



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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Tuesday, May 11, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANONSBURG, PA 15317

Re: Permit approval for HUDSON S-6HM
47-051-02377-00-00

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

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

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

James A. Martin
Chief

Operator's Well Number: HUDSON S-6HM
Farm Name: CNX LAND LLC
U.S. WELL NUMBER: 47-051-02377-00-00
Horizontal 6A New Drill
Date Issued: 5/11/2021

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.

API Number: _____

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.

05/14/2021

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

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

2) Operator's Well Number: Hudson S-6HM Well Pad Name: Hudson

3) Farm Name/Surface Owner: CNX Land, LLC Public Road Access: Roberts Ridge Road (CR 21)

4) Elevation, current ground: 1,346' Elevation, proposed post-construction: 1,346'

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

(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No Yes *Bay Stiller 3-16-21*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6779' - 6831', thickness of 52' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 6,931'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 17,285'

11) Proposed Horizontal Leg Length: 9,990.28'

12) Approximate Fresh Water Strata Depths: 70; 980'

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: 1,444'

15) Approximate Coal Seam Depths: Sewickley Coal - 888' and Pittsburgh Coal - 974'

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: Marshall County Coal Co./Marshall County Mine
Depth: Pittsburgh coal TVD - 974'; and 372' subsea level
Seam: Pittsburgh
Owner: Murray Energy / Consolidated Coal Company

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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'	259^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	1,080'	1,080'	1,100^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	1,080'	1,080'	1,100^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,877'	2,877'	955^3(CTS)
Production	5 1/2"	NEW	P110	20#	17,285'	17,285'	4,407 ^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,667'		
Liners							

B.S. 3-16-21

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.38	2,740	2,192	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"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47-051 - 02377
OPERATOR WELL NO. Hudson S-6HM
Well Pad Name: Hudson

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

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

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

Well to be completed with approximately 24,970,000 lb proppant and 450,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

B.S. 3-16-21

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 22.94 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.18 acres

23) Describe centralizer placement for each casing string:

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

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.

