80.82943848
4,399.99	20.15	230.59	4,355.33	-197.14	-239.94	14,430,845.70	1,688,339.00	39.73654246	-80.82953330
4,499.99	20.15	230.59	4,449.21	-219.00	-266.56	14,430,823.83	1,688,312.38	39.73648255	-80.82962812
4,599.99	20.15	230.59	4,543.09	-240.87	-293.17	14,430,801.97	1,688,285.77	39.73642264	-80.82972294
4,699.99	20.15	230.59	4,636.97	-262.74	-319.79	14,430,780.10	1,688,259.15	39.73636272	-80.82981776
4,799.99	20.15	230.59	4,730.85	-284.60	-346.40	14,430,758.23	1,688,232.54	39.73630281	-80.82991258
4,899.99	20.15	230.59	4,824.73	-306.47	-373.02	14,430,736.37	1,688,205.93	39.73624289	-80.83000740



Planning Report - Geographic

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AUG 05 2019

WV Department of
Environmental Protection

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Goudy
Well: Goudy 1N-12HU (L)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Goudy 1N-12HU (L)
TVD Reference: GL=1241 @ 1241.00usft
MD Reference: GL=1241 @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,999.99	20.15	230.59	4,918.61	-328.34	-399.63	14,430,714.50	1,688,179.31	39.73618298	-80.83010222	
5,099.99	20.15	230.59	5,012.49	-350.20	-426.25	14,430,692.63	1,688,152.70	39.73612307	-80.83019704	
5,199.99	20.15	230.59	5,106.37	-372.07	-452.86	14,430,670.77	1,688,126.08	39.73606315	-80.83029186	
5,299.99	20.15	230.59	5,200.25	-393.94	-479.47	14,430,648.90	1,688,099.47	39.73600324	-80.83038668	
5,399.99	20.15	230.59	5,294.13	-415.80	-506.09	14,430,627.03	1,688,072.85	39.73594332	-80.83048150	
5,499.99	20.15	230.59	5,388.01	-437.67	-532.70	14,430,605.17	1,688,046.24	39.73588341	-80.83057632	
5,599.99	20.15	230.59	5,481.89	-459.54	-559.32	14,430,583.30	1,688,019.62	39.73582349	-80.83067114	
5,699.99	20.15	230.59	5,575.77	-481.40	-585.93	14,430,561.43	1,687,993.01	39.73576358	-80.83076595	
5,799.99	20.15	230.59	5,669.65	-503.27	-612.55	14,430,539.57	1,687,966.39	39.73570366	-80.83086077	
5,899.99	20.15	230.59	5,763.53	-525.14	-639.16	14,430,517.70	1,687,939.78	39.73564375	-80.83095559	
5,999.99	20.15	230.59	5,857.41	-547.00	-665.78	14,430,495.83	1,687,913.16	39.73558383	-80.83105041	
6,099.99	20.15	230.59	5,951.29	-568.87	-692.39	14,430,473.97	1,687,886.55	39.73552392	-80.83114523	
6,199.99	20.15	230.59	6,045.17	-590.74	-719.01	14,430,452.10	1,687,859.93	39.73546400	-80.83124004	
6,299.99	20.15	230.59	6,139.05	-612.60	-745.62	14,430,430.23	1,687,833.32	39.73540409	-80.83133486	
6,399.99	20.15	230.59	6,232.93	-634.47	-772.24	14,430,408.37	1,687,806.70	39.73534417	-80.83142968	
6,499.99	20.15	230.59	6,326.81	-656.34	-798.85	14,430,386.50	1,687,780.09	39.73528426	-80.83152449	
6,599.99	20.15	230.59	6,420.69	-678.20	-825.47	14,430,364.63	1,687,753.47	39.73522434	-80.83161931	
6,699.99	20.15	230.59	6,514.57	-700.07	-852.08	14,430,342.77	1,687,726.86	39.73516443	-80.83171413	
6,799.99	20.15	230.59	6,608.45	-721.94	-878.70	14,430,320.90	1,687,700.24	39.73510451	-80.83180894	
6,899.99	20.15	230.59	6,702.33	-743.80	-905.31	14,430,299.03	1,687,673.63	39.73504460	-80.83190376	
6,999.99	20.15	230.59	6,796.21	-765.67	-931.93	14,430,277.17	1,687,647.01	39.73498468	-80.83199858	
7,099.99	20.15	230.59	6,890.09	-787.54	-958.54	14,430,255.30	1,687,620.40	39.73492477	-80.83209339	
7,199.99	20.15	230.59	6,983.97	-809.40	-985.16	14,430,233.43	1,687,593.78	39.73486485	-80.83218821	
7,299.99	20.15	230.59	7,077.85	-831.27	-1,011.77	14,430,211.57	1,687,567.17	39.73480493	-80.83228302	
7,399.99	20.15	230.59	7,171.73	-853.14	-1,038.39	14,430,189.70	1,687,540.55	39.73474502	-80.83237784	
7,499.99	20.15	230.59	7,265.61	-875.00	-1,065.00	14,430,167.83	1,687,513.94	39.73468510	-80.83247266	
7,599.98	20.15	230.59	7,359.49	-896.87	-1,091.62	14,430,145.96	1,687,487.33	39.73462519	-80.83256747	
7,699.98	20.15	230.59	7,453.37	-918.74	-1,118.23	14,430,124.10	1,687,460.71	39.73456527	-80.83266229	
7,799.98	20.15	230.59	7,547.25	-940.60	-1,144.85	14,430,102.23	1,687,434.10	39.73450535	-80.83275710	
7,899.98	20.15	230.59	7,641.13	-962.47	-1,171.46	14,430,080.36	1,687,407.48	39.73444544	-80.83285192	
7,999.98	20.15	230.59	7,735.01	-984.34	-1,198.07	14,430,058.50	1,687,380.87	39.73438552	-80.83294673	
8,099.98	20.15	230.59	7,828.89	-1,006.20	-1,224.69	14,430,036.63	1,687,354.25	39.73432560	-80.83304154	
8,199.98	20.15	230.59	7,922.77	-1,028.07	-1,251.30	14,430,014.76	1,687,327.64	39.73426569	-80.83313636	
8,299.98	20.15	230.59	8,016.65	-1,049.94	-1,277.92	14,429,992.90	1,687,301.02	39.73420577	-80.83323117	
8,399.98	20.15	230.59	8,110.53	-1,071.80	-1,304.53	14,429,971.03	1,687,274.41	39.73414585	-80.83332599	
8,499.98	20.15	230.59	8,204.41	-1,093.67	-1,331.15	14,429,949.16	1,687,247.79	39.73408594	-80.83342080	
8,599.98	20.15	230.59	8,298.29	-1,115.54	-1,357.76	14,429,927.30	1,687,221.18	39.73402602	-80.83351561	
8,699.98	20.15	230.59	8,392.17	-1,137.40	-1,384.38	14,429,905.43	1,687,194.56	39.73396610	-80.83361043	
8,799.98	20.15	230.59	8,486.05	-1,159.27	-1,410.99	14,429,883.56	1,687,167.95	39.73390619	-80.83370524	
8,899.98	20.15	230.59	8,579.93	-1,181.14	-1,437.61	14,429,861.70	1,687,141.33	39.73384627	-80.83380005	
8,999.98	20.15	230.59	8,673.81	-1,203.00	-1,464.22	14,429,839.83	1,687,114.72	39.73378635	-80.83389487	
9,099.98	20.15	230.59	8,767.69	-1,224.87	-1,490.84	14,429,817.96	1,687,088.10	39.73372643	-80.83398968	
9,199.98	20.15	230.59	8,861.57	-1,246.74	-1,517.45	14,429,796.10	1,687,061.49	39.73366652	-80.83408449	
9,299.98	20.15	230.59	8,955.45	-1,268.60	-1,544.07	14,429,774.23	1,687,034.87	39.73360660	-80.83417930	
9,399.98	20.15	230.59	9,049.33	-1,290.47	-1,570.68	14,429,752.36	1,687,008.26	39.73354668	-80.83427412	
9,499.98	20.15	230.59	9,143.21	-1,312.34	-1,597.30	14,429,730.50	1,686,981.64	39.73348676	-80.83436893	
9,599.98	20.15	230.59	9,237.09	-1,334.20	-1,623.91	14,429,708.63	1,686,955.03	39.73342685	-80.83446374	
9,699.98	20.15	230.59	9,330.97	-1,356.07	-1,650.53	14,429,686.76	1,686,928.41	39.73336693	-80.83455855	
9,799.98	20.15	230.59	9,424.85	-1,377.94	-1,677.14	14,429,664.90	1,686,901.80	39.73330701	-80.83465336	
9,899.98	20.15	230.59	9,518.73	-1,399.81	-1,703.76	14,429,643.03	1,686,875.18	39.73324709	-80.83474817	
9,999.98	20.15	230.59	9,612.61	-1,421.67	-1,730.37	14,429,621.16	1,686,848.57	39.73318717	-80.83484299	
10,099.98	20.15	230.59	9,706.49	-1,443.54	-1,756.99	14,429,599.30	1,686,821.95	39.73312726	-80.83493780	
10,199.98	20.15	230.59	9,800.37	-1,465.41	-1,783.60	14,429,577.43	1,686,795.34	39.73306734	-80.83503261	
10,299.98	20.15	230.59	9,894.25	-1,487.27	-1,810.22	14,429,555.56	1,686,768.72	39.73300742	-80.83512742	
10,399.98	20.15	230.59	9,988.13	-1,509.14	-1,836.83	14,429,533.70	1,686,742.11	39.73294750	-80.83522223	



Planning Report - Geographic

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Office of Oil and Gas

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Goudy
Well: Goudy 1N-12HU (L)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Goudy 1N-12HU (L)
TVD Reference: GL=1241 @ 1241.00usft
MD Reference: GL=1241 @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

AUG 05 2019

WV Department of
Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,499.98	20.15	230.59	10,082.01	-1,531.01	-1,863.45	14,429,511.83	1,686,715.50	39.73288758	-80.83531704
10,599.98	20.15	230.59	10,175.89	-1,552.87	-1,890.06	14,429,489.96	1,686,688.88	39.73282766	-80.83541185
10,699.98	20.15	230.59	10,269.77	-1,574.74	-1,916.68	14,429,468.10	1,686,662.27	39.73276775	-80.83550666
10,799.98	20.15	230.59	10,363.65	-1,596.61	-1,943.29	14,429,446.23	1,686,635.65	39.73270783	-80.83560147
10,894.64	20.15	230.59	10,452.52	-1,617.31	-1,968.48	14,429,425.53	1,686,610.46	39.73265111	-80.83569122
Begin 10°/100' build/turn									
10,899.98	20.10	232.14	10,457.53	-1,618.45	-1,969.92	14,429,424.38	1,686,609.02	39.73264796	-80.83569633
10,999.98	21.65	260.12	10,551.20	-1,632.20	-2,001.74	14,429,410.64	1,686,577.20	39.73261038	-80.83580960
11,099.98	26.93	280.99	10,642.48	-1,631.04	-2,042.24	14,429,411.79	1,686,536.70	39.73261375	-80.83595366
11,199.98	34.25	294.49	10,728.61	-1,615.02	-2,090.20	14,429,427.81	1,686,488.74	39.73265798	-80.83612414
11,299.98	42.56	303.48	10,806.97	-1,584.63	-2,144.15	14,429,458.21	1,686,434.79	39.73274173	-80.83631585
11,399.98	51.39	309.94	10,875.17	-1,540.78	-2,202.46	14,429,502.06	1,686,376.48	39.73286245	-80.83652298
11,499.98	60.49	314.96	10,931.15	-1,484.81	-2,263.36	14,429,558.03	1,686,315.58	39.73301646	-80.83673922
11,599.98	69.74	319.14	10,973.20	-1,418.42	-2,324.99	14,429,624.42	1,686,253.95	39.73319911	-80.83695800
11,699.98	79.09	322.84	11,000.05	-1,343.62	-2,385.48	14,429,699.22	1,686,193.46	39.73340482	-80.83717269
11,799.98	88.47	326.32	11,010.88	-1,262.69	-2,443.00	14,429,780.14	1,686,135.94	39.73362736	-80.83737675
11,826.91	91.00	327.24	11,011.00	-1,240.16	-2,457.76	14,429,802.67	1,686,121.18	39.73368931	-80.83742909
Begin 91.00° lateral									
11,899.98	91.00	327.24	11,009.72	-1,178.73	-2,497.28	14,429,864.11	1,686,081.66	39.73385823	-80.83756929
11,999.98	91.00	327.24	11,007.97	-1,094.64	-2,551.38	14,429,948.19	1,686,027.56	39.73408942	-80.83776118
12,099.98	91.00	327.24	11,006.23	-1,010.56	-2,605.48	14,430,032.28	1,685,973.46	39.73432061	-80.83795308
12,199.98	91.00	327.24	11,004.48	-926.47	-2,659.58	14,430,116.36	1,685,919.36	39.73455179	-80.83814497
12,299.98	91.00	327.24	11,002.73	-842.39	-2,713.68	14,430,200.45	1,685,865.26	39.73478298	-80.83833667
12,399.98	91.00	327.24	11,000.98	-758.31	-2,767.78	14,430,284.53	1,685,811.16	39.73501417	-80.83852876
12,499.98	91.00	327.24	10,999.23	-674.22	-2,821.88	14,430,368.61	1,685,757.06	39.73524536	-80.83872066
12,599.98	91.00	327.24	10,997.48	-590.14	-2,875.98	14,430,452.70	1,685,702.96	39.73547655	-80.83891256
12,699.97	91.00	327.24	10,995.73	-506.05	-2,930.08	14,430,536.78	1,685,648.86	39.73570773	-80.83910446
12,799.97	91.00	327.24	10,993.99	-421.97	-2,984.18	14,430,620.87	1,685,594.76	39.73593892	-80.83929636
12,899.97	91.00	327.24	10,992.24	-337.89	-3,038.28	14,430,704.95	1,685,540.66	39.73617011	-80.83948827
12,999.97	91.00	327.24	10,990.49	-253.80	-3,092.38	14,430,789.03	1,685,486.56	39.73640129	-80.83968017
13,099.97	91.00	327.24	10,988.74	-169.72	-3,146.48	14,430,873.12	1,685,432.46	39.73663248	-80.83987208
13,199.97	91.00	327.24	10,986.99	-85.63	-3,200.58	14,430,957.20	1,685,378.36	39.73686367	-80.84006398
13,299.97	91.00	327.24	10,985.24	-1.55	-3,254.68	14,431,041.28	1,685,324.26	39.73709485	-80.84025589
13,399.97	91.00	327.24	10,983.49	82.53	-3,308.78	14,431,125.37	1,685,270.16	39.73732604	-80.84044780
13,499.97	91.00	327.24	10,981.75	166.62	-3,362.88	14,431,209.45	1,685,216.06	39.73755722	-80.84063971
13,599.97	91.00	327.24	10,980.00	250.70	-3,416.98	14,431,293.54	1,685,161.96	39.73778841	-80.84083162
13,699.97	91.00	327.24	10,978.25	334.79	-3,471.08	14,431,377.62	1,685,107.86	39.73801959	-80.84102354
13,799.97	91.00	327.24	10,976.50	418.87	-3,525.18	14,431,461.70	1,685,053.76	39.73825077	-80.84121545
13,899.97	91.00	327.24	10,974.75	502.95	-3,579.28	14,431,545.79	1,684,999.66	39.73848196	-80.84140737
13,999.97	91.00	327.24	10,973.00	587.04	-3,633.38	14,431,629.87	1,684,945.56	39.73871314	-80.84159928
14,099.97	91.00	327.24	10,971.26	671.12	-3,687.48	14,431,713.96	1,684,891.46	39.73894432	-80.84179120
14,199.97	91.00	327.24	10,969.51	755.20	-3,741.58	14,431,798.04	1,684,837.36	39.73917550	-80.84198312
14,299.97	91.00	327.24	10,967.76	839.29	-3,795.68	14,431,882.12	1,684,783.26	39.73940669	-80.84217504
14,399.97	91.00	327.24	10,966.01	923.37	-3,849.78	14,431,966.21	1,684,729.16	39.73963787	-80.84236696
14,499.97	91.00	327.24	10,964.26	1,007.46	-3,903.88	14,432,050.29	1,684,675.06	39.73986905	-80.84255889
14,599.97	91.00	327.24	10,962.51	1,091.54	-3,957.98	14,432,134.38	1,684,620.96	39.74010023	-80.84275081
14,699.97	91.00	327.24	10,960.76	1,175.62	-4,012.08	14,432,218.46	1,684,566.86	39.74033141	-80.84294274
14,799.97	91.00	327.24	10,959.02	1,259.71	-4,066.18	14,432,302.54	1,684,512.76	39.74056259	-80.84313467
14,899.97	91.00	327.24	10,957.27	1,343.79	-4,120.28	14,432,386.63	1,684,458.66	39.74079377	-80.84332659
14,999.97	91.00	327.24	10,955.52	1,427.88	-4,174.38	14,432,470.71	1,684,404.56	39.74102495	-80.84351852
15,099.97	91.00	327.24	10,953.77	1,511.96	-4,228.48	14,432,554.80	1,684,350.46	39.74125613	-80.84371046
15,199.97	91.00	327.24	10,952.02	1,596.04	-4,282.58	14,432,638.88	1,684,296.36	39.74148731	-80.84390239
15,299.97	91.00	327.24	10,950.27	1,680.13	-4,336.68	14,432,722.96	1,684,242.26	39.74171849	-80.84409432
15,399.97	91.00	327.24	10,948.52	1,764.21	-4,390.78	14,432,807.05	1,684,188.16	39.74194967	-80.84428626