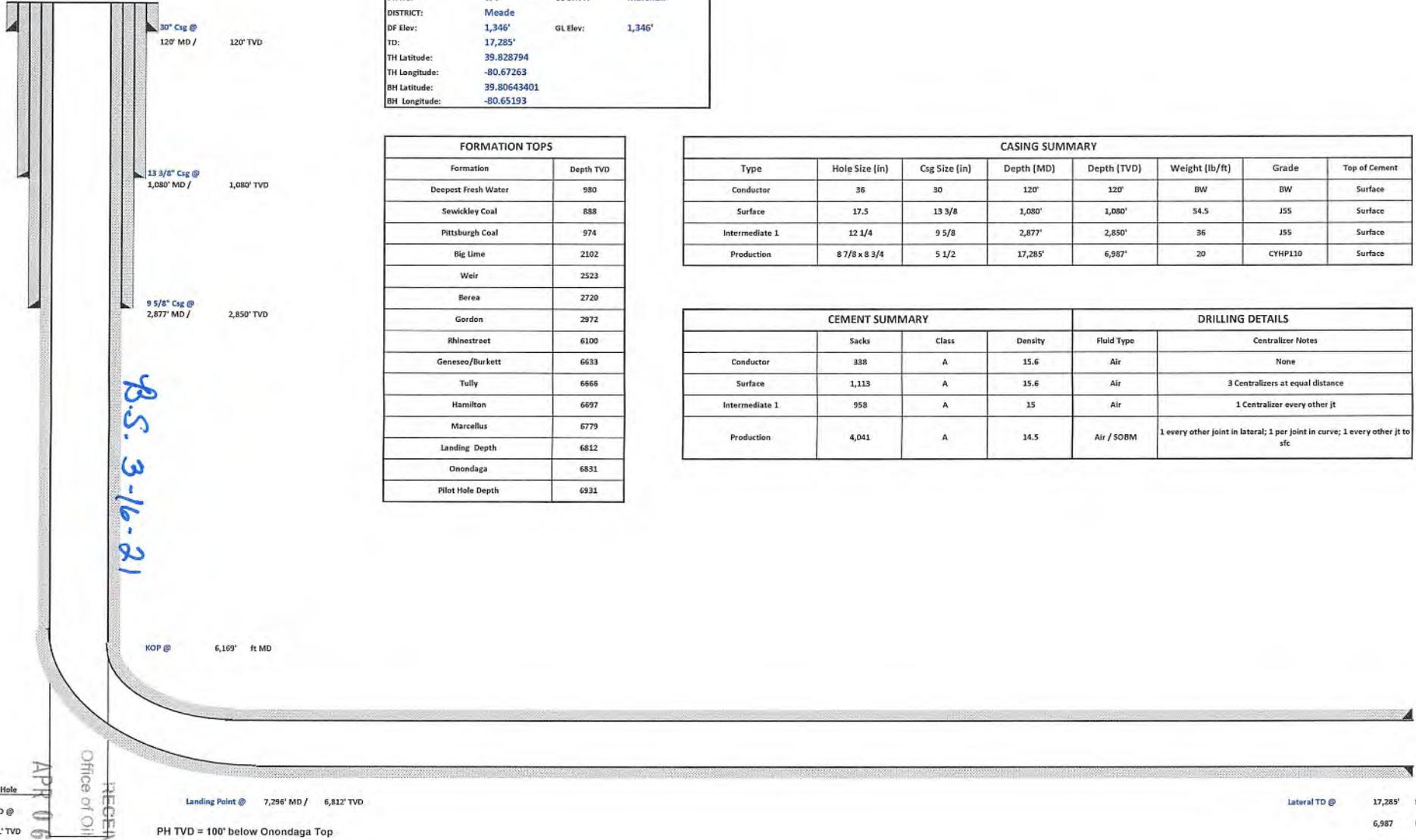


WELL NAME: Hudson S-6HM
STATE: WV **COUNTY:** Marshall
DISTRICT: Meade
DF Elev: 1,346' **GL Elev:** 1,346'
TD: 17,285'
TH Latitude: 39.828794
TH Longitude: -80.67263
BH Latitude: 39.80643401
BH Longitude: -80.65193

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	980
Sewickley Coal	888
Pittsburgh Coal	974
Big Lime	2102
Weir	2523
Berea	2720
Gordon	2972
Rhinstreet	6100
Genesee/Burkett	6633
Tully	6666
Hamilton	6697
Marcellus	6779
Landing Depth	6812
Onondaga	6831
Pilot Hole Depth	6931

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,080'	1,080'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,877'	2,850'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	17,285'	6,987'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,113	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	958	A	15	Air	1 Centralizer every other jt
Production	4,041	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



PH TVD = 100' below Onondaga Top

Lateral TD @ 17,285' ft MD
 6,987' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Hudson S-6HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,080'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,877'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4	17,285'	CTS

Cement

- Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
- Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
- Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
- Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
- 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 = 1.19

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05/14/2021



TUG HILL
OPERATING

Well: Hudson S-06 HM (slot L)
Site: Hudson Alt North
Project: Marshall County, West Virginia
Design: rev5

DESIGN TARGET DETAILS

SECTION DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Hudson 06HM LP r1	6812.00	534.01	847.60	39.83025195	-80.66960397
- plan misses target center by 24.11ft at 7290.41ft MD (6911.98 TVD, 546.18 N, 868.41 E)					
Hudson 06HM PBHL r4	6986.75	-8120.03	5843.21	39.80643400	-80.65193000
- plan hits target center					

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	1501.75	0.00	0.00	1501.75	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	2001.75	10.00	55.00	1999.22	24.96	35.85	2.00	55.000	0.56	Begin 2°/100' build
4	2424.73	14.77	21.36	2412.74	96.38	85.47	2.00	-73.764	-28.31	Begin 14.77° tangent
5	6168.50	14.77	21.36	6032.78	985.34	433.12	0.00	0.000	-546.80	Begin 8°/100' build/turn
6	6895.88	50.00	140.28	6674.35	845.14	665.24	8.00	127.906	-297.43	Begin 10°/100' build/turn
7	7296.06	89.00	150.14	6812.11	541.29	871.23	10.00	15.446	69.52	Begin 89.00° lateral
8	17284.52	89.00	150.14	6986.75	-8120.03	5843.21	0.00	0.000	0003.90	PBHL/TD 17284.52 MD 6986.75 TVD