Planning Report - Geographic

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Office of Oil and Gas

AUG 05 2019

WV Department of
Environmental Protection

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Goudy
Well: Goudy 1N-12HU (L)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Goudy 1N-12HU (L)
TVD Reference: GL=1241 @ 1241.00usft
MD Reference: GL=1241 @ 1241.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,499.97	91.00	327.24	10,946.78	1,848.30	-4,444.88	14,432,891.13	1,684,134.06	39.74218085	-80.84447819
15,599.97	91.00	327.24	10,945.03	1,932.38	-4,498.98	14,432,975.22	1,684,079.96	39.74241202	-80.84467013
15,699.97	91.00	327.24	10,943.28	2,016.46	-4,553.08	14,433,059.30	1,684,025.86	39.74264320	-80.84486207
15,799.97	91.00	327.24	10,941.53	2,100.55	-4,607.18	14,433,143.38	1,683,971.76	39.74287438	-80.84505401
15,899.97	91.00	327.24	10,939.78	2,184.63	-4,661.28	14,433,227.47	1,683,917.66	39.74310556	-80.84524595
15,999.97	91.00	327.24	10,938.03	2,268.72	-4,715.38	14,433,311.55	1,683,863.56	39.74333673	-80.84543789
16,099.97	91.00	327.24	10,936.28	2,352.80	-4,769.48	14,433,395.64	1,683,809.46	39.74356791	-80.84562984
16,199.97	91.00	327.24	10,934.54	2,436.88	-4,823.58	14,433,479.72	1,683,755.36	39.74379908	-80.84582178
16,299.97	91.00	327.24	10,932.79	2,520.97	-4,877.68	14,433,563.80	1,683,701.26	39.74403026	-80.84601373
16,399.97	91.00	327.24	10,931.04	2,605.05	-4,931.78	14,433,647.89	1,683,647.16	39.74426144	-80.84620568
16,499.97	91.00	327.24	10,929.29	2,689.14	-4,985.88	14,433,731.97	1,683,593.06	39.74449261	-80.84639763
16,599.97	91.00	327.24	10,927.54	2,773.22	-5,039.98	14,433,816.05	1,683,538.96	39.74472379	-80.84658958
16,699.97	91.00	327.24	10,925.79	2,857.30	-5,094.08	14,433,900.14	1,683,484.86	39.74495496	-80.84678153
16,799.97	91.00	327.24	10,924.04	2,941.39	-5,148.18	14,433,984.22	1,683,430.76	39.74518613	-80.84697348
16,899.97	91.00	327.24	10,922.30	3,025.47	-5,202.28	14,434,068.31	1,683,376.66	39.74541731	-80.84716544
16,999.97	91.00	327.24	10,920.55	3,109.56	-5,256.38	14,434,152.39	1,683,322.56	39.74564848	-80.84735739
17,099.97	91.00	327.24	10,918.80	3,193.64	-5,310.48	14,434,236.47	1,683,268.47	39.74587965	-80.84754935
17,199.97	91.00	327.24	10,917.05	3,277.72	-5,364.58	14,434,320.56	1,683,214.37	39.74611083	-80.84774131
17,299.97	91.00	327.24	10,915.30	3,361.81	-5,418.68	14,434,404.64	1,683,160.27	39.74634200	-80.84793327
17,399.97	91.00	327.24	10,913.55	3,445.89	-5,472.78	14,434,488.73	1,683,106.17	39.74657317	-80.84812523
17,499.97	91.00	327.24	10,911.80	3,529.97	-5,526.88	14,434,572.81	1,683,052.07	39.74680434	-80.84831719
17,599.97	91.00	327.24	10,910.06	3,614.06	-5,580.97	14,434,656.89	1,682,997.97	39.74703551	-80.84850915
17,699.96	91.00	327.24	10,908.31	3,698.14	-5,635.07	14,434,740.98	1,682,943.87	39.74726669	-80.84870112
17,799.96	91.00	327.24	10,906.56	3,782.23	-5,689.17	14,434,825.06	1,682,889.77	39.74749786	-80.84889308
17,899.96	91.00	327.24	10,904.81	3,866.31	-5,743.27	14,434,909.15	1,682,835.67	39.74772903	-80.84908505
17,999.96	91.00	327.24	10,903.06	3,950.39	-5,797.37	14,434,993.23	1,682,781.57	39.74796020	-80.84927702
18,099.96	91.00	327.24	10,901.31	4,034.48	-5,851.47	14,435,077.31	1,682,727.47	39.74819137	-80.84946899
18,199.96	91.00	327.24	10,899.57	4,118.56	-5,905.57	14,435,161.40	1,682,673.37	39.74842254	-80.84966096
18,299.96	91.00	327.24	10,897.82	4,202.65	-5,959.67	14,435,245.48	1,682,619.27	39.74865370	-80.84985293
18,399.96	91.00	327.24	10,896.07	4,286.73	-6,013.77	14,435,329.57	1,682,565.17	39.74888487	-80.85004490
18,499.96	91.00	327.24	10,894.32	4,370.81	-6,067.87	14,435,413.65	1,682,511.07	39.74911604	-80.85023688
18,599.96	91.00	327.24	10,892.57	4,454.90	-6,121.97	14,435,497.73	1,682,456.97	39.74934721	-80.85042885
18,699.96	91.00	327.24	10,890.82	4,538.98	-6,176.07	14,435,581.82	1,682,402.87	39.74957838	-80.85062083
18,799.96	91.00	327.24	10,889.07	4,623.07	-6,230.17	14,435,665.90	1,682,348.77	39.74980955	-80.85081281
18,899.96	91.00	327.24	10,887.33	4,707.15	-6,284.27	14,435,749.99	1,682,294.67	39.75004071	-80.85100479
18,999.96	91.00	327.24	10,885.58	4,791.23	-6,338.37	14,435,834.07	1,682,240.57	39.75027188	-80.85119677
19,099.96	91.00	327.24	10,883.83	4,875.32	-6,392.47	14,435,918.15	1,682,186.47	39.75050305	-80.85138875
19,199.96	91.00	327.24	10,882.08	4,959.40	-6,446.57	14,436,002.24	1,682,132.37	39.75073421	-80.85158074
19,299.96	91.00	327.24	10,880.33	5,043.49	-6,500.67	14,436,086.32	1,682,078.27	39.75096538	-80.85177272
19,399.96	91.00	327.24	10,878.58	5,127.57	-6,554.77	14,436,170.41	1,682,024.17	39.75119654	-80.85196471
19,499.96	91.00	327.24	10,876.83	5,211.65	-6,608.87	14,436,254.49	1,681,970.07	39.75142771	-80.85215670
19,599.96	91.00	327.24	10,875.09	5,295.74	-6,662.97	14,436,338.57	1,681,915.97	39.75165887	-80.85234869
19,699.96	91.00	327.24	10,873.34	5,379.82	-6,717.07	14,436,422.66	1,681,861.87	39.75189004	-80.85254068
19,799.96	91.00	327.24	10,871.59	5,463.91	-6,771.17	14,436,506.74	1,681,807.77	39.75212120	-80.85273267
19,899.96	91.00	327.24	10,869.84	5,547.99	-6,825.27	14,436,590.82	1,681,753.67	39.75235237	-80.85292466
19,999.96	91.00	327.24	10,868.09	5,632.07	-6,879.37	14,436,674.91	1,681,699.57	39.75258353	-80.85311665
20,099.96	91.00	327.24	10,866.34	5,716.16	-6,933.47	14,436,758.99	1,681,645.47	39.75281469	-80.85330865
20,199.96	91.00	327.24	10,864.59	5,800.24	-6,987.57	14,436,843.08	1,681,591.37	39.75304586	-80.85350065
20,299.96	91.00	327.24	10,862.85	5,884.33	-7,041.67	14,436,927.16	1,681,537.27	39.75327702	-80.85369264
20,399.96	91.00	327.24	10,861.10	5,968.41	-7,095.77	14,437,011.24	1,681,483.17	39.75350818	-80.85388464
20,499.96	91.00	327.24	10,859.35	6,052.49	-7,149.87	14,437,095.33	1,681,429.07	39.75373934	-80.85407664
20,599.96	91.00	327.24	10,857.60	6,136.58	-7,203.97	14,437,179.41	1,681,374.97	39.75397051	-80.85426864
20,699.96	91.00	327.24	10,855.85	6,220.66	-7,258.07	14,437,263.50	1,681,320.87	39.75420167	-80.85446065
20,799.96	91.00	327.24	10,854.10	6,304.74	-7,312.17	14,437,347.58	1,681,266.77	39.75443283	-80.85465265
20,899.96	91.00	327.24	10,852.35	6,388.83	-7,366.27	14,437,431.66	1,681,212.67	39.75466399	-80.85484466



Planning Report - Geographic

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Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Goudy
 Well: Goudy 1N-12HU (L)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Goudy 1N-12HU (L)
 TVD Reference: GL=1241 @ 1241.00usft
 MD Reference: GL=1241 @ 1241.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

AUG 05 2019

WV Department of
Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,999.96	91.00	327.24	10,850.61	6,472.91	-7,420.37	14,437,515.75	1,681,158.57	39.75489515	-80.85503666
21,099.96	91.00	327.24	10,848.86	6,557.00	-7,474.47	14,437,599.83	1,681,104.47	39.75512631	-80.85522867
21,199.96	91.00	327.24	10,847.11	6,641.08	-7,528.57	14,437,683.92	1,681,050.37	39.75535747	-80.85542068
21,299.96	91.00	327.24	10,845.36	6,725.16	-7,582.67	14,437,768.00	1,680,996.27	39.75558863	-80.85561269
21,399.96	91.00	327.24	10,843.61	6,809.25	-7,636.77	14,437,852.08	1,680,942.17	39.75581979	-80.85580470
21,499.96	91.00	327.24	10,841.86	6,893.33	-7,690.87	14,437,936.17	1,680,888.07	39.75605095	-80.85599672
21,599.96	91.00	327.24	10,840.12	6,977.42	-7,744.97	14,438,020.25	1,680,833.97	39.75628210	-80.85618873
21,699.96	91.00	327.24	10,838.37	7,061.50	-7,799.07	14,438,104.34	1,680,779.87	39.75651326	-80.85638075
21,799.96	91.00	327.24	10,836.62	7,145.58	-7,853.17	14,438,188.42	1,680,725.77	39.75674442	-80.85657276
21,899.96	91.00	327.24	10,834.87	7,229.67	-7,907.27	14,438,272.50	1,680,671.67	39.75697558	-80.85676478
21,999.96	91.00	327.24	10,833.12	7,313.75	-7,961.37	14,438,356.59	1,680,617.57	39.75720673	-80.85695680
22,099.96	91.00	327.24	10,831.37	7,397.84	-8,015.47	14,438,440.67	1,680,563.47	39.75743789	-80.85714882
22,178.44	91.00	327.24	10,830.00	7,463.82	-8,057.93	14,438,506.66	1,680,521.02	39.75761930	-80.85729952

PBHL/TD 22178.44 MD/10830.00 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Goudy 1N-12HU BHL - hit/miss target - Shape - Point	0.00	0.01	10,830.00	7,463.82	-8,057.93	14,438,506.66	1,680,521.02	39.75761930	-80.85729952
Goudy 1N-12HU LP - plan hits target center - Point	0.00	0.01	11,011.00	-1,240.16	-2,457.76	14,429,802.67	1,686,121.18	39.73368931	-80.83742909

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.00	1,000.00	20" Casing	20	26
2,950.00	2,950.00	13 3/8" Casing	13-3/8	17
10,252.84	9,850.00	9 5/8" Casing	9-5/8	12-1/4

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,000.00	3,000.00	0.00	0.00	KOP Begin 2°/100' build
4,007.43	3,986.80	-111.30	-135.46	Begin 20.15° tangent
10,894.64	10,452.52	-1,617.31	-1,968.48	Begin 10°/100' build/turn
11,826.91	11,011.00	-1,240.16	-2,457.76	Begin 91.00° lateral
22,178.44	10,830.00	7,463.82	-8,057.93	PBHL/TD 22178.44 MD/10830.00 TVD

WW-9
(4/16)

API Number 47 - 051 - _____

Operator's Well No. Goudy 1N-12HU **RECEIVED**
Office of Oil and Gas

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

AUG 05 2019

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

WV Department of
Environmental Protection

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) French Creek - Ohio River Quadrangle New Martinsville 7.5'

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature Jim Pancake

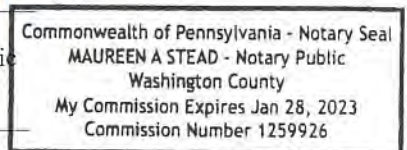
Company Official (Typed Name) Jim Pancake

Company Official Title Vice President Geoscience

Subscribed and sworn before me this 29 day of JANUARY, 20 19

Maureen A Stead Notary Public

My commission expires 1/28/23



Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 11.56 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