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 @ 1346.00ft

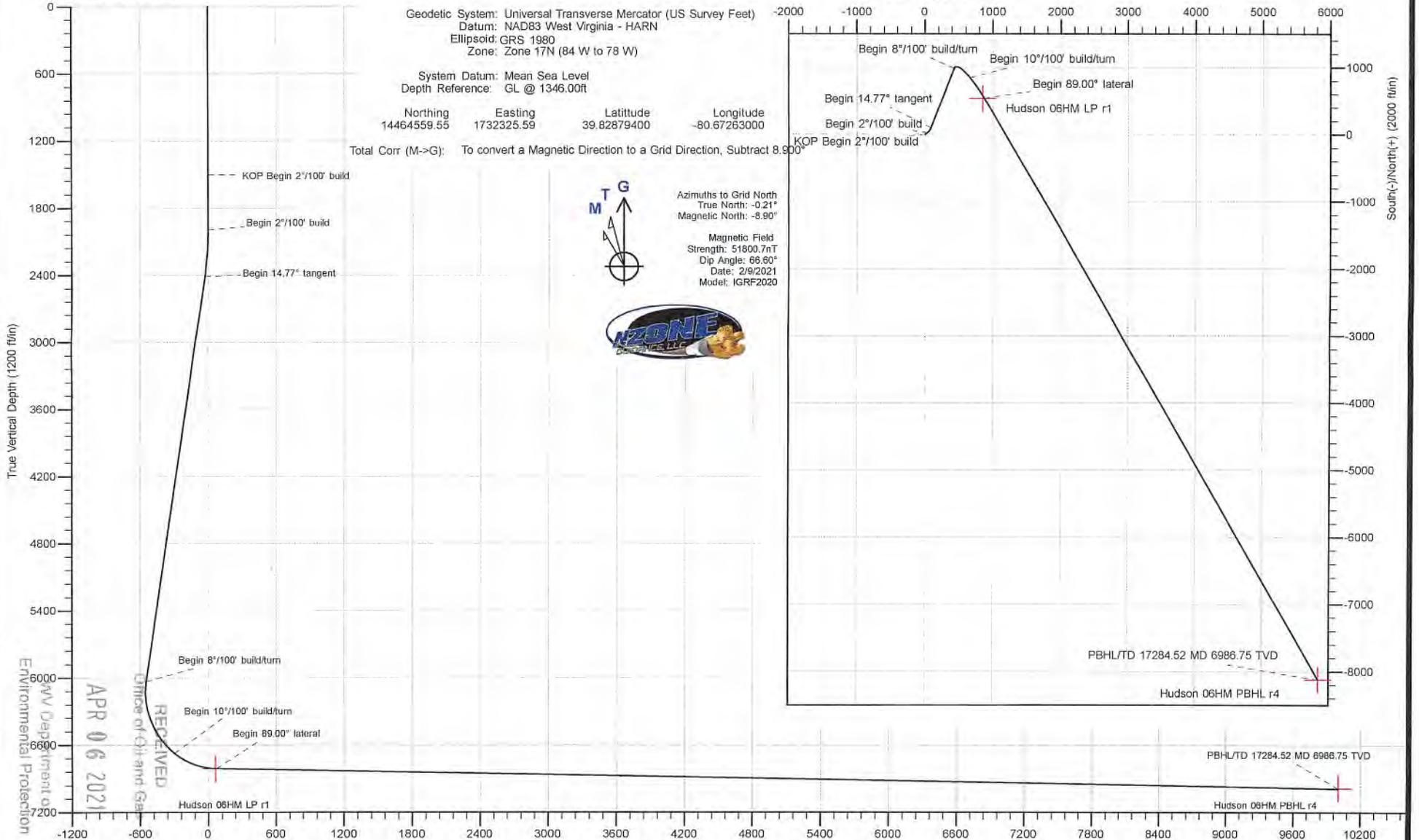
Northing: 14464559.55 Easting: 1732325.59 Latitude: 39.82879400 Longitude: -80.67263000

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.90°



Azimuths to Grid North
True North: -0.21°
Magnetic North: -8.90°

Magnetic Field
Strength: 51600.7nT
Dip Angle: 66.60°
Date: 2/9/2021
Model: IGRF2020



Vertical Section at 144.26° (1200 ft/in)

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Planning Report - Geographic

Database:	Win10Lt_Dec2820_v16	Local Co-ordinate Reference:	Well Hudson S-06 HM (slot L)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1346.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1346.00ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-06 HM (slot L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

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	Hudson Alt North				
Site Position:		Northing:	14,464,552.10 usft	Latitude:	39.82877400
From:	Lat/Long	Easting:	1,732,278.45 usft	Longitude:	-80.67279800
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Hudson S-06 HM (slot L)					
Well Position	+N/-S	0.00 ft	Northing:	14,464,559.55 usft	Latitude:	39.82879400
	+E/-W	0.00 ft	Easting:	1,732,325.59 usft	Longitude:	-80.67263000
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,346.00 ft
Grid Convergence:	0.210 °					

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2/9/2021	-8.690	66.600	51,800.69510138

Design	rev5				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	144.26	

Plan Survey Tool Program	Date	2/19/2021			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,284.52 rev5 (Original Hole)	MWD		
			MWD - Standard		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,501.75	0.00	0.00	1,501.75	0.00	0.00	0.00	0.00	0.00	0.000	
2,001.75	10.00	55.00	1,999.22	24.96	35.65	2.00	2.00	0.00	55.000	
2,424.73	14.77	21.36	2,412.74	96.38	85.47	2.00	1.13	-7.95	-73.764	
6,168.50	14.77	21.36	6,032.78	985.34	433.12	0.00	0.00	0.00	0.000	
6,895.88	50.00	140.28	6,674.35	845.14	665.24	8.00	4.84	16.35	127.906	
7,296.06	89.00	150.14	6,812.11	541.29	871.23	10.00	9.75	2.46	15.446	
17,284.52	89.00	150.14	6,986.75	-8,120.03	5,843.21	0.00	0.00	0.00	0.000	