RECEIVED
Office of Oil and Gas

AUG 05 2019

Seed Mixtures

WV Department of
Environmental Protection

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Unkles*

Comments: _____

Title: Oil and Gas Inspector

Date: 8/14/19

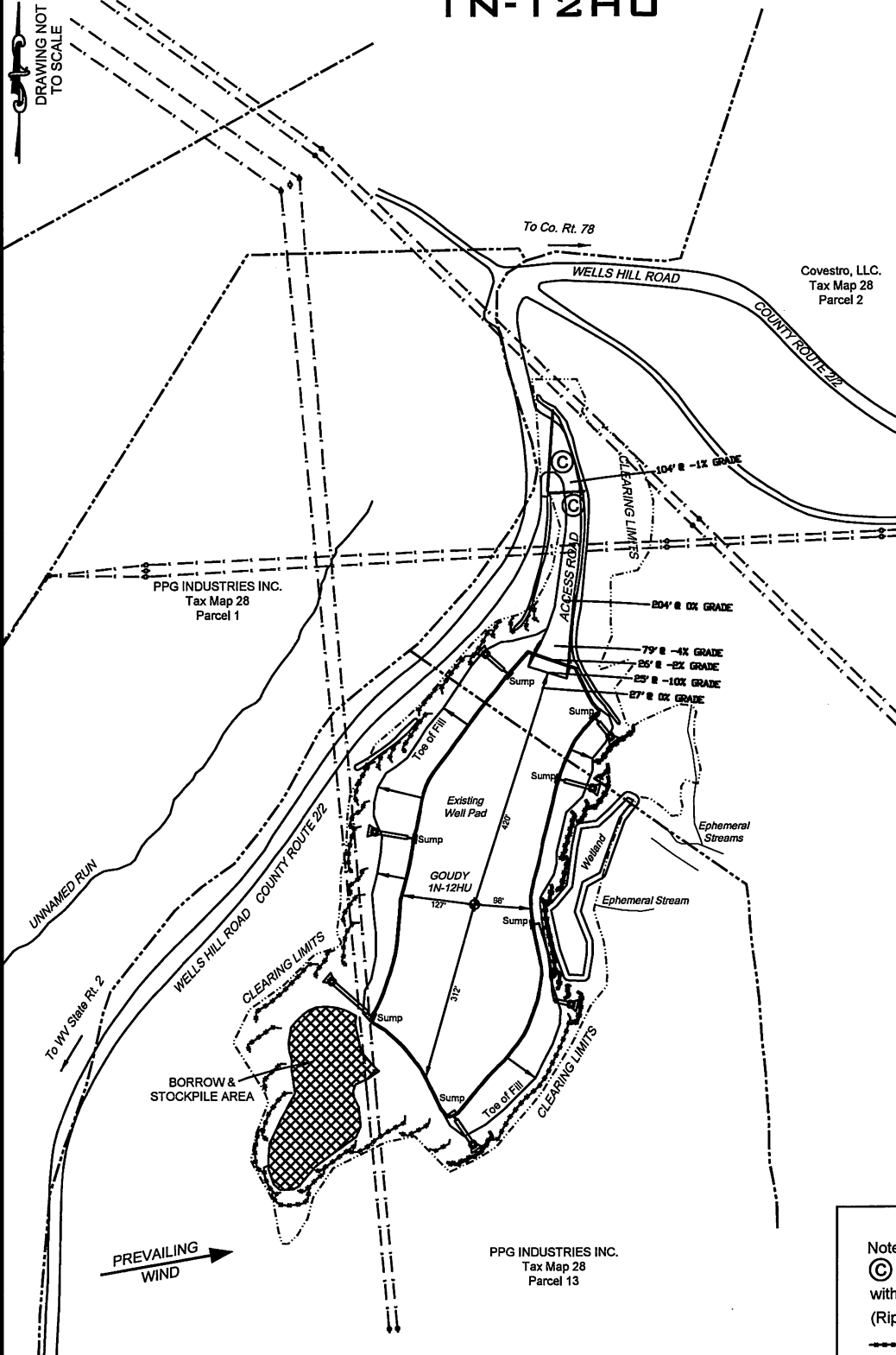
Field Reviewed? Yes No

WW-9

PROPOSED GOUDY 1N-12HU

SUPPLEMENT PG 1

DRAWING NOT
TO SCALE



REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

RECEIVED
Office of Oil and Gas

AUG 05 2019

WV Department of
Environmental Protection

LEGEND

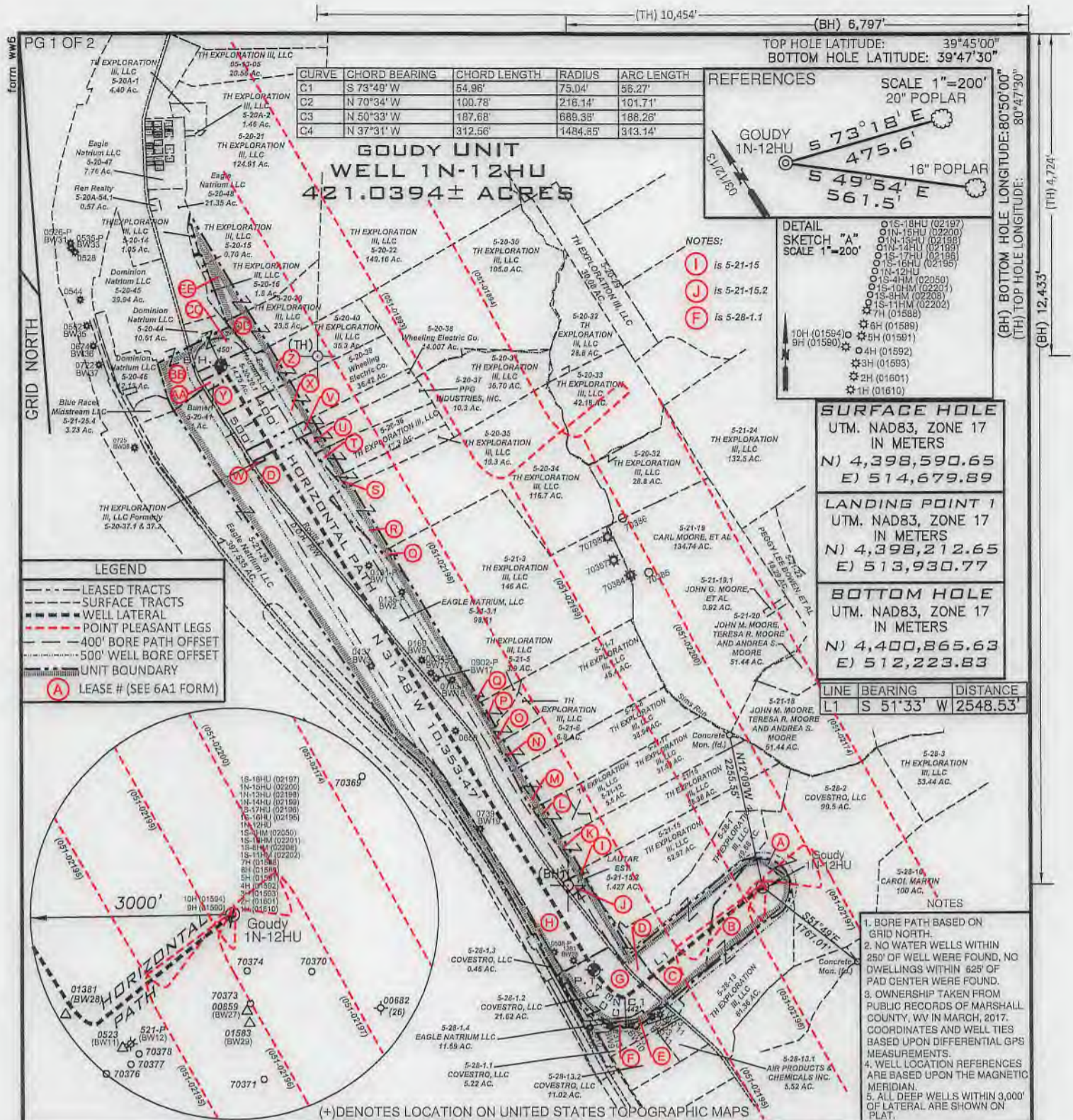
Note:

- Ⓢ — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
- Silt Fence and or Sediment and Erosion Control Measure.
- Surface Boundary
- E — Overhead Utility

DATE: 03/04/2019

PROJECT NO: 494510851

DRAWN BY: J.A.H.



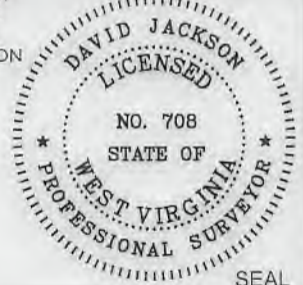
SURFACE HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,398,590.65 E) 514,679.89
LANDING POINT 1 UTM. NAD83, ZONE 17 IN METERS N) 4,398,212.65 E) 513,930.77
BOTTOM HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,400,865.63 E) 512,223.83
LINE BEARING DISTANCE L1 S 51°33' W 2548.53'

- NOTES
- BORE PATH BASED ON GRID NORTH.
 - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - ALL DEEP WELLS WITHIN 3,000' OF LATERAL ARE SHOWN ON PLAT.

FILE NUMBER _____
 DRAWING NUMBER: GOUDY 1N-12HU Rev 1
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING
GRADE GPS

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

David L Jackson



DATE: AUGUST 1, 2019
 OPERATORS WELL NO. GOUDY 1N-12HU
 API WELL NO. 47-051-02261-HGA *Deep*
 STATE COUNTY PERMIT

LOCATION ELEVATION 1239.4' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER
 DISTRICT FRANKLIN COUNTY MARSHALL
 QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER _____ WW-6A1 FORM

SURFACE OWNER TH EXPLORATION III, LLC ACREAGE 70.0
 OIL & GAS ROYALTY OWNER TH EXPLORATION III, LLC LEASE ACREAGE 70.0
 PROPOSED WORK: DRILL CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION _____
 PERFORATE NEW FORMATION _____ OTHER PHYSICAL CHANGE (SPECIFY) _____
 PLUG & ABANDON _____ CLEAN OUT & REPLUG _____

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD 11,259' TMD: 22,178'
 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



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

COUNTY NAME
 PERMIT

**GOUDY LEASE
WELL N-12HU
421.0394 ± ACRES**

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Deed Book/Page	
10*27022	5-28-2	A	COVESTRO LLC	1046	431
10*14418	5-28-13	B	PPG INDUSTRIES, INC.	878	610
10*14418	5-28-1	C	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-3.1	D	PPG INDUSTRIES, INC.	878	610
10*14418	5-28-1.4	E	PPG INDUSTRIES, INC.	878	610
10*14418	5-28-1.1	F	PPG INDUSTRIES, INC.	878	610
10*14418	5-28-1.2	G	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-25	H	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-15	I	PPG INDUSTRIES, INC.	878	610
10*26615	5-21-15.2	J	TH EXPLORATION III, LLC	1026	479
10*14418	5-21-16	K	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-13	L	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-8	M	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-7	N	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-6	O	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-5	P	PPG INDUSTRIES, INC.	878	610
10*14418	5-21-3	Q	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-34	R	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-35	S	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-36	T	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-37	U	PPG INDUSTRIES, INC.	878	610
10*14703	5-20-38	V	WHEELING POWER COMPANY	786	383
10*14418	Formerly 5-20-37.1 & 37.2	W	PPG INDUSTRIES, INC.	878	610
10*14703	5-20-39	X	WHEELING POWER COMPANY	786	383
10*14418	5-20-20.1	Y	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-40	Z	PPG INDUSTRIES, INC.	878	610
10*14458	5-20-41	AA	MARILYN SUE BUMER	731	147
10*14418	5-20-45	BB	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-44	CC	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-20	DD	PPG INDUSTRIES, INC.	878	610
10*14418	5-20-21	EE	PPG INDUSTRIES, INC.	878	610



David L Jackson

P.S.
708



TUG HILL
OPERATING

OPERATOR'S
WELL #: Goudy N-12HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 2
DATE: 08/01/2019

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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*See attached pages

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment
10*27022	5-28-2	A	COVESTRO LLC	TH EXPLORATION LLC	1/8+	1046 431	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-28-13	B	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-28-1	C	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-3.1	D	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-28-1.4	E	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-28-1.1	F	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-28-1.2	G	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-25	H	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-15	I	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*26615	5-21-15.2	J	TH EXPLORATION III, LLC	N/A	FEE	1026 479	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-16	K	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-13	L	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-8	M	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-7	N	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878 610	N/A	Gastar Exploration Inc to Athnum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Athnum Marcellus I LLC & TH Exploration II LLC: 34/277

10*14418	5-21-6	O	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-5	P	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-21-3	Q	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-34	R	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-35	S	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-36	T	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-37	U	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14703	5-20-38	V	WHEELING POWER COMPANY	GASTAR EXPLORATION USA INC	1/8+	786	383	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 29/157	Gastar Exploration USA Inc merged into Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	Formerly 5-20-37.1 & 37.2	W	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14703	5-20-39	X	WHEELING POWER COMPANY	GASTAR EXPLORATION USA INC	1/8+	786	383	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 29/157	Gastar Exploration USA Inc merged into Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-20.1	Y	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-40	Z	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14458	5-20-41	AA	MARILYN SUE BUMER	GASTAR EXPLORATION USA, INC.	1/8+	731	147	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	Gastar Exploration USA Inc merged into Gastar Exploration Inc: 21/41	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277

10*14418	5-20-45	BB	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-44	CC	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-20	DD	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277
10*14418	5-20-21	EE	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 24/332	Gastar Exploration Inc to TH Exploration II LLC: 36/9	Memorandum of Operating Agreement between TH Exploration LLC and Atinum Marcellus I LLC & TH Exploration II LLC: 34/277

MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

This Memorandum of Operating Agreement and Financing Statement (hereinafter referred to as "Memorandum") is executed to be effective concurrently with that certain Operating Agreement (the "Operating Agreement") by and between TH Exploration, LLC, as Operator, and Atinum Marcellus I LLC and TH Exploration II, LLC, as Non-Operators, covering, among other things, the development and production of crude oil, natural gas and associated substances from the leases (hereinafter called the "Contract Area") described on Exhibit "A", Exhibit "A-1" and Exhibit "A-2" attached hereto and owned by Operator and Non-Operator in the respective percentages of shares indicated on Exhibit "A" to the Operating Agreement.

The Operating Agreement contains an Accounting Procedure, along with provisions giving the parties hereto mutual liens and security interests where one or more parties hereto are or may become Debtors to one or more other parties hereto. This Memorandum incorporates by reference all of the terms and conditions of the Operating Agreement, including but not limited to the lien and security interest provisions.

The purpose of this Memorandum is to place third parties on notice of the Operating Agreement, and to secure and perfect the mutual liens and security interests of the parties hereto.

The Operating Agreement specifically provides and the parties do hereby confirm and agree that:

1. The Operator shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of, the Operating Agreement.
2. The liability of the parties under the Operating Agreement shall be several, not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for its proportionate share of costs.
3. Each Non-Operator grants to Operator a lien upon its oil and gas rights, oil and gas leases and mineral interests in the Contract Area, and a security interest in its share of oil and/or gas when extracted and its interest in all fixtures, inventory, personal property and equipment located on or used on the Contract Area and in all its contract rights and receivables related thereto and arising therefrom to secure payment of its present and future share of costs and expenses, together with interest thereon at the rate provided in the Accounting Procedure referred to above. To the extent that Operator has a security interest under the Uniform Commercial Code ("Code") of the state or states in which the Contract Area is located, Operator without prejudice and in addition to all other legal, equitable and contractual remedies which are expressly reserved, shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the rights or security interests for the payment thereof.
4. The Operator grants to Non-Operator a lien and security interest equivalent to that granted to Operator as described in Paragraph 3 above, to secure payment by Operator of its own share of costs and expenses when due.

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As reflected above, either or both Operator and Non-Operator may become Debtors if they default in their payment obligations under the terms of the Operating Agreement. On default, the non-defaulting party(ies) will be considered secured party(ies).



August 1, 2019

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

RE: Goudy 1N-12HU

Subject: Marshall County Route 2 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 2 in the area reflected on the Goudy 1N-12HU 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,

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

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WV Department of
Environmental Protection

380 SOUTHPOINTE BLVD • SUITE 200 • CANONSBURG, PA 15317 • T 724.485-2000

724.338.2030

WW-6AC
(1/12)

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

Date of Notice Certification: 08/01/2019

API No. 47- 051
Operator's Well No. Goudy 1N-12HU
Well Pad Name: Goudy

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>514,671.80</u>
County:	<u>Marshall</u>		Northing:	<u>4,398,580.66</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Wells Hill Road</u>	
Quadrangle:	<u>New Martinsville 7.5'</u>	Generally used farm name:	<u>TH Exploration III, LLC</u>	
Watershed:	<u>French Creek - Ohio River (HUC 10)</u>			

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

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

Required Attachments:

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

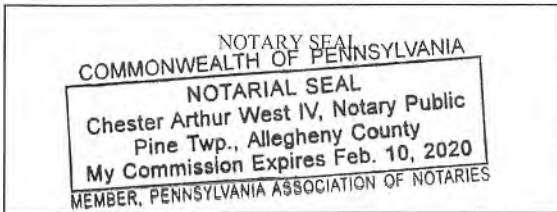
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Certification of Notice is hereby given:

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

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist</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 15th day of August 2019.