Planning Report - Geographic

Database:	Win10Lt_Dec2820_v16	Local Co-ordinate Reference:	Well Hudson S-06 HM (slot L)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1346.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1346.00ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-06 HM (slot L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
100.00	0.00	0.00	100.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
200.00	0.00	0.00	200.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
300.00	0.00	0.00	300.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
400.00	0.00	0.00	400.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
500.00	0.00	0.00	500.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
600.00	0.00	0.00	600.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
700.00	0.00	0.00	700.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
800.00	0.00	0.00	800.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
900.00	0.00	0.00	900.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
1,501.75	0.00	0.00	1,501.75	0.00	0.00	14,464,559.55	1,732,325.59	39.82879400	-80.67263000
KOP Begin 2°/100' build									
1,600.00	1.97	55.00	1,599.98	0.97	1.38	14,464,560.52	1,732,326.97	39.82879664	-80.67262507
1,700.00	3.97	55.00	1,699.84	3.93	5.62	14,464,563.49	1,732,331.21	39.82880475	-80.67260994
1,800.00	5.97	55.00	1,799.46	8.90	12.71	14,464,568.45	1,732,338.30	39.82881831	-80.67258463
1,900.00	7.97	55.00	1,898.72	15.85	22.64	14,464,575.41	1,732,348.23	39.82883731	-80.67254916
2,000.00	9.97	55.00	1,997.49	24.79	35.40	14,464,584.34	1,732,360.99	39.82886172	-80.67250358
2,001.75	10.00	55.00	1,999.22	24.96	35.65	14,464,584.52	1,732,361.24	39.82886220	-80.67250269
Begin 2°/100' build									
2,100.00	10.72	44.80	2,095.87	36.34	49.08	14,464,595.89	1,732,374.67	39.82889330	-80.67245472
2,200.00	11.74	35.95	2,193.96	51.17	61.60	14,464,610.72	1,732,387.19	39.82893391	-80.67240993
2,300.00	12.98	28.64	2,291.65	69.26	72.96	14,464,628.82	1,732,398.55	39.82898349	-80.67236924
2,400.00	14.40	22.66	2,388.81	90.60	83.13	14,464,650.16	1,732,408.72	39.82904198	-80.67233272
2,424.73	14.77	21.36	2,412.74	96.38	85.47	14,464,655.93	1,732,411.05	39.82905781	-80.67232433
Begin 14.77° tangent									
2,500.00	14.77	21.36	2,485.53	114.25	92.45	14,464,673.80	1,732,418.04	39.82910683	-80.67229920
2,600.00	14.77	21.36	2,582.22	137.99	101.74	14,464,697.55	1,732,427.33	39.82917194	-80.67226581
2,700.00	14.77	21.36	2,678.92	161.74	111.03	14,464,721.29	1,732,436.62	39.82923706	-80.67223243
2,800.00	14.77	21.36	2,775.61	185.49	120.31	14,464,745.04	1,732,445.90	39.82930218	-80.67219904
2,900.00	14.77	21.36	2,872.31	209.23	129.60	14,464,768.78	1,732,455.19	39.82936729	-80.67216565
3,000.00	14.77	21.36	2,969.00	232.98	138.89	14,464,792.53	1,732,464.48	39.82943241	-80.67213227
3,100.00	14.77	21.36	3,065.70	256.72	148.17	14,464,816.27	1,732,473.76	39.82949752	-80.67209888
3,200.00	14.77	21.36	3,162.39	280.47	157.46	14,464,840.02	1,732,483.05	39.82956264	-80.67206549
3,300.00	14.77	21.36	3,259.09	304.21	166.75	14,464,863.76	1,732,492.33	39.82962776	-80.67203211
3,400.00	14.77	21.36	3,355.78	327.96	176.03	14,464,887.51	1,732,501.62	39.82969287	-80.67199872
3,500.00	14.77	21.36	3,452.48	351.70	185.32	14,464,911.25	1,732,510.91	39.82975799	-80.67196533
3,600.00	14.77	21.36	3,549.17	375.45	194.60	14,464,935.00	1,732,520.19	39.82982310	-80.67193195
3,700.00	14.77	21.36	3,645.87	399.19	203.89	14,464,958.74	1,732,529.48	39.82988822	-80.67189856
3,800.00	14.77	21.36	3,742.56	422.94	213.18	14,464,982.49	1,732,538.77	39.82995334	-80.67186517
3,900.00	14.77	21.36	3,839.26	446.68	222.46	14,465,006.24	1,732,548.05	39.83001845	-80.67183179
4,000.00	14.77	21.36	3,935.95	470.43	231.75	14,465,029.98	1,732,557.34	39.83008357	-80.67179840
4,100.00	14.77	21.36	4,032.65	494.17	241.04	14,465,053.73	1,732,566.63	39.83014868	-80.67176501
4,200.00	14.77	21.36	4,129.34	517.92	250.32	14,465,077.47	1,732,575.91	39.83021380	-80.67173162
4,300.00	14.77	21.36	4,226.04	541.66	259.61	14,465,101.22	1,732,585.20	39.83027892	-80.67169824
4,400.00	14.77	21.36	4,322.73	565.41	268.90	14,465,124.96	1,732,594.48	39.83034403	-80.67166485
4,500.00	14.77	21.36	4,419.43	589.15	278.18	14,465,148.71	1,732,603.77	39.83040915	-80.67163146
4,600.00	14.77	21.36	4,516.12	612.90	287.47	14,465,172.45	1,732,613.06	39.83047426	-80.67159807
4,700.00	14.77	21.36	4,612.82	636.64	296.75	14,465,196.20	1,732,622.34	39.83053938	-80.67156469