[Signature] Notary Public

My Commission Expires 2-10-2020

Oil and Gas Privacy Notice:

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

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WV Department of
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WW-6A
(9-13)

4705102261
API NO. 47-051 -
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

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: 3/14/2019 **Date Permit Application Filed:** 3/15/2019

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: TH Exploration III, LLC
Address: 1320 S. University Drive, Suite 500
Ft. Worth, TX 76107

Name: COVESTRO, LLC (formerly Bayer Material Science, LLC)
Address: 1 COVESTRO CIRCLE
PITTSBURGH PA 15272

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____

Name: _____
Address: _____

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

COAL OWNER OR LESSEE
Name: TH Exploration III, LLC
Address: 1320 S. University Drive, Suite 500
Ft. Worth, TX 76107 **See attachment

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

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*Please attach additional forms if necessary

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API NO. 47- 051 -
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

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

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

Well Location Restrictions

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

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API NO. 47-051 - _____
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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(8-13)

AUG 05 2019

API NO. 47- 051 -
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

WV Department of
Environmental Protection

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.

WW-6A
(8-13)

API NO. 47- 051 - _____
OPERATOR WELL NO. Goudy 1N-12HU
Well Pad Name: Goudy

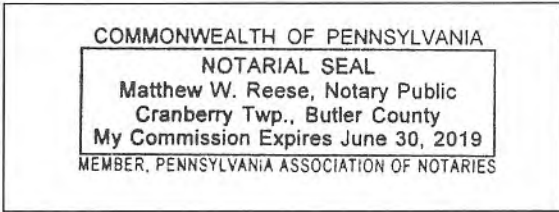
Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-838-2030

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 14 day of MAR. 2019.

[Signature] Notary Public

My Commission Expires 6-30-2019

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**WW-6A Notice of Application
Supplement Page**

COAL OWNER(S):

NAME: APPALACHIAN POWER CO.
ADDRESS: 1 RIVERSIDE PLACE
COLUMBUS, OH 43215

NAME: COVESTRO, LLC (FORMERLY BAYER MATERIAL SCIENCE, LLC)
ADDRESS: 1 CONVESTRO CIRCLE
PITTSBURGH, PA 15205

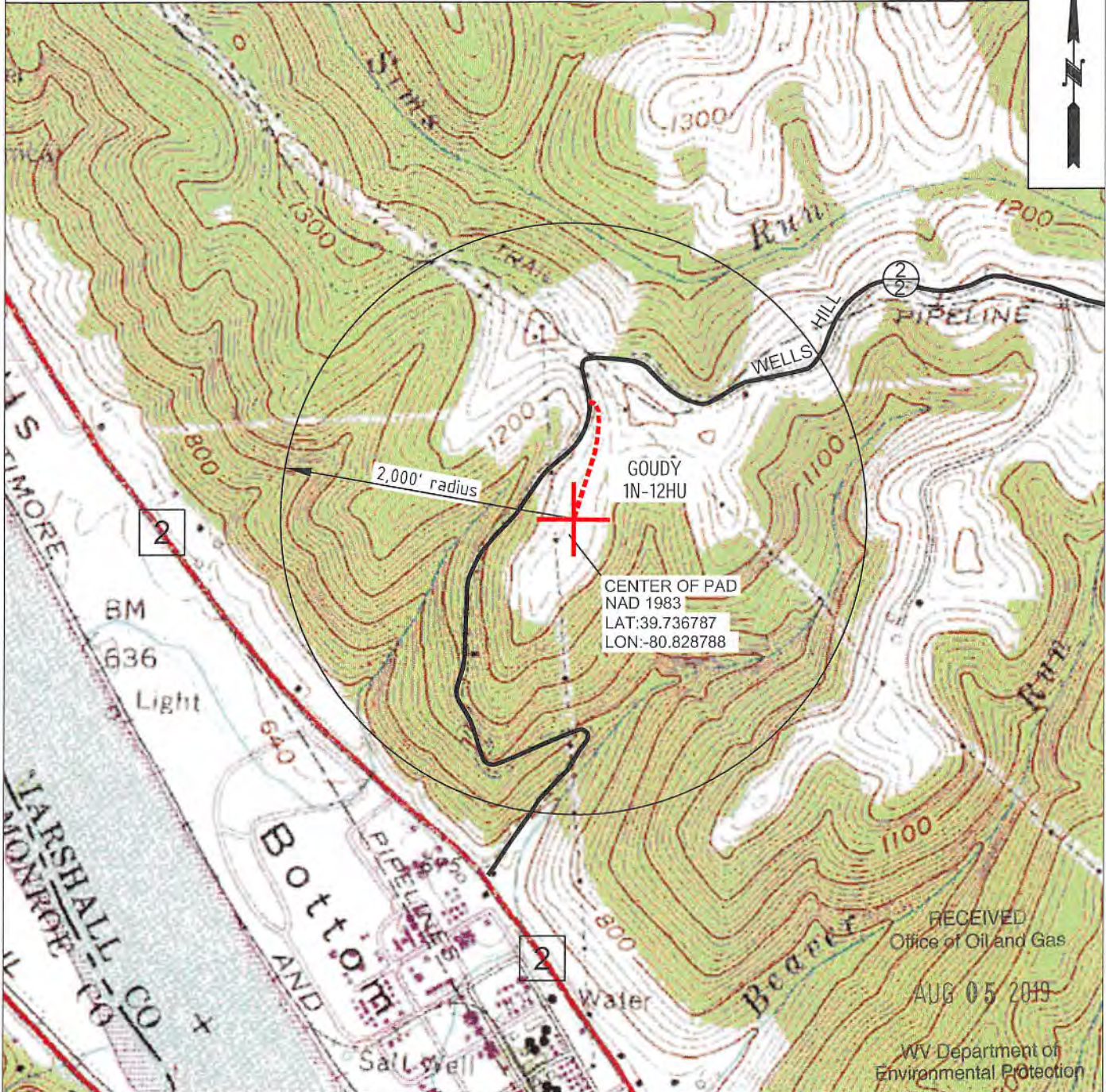
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Environmental Protection

PROPOSED GOUDY 1N-12HU

There appears to be no (0) possible water source within 2,000'.



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AUG 05 2019
WV Department of
Environmental Protection

 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		NEW MARTINSVILLE 7.5'	GOUDY
			SCALE:	DATE:
			1" = 1000'	DATE: 03/04/2019

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 1/8/2019 **Date of Planned Entry:** 1/15/2019

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: TH Exploration III, LLC

Address: 1320 S. University Drive, Suite 500
Ft. Worth, TX 76107

Name: COVESTRO, LLC (formerly Bayer Material Science, LLC)

Address: 1 COVESTRO CIRCLE
PITTSBURGH PA 15272

Name: _____

Address: _____

COAL OWNER OR LESSEE

Name: TH Exploration III, LLC

Address: 1320 S. University Drive, Suite 500
Ft. Worth, TX 76107 ****SEE ATTACHED**

MINERAL OWNER(s)

Name: TH Exploration III, LLC

Address: 1320 S. University Drive, Suite 500
Ft. Worth, TX 76107 ****SEE ATTACHED**

**please attach additional forms if necessary*

RECEIVED
Office of Oil and Gas
AUG 05 2019
WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>WEST VIRGINIA</u>	Approx. Latitude & Longitude: <u>39.73678670; -80.82878798</u>
County: <u>MARSHALL</u>	Public Road Access: <u>WELLS HEAD ROAD (ROUTE 22)</u>
District: <u>FRANKLIN</u>	Watershed: <u>(HUC 10) FRENCH CREEK- OHIO RIVER</u>
Quadrangle: <u>NEW MARTINSVILLE</u>	Generally used farm name: <u>TH Exploration III, LLC</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, SOUTHPOINTE PLAZA II, SUITE 200</u>
Telephone: <u>724-338-2026</u>	<u>CANONSBURG, PA 15317</u>
Email: <u>amiller@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.