Planning Report - Geographic

Database:	Win10LT_Dec2820_v16	Local Co-ordinate Reference:	Well Hudson S-06 HM (slot L)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1346.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1346.00ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-06 HM (slot L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	14.77	21.36	4,709.51	660.39	306.04	14,465,219.94	1,732,631.63	39.83060450	-80.67153130
4,900.00	14.77	21.36	4,806.21	684.13	315.33	14,465,243.69	1,732,640.92	39.83066961	-80.67149791
5,000.00	14.77	21.36	4,902.90	707.88	324.61	14,465,267.43	1,732,650.20	39.83073473	-80.67146452
5,100.00	14.77	21.36	4,999.60	731.62	333.90	14,465,291.18	1,732,659.49	39.83079984	-80.67143113
5,200.00	14.77	21.36	5,096.29	755.37	343.19	14,465,314.92	1,732,668.78	39.83086496	-80.67139775
5,300.00	14.77	21.36	5,192.99	779.11	352.47	14,465,338.67	1,732,678.06	39.83093008	-80.67136436
5,400.00	14.77	21.36	5,289.68	802.86	361.76	14,465,362.41	1,732,687.35	39.83099519	-80.67133097
5,500.00	14.77	21.36	5,386.38	826.61	371.04	14,465,386.16	1,732,696.63	39.83106031	-80.67129758
5,600.00	14.77	21.36	5,483.07	850.35	380.33	14,465,409.90	1,732,705.92	39.83112542	-80.67126419
5,700.00	14.77	21.36	5,579.77	874.10	389.62	14,465,433.65	1,732,715.21	39.83119054	-80.67123080
5,800.00	14.77	21.36	5,676.46	897.84	398.90	14,465,457.39	1,732,724.49	39.83125566	-80.67119742
5,900.00	14.77	21.36	5,773.16	921.59	408.19	14,465,481.14	1,732,733.78	39.83132077	-80.67116403
6,000.00	14.77	21.36	5,869.85	945.33	417.48	14,465,504.88	1,732,743.07	39.83138589	-80.67113064
6,100.00	14.77	21.36	5,966.55	969.08	426.76	14,465,528.63	1,732,752.35	39.83145100	-80.67109725
6,168.50	14.77	21.36	6,032.78	985.34	433.12	14,465,544.89	1,732,758.71	39.83149560	-80.67107438
Begin 8°/100' build/turn									
6,200.00	13.37	29.99	6,063.34	992.24	436.41	14,465,551.79	1,732,762.00	39.83151451	-80.67106259
6,300.00	11.68	66.73	6,161.11	1,006.27	451.51	14,465,565.82	1,732,777.10	39.83155290	-80.67100862
6,400.00	14.84	99.41	6,258.57	1,008.18	473.48	14,465,567.73	1,732,799.07	39.83155792	-80.67093034
6,500.00	20.75	117.37	6,353.81	997.92	501.89	14,465,557.48	1,732,827.48	39.83152947	-80.67082927
6,600.00	27.69	127.17	6,444.99	975.71	536.19	14,465,535.26	1,732,861.78	39.83146811	-80.67070738
6,700.00	35.06	133.19	6,530.33	941.96	575.71	14,465,501.51	1,732,901.30	39.83137502	-80.67056704
6,800.00	42.63	137.31	6,608.17	897.33	619.69	14,465,456.89	1,732,945.26	39.83125203	-80.67041100
6,895.88	50.00	140.28	6,674.35	845.14	665.24	14,465,404.69	1,732,990.83	39.83110824	-80.67024943
Begin 10°/100' build/turn									
6,900.00	50.40	140.42	6,676.99	842.70	667.26	14,465,402.26	1,732,992.85	39.83110152	-80.67024227
7,000.00	60.08	143.46	6,733.94	778.03	717.73	14,465,337.58	1,733,043.32	39.83092340	-80.67006334
7,100.00	69.82	145.96	6,776.23	704.13	769.94	14,465,263.68	1,733,095.52	39.83071993	-80.66987836
7,200.00	79.60	148.16	6,802.57	623.26	822.29	14,465,182.81	1,733,147.87	39.83049730	-80.66969296
7,296.06	89.00	150.14	6,812.11	541.29	871.23	14,465,100.84	1,733,196.82	39.83027169	-80.66951970
Begin 89.00° lateral									
7,300.00	89.00	150.14	6,812.18	537.87	873.19	14,465,097.42	1,733,198.78	39.83026229	-80.66951276
7,400.00	89.00	150.14	6,813.93	451.16	922.97	14,465,010.71	1,733,248.56	39.83002365	-80.66933660
7,500.00	89.00	150.14	6,815.67	364.44	972.75	14,464,924.00	1,733,298.33	39.82978501	-80.66916044
7,600.00	89.00	150.14	6,817.42	277.73	1,022.52	14,464,837.28	1,733,348.11	39.82954637	-80.66898428
7,700.00	89.00	150.14	6,819.17	191.02	1,072.30	14,464,750.57	1,733,397.89	39.82930774	-80.66880812
7,800.00	89.00	150.14	6,820.92	104.30	1,122.08	14,464,663.86	1,733,447.67	39.82906910	-80.66863197
7,900.00	89.00	150.14	6,822.67	17.59	1,171.86	14,464,577.14	1,733,497.44	39.82883046	-80.66845581
8,000.00	89.00	150.14	6,824.42	-69.12	1,221.63	14,464,490.43	1,733,547.22	39.82859181	-80.66827966
8,100.00	89.00	150.14	6,826.17	-155.84	1,271.41	14,464,403.72	1,733,597.00	39.82835317	-80.66810351
8,200.00	89.00	150.14	6,827.91	-242.55	1,321.19	14,464,317.00	1,733,646.77	39.82811453	-80.66792736
8,300.00	89.00	150.14	6,829.66	-329.26	1,370.96	14,464,230.29	1,733,696.55	39.82787589	-80.66775121
8,400.00	89.00	150.14	6,831.41	-415.98	1,420.74	14,464,143.58	1,733,746.33	39.82763725	-80.66757506
8,500.00	89.00	150.14	6,833.16	-502.69	1,470.52	14,464,056.87	1,733,796.11	39.82739861	-80.66739892
8,600.00	89.00	150.14	6,834.91	-589.40	1,520.30	14,463,970.15	1,733,845.88	39.82715997	-80.66722277
8,700.00	89.00	150.14	6,836.66	-676.12	1,570.07	14,463,883.44	1,733,895.66	39.82692132	-80.66704663
8,800.00	89.00	150.14	6,838.40	-762.83	1,619.85	14,463,796.73	1,733,945.44	39.82668268	-80.66687048
8,900.00	89.00	150.14	6,840.15	-849.54	1,669.63	14,463,710.01	1,733,995.21	39.82644404	-80.66669434
9,000.00	89.00	150.14	6,841.90	-936.25	1,719.41	14,463,623.30	1,734,044.99	39.82620539	-80.66651820
9,100.00	89.00	150.14	6,843.65	-1,022.97	1,769.18	14,463,536.59	1,734,094.77	39.82596675	-80.66634206
9,200.00	89.00	150.14	6,845.40	-1,109.68	1,818.96	14,463,449.87	1,734,144.55	39.82572811	-80.66616592
9,300.00	89.00	150.14	6,847.15	-1,196.39	1,868.74	14,463,363.16	1,734,194.32	39.82548946	-80.66598978
9,400.00	89.00	150.14	6,848.89	-1,283.11	1,918.51	14,463,276.45	1,734,244.10	39.82525082	-80.66581365
9,500.00	89.00	150.14	6,850.64	-1,369.82	1,968.29	14,463,189.74	1,734,293.88	39.82501217	-80.66563751

Planning Report - Geographic

Database: Win10Lt_Dec2820_v16
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Hudson Alt North
 Well: Hudson S-06 HM (slot L)
 Wellbore: Original Hole
 Design: rev5