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

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

Date of Notice: 03/14/2019 **Date Permit Application Filed:** 03/15/2019

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Office of Oil and Gas

AUG 05 2019

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

WV Department of
Environmental Protection

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

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: TH Exploration III, LLC
Address: 1320 S. University Drive, suite 500
Fort Worth, TX 76107

Name: COVESTRO, LLC (formerly Bayer Material Science, LLC)
Address: 1 Covestro Circle
Pittsburgh, PA 15272

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>514,679.89</u>
County:	<u>Marshall</u>		Northing:	<u>4,398,590.65</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Wells Hill Road (Route 22)</u>	
Quadrangle:	<u>New Martinsville 7.5'</u>	Generally used farm name:	<u>TH Exploration III, LLC</u>	
Watershed:	<u>French Creek - Ohio River</u>			

This Notice Shall Include:

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

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 300
Canonsburg, PA 15317
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

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



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

March 15, 2019

Jill M. Newman
Deputy Commissioner

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

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AUG 05 2019

Subject: DOH Permit for the Goudy Well Pad, Marshall County
Goudy 1N-12HU

WV Department of
Environmental Protection

Dear Mr. Martin,

This well site will be accessed from Permit #06-2012-0518 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 2/2 SLS.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

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

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

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



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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

AUG 05 2019

Well No. Goudy 1N-12HU

WV Department of
Environmental Protection

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



**WVDEP OOG
ACCEPTED AS-BUILT**

6 / 19 / 2018

Goudy Well Site
Site Design, Construction Plan, &
Erosion and Sediment Control Plans
Tug Hill Operating
Marshall County
Franklin District
Latitude 39.73678670°
Longitude -80.82878798°
French Creek - Ohio River Watershed

Pertinent Site Information
Goudy Well Site
Emergency Number: 304-845-1920
Franklin District, Marshall County, WV
Watershed: French Creek - Ohio River Watershed
Tug Hill Contact Number: 1-817-632-3400

Property Owner Information - Goudy Well Site. Table with columns: Owner, Parcel ID, Area (Acres), Elevation (Feet), etc.

Exhibit A: Final Design: Issue for Permitting



Grid of well locations with columns: Well ID, Well Type, Well Depth, etc. Lists numerous wells across the site.

Acces Road and Disturbed Area tables. Includes columns for road type, width, and area details.

Project Contacts
Tug Hill Operating
Marshall County
Franklin District
Professional Engineer
Professional Surveyor
Professional Geologist

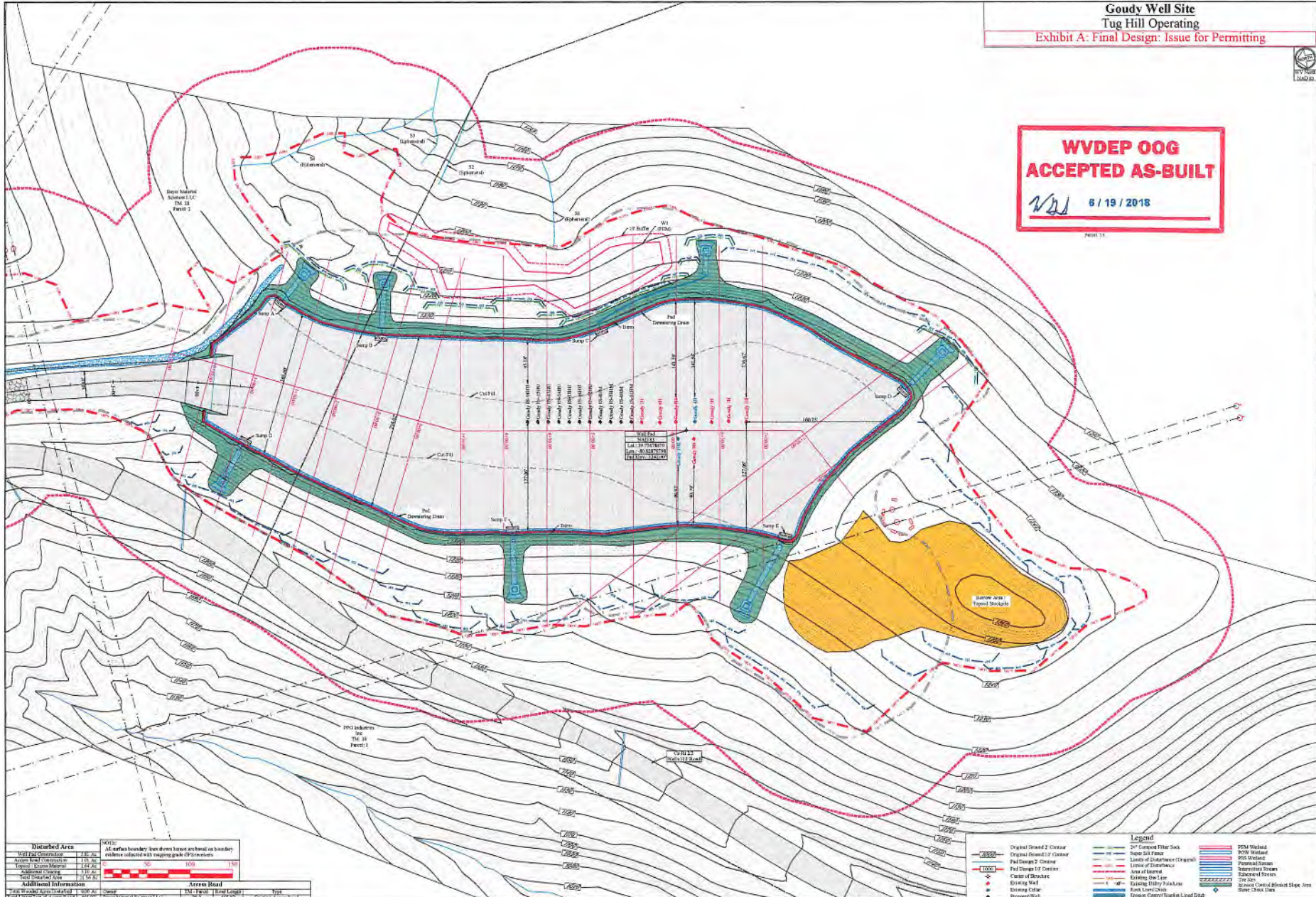
Site Locations (NAD 27) and Site Locations (NAD 83) tables. Columns: Station, Easting, Northing, Elevation.



Well Location Schedule table. Columns: Sheet, Description. Lists sheets V1 through P1 and their corresponding descriptions.

Vertical text on the right side of the page, including 'TUG HILL OPERATING' logo and 'Cover Sheet' information.

**WVDEP OOG
ACCEPTED AS-BUILT**
6/19/2018



Disturbed Area	
Well Pad Construction	2.88 AC
Access Road Construction	1.78 AC
General Excavation Material	1.24 AC
Subtotal Disturbed Area	5.90 AC
Total Disturbed Area	11.50 AC

Access Road	
Design	1.50 AC
Final	1.50 AC
Subtotal Access Road	3.00 AC
Total Access Road	3.00 AC

Legend	
Original Ground 2' Contour	2' Contour Filter Sock
Original Ground 1' Contour	Stone Silt Fence
Proposed 2' Contour	Line of Disturbance (Orange)
Proposed 1' Contour	Line of Disturbance
Center of Structure	Existing Dip Line
Driveway Wall	Existing 18" x 18" x 12" Post Load Cell
Ditching Cut	Drainage Channel/Transect Load Cell
Proposed Well	DEM Wetland
	DEM Wetland
	DEM Wetland
	Proposed Stream
	Streambed Stream
	Subsided Stream
	DEM
	DEM
	DEM

TUG HILL
OPERATING

THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING

K/S
K/S CONSULTANTS
P.O. Box 100
Martinsburg, WV 26150

Site Plan
Goudy Well Site
Franklin District
Marshall County, WV

Date: 05/16/2018
Scale: As Shown
Designed By: ZS
File No:
Sheet 10 of 12