Local Co-ordinate Reference: Well Hudson S-06 HM (slot L)
 TVD Reference: GL @ 1346.00ft
 MD Reference: GL @ 1346.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,600.00	89.00	150.14	6,852.39	-1,456.53	2,018.07	14,463,103.02	1,734,343.65	39.82477353	-80.66546138
9,700.00	89.00	150.14	6,854.14	-1,543.25	2,067.85	14,463,016.31	1,734,393.43	39.82453489	-80.66528525
9,800.00	89.00	150.14	6,855.89	-1,629.96	2,117.62	14,462,929.60	1,734,443.21	39.82429624	-80.66510912
9,900.00	89.00	150.14	6,857.64	-1,716.67	2,167.40	14,462,842.88	1,734,492.99	39.82405759	-80.66493299
10,000.00	89.00	150.14	6,859.39	-1,803.39	2,217.18	14,462,756.17	1,734,542.76	39.82381895	-80.66475686
10,100.00	89.00	150.14	6,861.13	-1,890.10	2,266.95	14,462,669.46	1,734,592.54	39.82358030	-80.66458073
10,200.00	89.00	150.14	6,862.88	-1,976.81	2,316.73	14,462,582.75	1,734,642.32	39.82334166	-80.66440461
10,300.00	89.00	150.14	6,864.63	-2,063.53	2,366.51	14,462,496.03	1,734,692.09	39.82310301	-80.66422848
10,400.00	89.00	150.14	6,866.38	-2,150.24	2,416.29	14,462,409.32	1,734,741.87	39.82286436	-80.66405236
10,500.00	89.00	150.14	6,868.13	-2,236.95	2,466.06	14,462,322.61	1,734,791.65	39.82262571	-80.66387623
10,600.00	89.00	150.14	6,869.88	-2,323.67	2,515.84	14,462,235.89	1,734,841.43	39.82238707	-80.66370011
10,700.00	89.00	150.14	6,871.62	-2,410.38	2,565.62	14,462,149.18	1,734,891.20	39.82214842	-80.66352399
10,800.00	89.00	150.14	6,873.37	-2,497.09	2,615.40	14,462,062.47	1,734,940.98	39.82190977	-80.66334787
10,900.00	89.00	150.14	6,875.12	-2,583.81	2,665.17	14,461,975.75	1,734,990.76	39.82167112	-80.66317176
11,000.00	89.00	150.14	6,876.87	-2,670.52	2,714.95	14,461,889.04	1,735,040.53	39.82143247	-80.66299564
11,100.00	89.00	150.14	6,878.62	-2,757.23	2,764.73	14,461,802.33	1,735,090.31	39.82119383	-80.66281953
11,200.00	89.00	150.14	6,880.37	-2,843.94	2,814.50	14,461,715.62	1,735,140.09	39.82095518	-80.66264341
11,300.00	89.00	150.14	6,882.11	-2,930.66	2,864.28	14,461,628.90	1,735,189.87	39.82071653	-80.66246730
11,400.00	89.00	150.14	6,883.86	-3,017.37	2,914.06	14,461,542.19	1,735,239.64	39.82047788	-80.66229119
11,500.00	89.00	150.14	6,885.61	-3,104.08	2,963.84	14,461,455.48	1,735,289.42	39.82023923	-80.66211508
11,600.00	89.00	150.14	6,887.36	-3,190.80	3,013.61	14,461,368.76	1,735,339.20	39.82000058	-80.66193897
11,700.00	89.00	150.14	6,889.11	-3,277.51	3,063.39	14,461,282.05	1,735,388.97	39.81976193	-80.66176286
11,800.00	89.00	150.14	6,890.86	-3,364.22	3,113.17	14,461,195.34	1,735,438.75	39.81952328	-80.66158675
11,900.00	89.00	150.14	6,892.61	-3,450.94	3,162.94	14,461,108.62	1,735,488.53	39.81928462	-80.66141065
12,000.00	89.00	150.14	6,894.35	-3,537.65	3,212.72	14,461,021.91	1,735,538.30	39.81904597	-80.66123454
12,100.00	89.00	150.14	6,896.10	-3,624.36	3,262.50	14,460,935.20	1,735,588.08	39.81880732	-80.66105844
12,200.00	89.00	150.14	6,897.85	-3,711.08	3,312.28	14,460,848.49	1,735,637.86	39.81856867	-80.66088234
12,300.00	89.00	150.14	6,899.60	-3,797.79	3,362.05	14,460,761.77	1,735,687.64	39.81833002	-80.66070624
12,400.00	89.00	150.14	6,901.35	-3,884.50	3,411.83	14,460,675.06	1,735,737.41	39.81809136	-80.66053014
12,500.00	89.00	150.14	6,903.10	-3,971.22	3,461.61	14,460,588.35	1,735,787.19	39.81785271	-80.66035404
12,600.00	89.00	150.14	6,904.84	-4,057.93	3,511.38	14,460,501.63	1,735,836.97	39.81761406	-80.66017794
12,700.00	89.00	150.14	6,906.59	-4,144.64	3,561.16	14,460,414.92	1,735,886.74	39.81737541	-80.66000185
12,800.00	89.00	150.14	6,908.34	-4,231.36	3,610.94	14,460,328.21	1,735,936.52	39.81713675	-80.65982575
12,900.00	89.00	150.14	6,910.09	-4,318.07	3,660.72	14,460,241.49	1,735,986.30	39.81689810	-80.65964966
13,000.00	89.00	150.14	6,911.84	-4,404.78	3,710.49	14,460,154.78	1,736,036.08	39.81665944	-80.65947357
13,100.00	89.00	150.14	6,913.59	-4,491.49	3,760.27	14,460,068.07	1,736,085.85	39.81642079	-80.65929748
13,200.00	89.00	150.14	6,915.34	-4,578.21	3,810.05	14,459,981.36	1,736,135.63	39.81618214	-80.65912139
13,300.00	89.00	150.14	6,917.08	-4,664.92	3,859.83	14,459,894.64	1,736,185.41	39.81594348	-80.65894530
13,400.00	89.00	150.14	6,918.83	-4,751.63	3,909.60	14,459,807.93	1,736,235.18	39.81570483	-80.65876921
13,500.00	89.00	150.14	6,920.58	-4,838.35	3,959.38	14,459,721.22	1,736,284.96	39.81546617	-80.65859312
13,600.00	89.00	150.14	6,922.33	-4,925.06	4,009.16	14,459,634.50	1,736,334.74	39.81522751	-80.65841704
13,700.00	89.00	150.14	6,924.08	-5,011.77	4,058.93	14,459,547.79	1,736,384.52	39.81498886	-80.65824096
13,800.00	89.00	150.14	6,925.83	-5,098.49	4,108.71	14,459,461.08	1,736,434.29	39.81475020	-80.65806487
13,900.00	89.00	150.14	6,927.57	-5,185.20	4,158.49	14,459,374.36	1,736,484.07	39.81451155	-80.65788879
14,000.00	89.00	150.14	6,929.32	-5,271.91	4,208.27	14,459,287.65	1,736,533.85	39.81427289	-80.65771271
14,100.00	89.00	150.14	6,931.07	-5,358.63	4,258.04	14,459,200.94	1,736,583.62	39.81403423	-80.65753663
14,200.00	89.00	150.14	6,932.82	-5,445.34	4,307.82	14,459,114.23	1,736,633.40	39.81379557	-80.65736056
14,300.00	89.00	150.14	6,934.57	-5,532.05	4,357.60	14,459,027.51	1,736,683.18	39.81355692	-80.65718448
14,400.00	89.00	150.14	6,936.32	-5,618.77	4,407.37	14,458,940.80	1,736,732.96	39.81331826	-80.65700840
14,500.00	89.00	150.14	6,938.06	-5,705.48	4,457.15	14,458,854.09	1,736,782.73	39.81307960	-80.65683233
14,600.00	89.00	150.14	6,939.81	-5,792.19	4,506.93	14,458,767.37	1,736,832.51	39.81284094	-80.65665626
14,700.00	89.00	150.14	6,941.56	-5,878.91	4,556.71	14,458,680.66	1,736,882.29	39.81260228	-80.65648019
14,800.00	89.00	150.14	6,943.31	-5,965.62	4,606.48	14,458,593.95	1,736,932.06	39.81236362	-80.65630412
14,900.00	89.00	150.14	6,945.06	-6,052.33	4,656.26	14,458,507.23	1,736,981.84	39.81212497	-80.65612805
15,000.00	89.00	150.14	6,946.81	-6,139.04	4,706.04	14,458,420.52	1,737,031.62	39.81188631	-80.65595198

Planning Report - Geographic

Database:	Win10LT_Dec2820_v16	Local Co-ordinate Reference:	Well Hudson S-06 HM (slot L)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1346.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1346.00ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-06 HM (slot L)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev5		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,100.00	89.00	150.14	6,948.56	-6,225.76	4,755.82	14,458,333.81	1,737,081.40	39.81164765	-80.65577591
15,200.00	89.00	150.14	6,950.30	-6,312.47	4,805.59	14,458,247.10	1,737,131.17	39.81140899	-80.65559985
15,300.00	89.00	150.14	6,952.05	-6,399.18	4,855.37	14,458,160.38	1,737,180.95	39.81117033	-80.65542378
15,400.00	89.00	150.14	6,953.80	-6,485.90	4,905.15	14,458,073.67	1,737,230.73	39.81093166	-80.65524772
15,500.00	89.00	150.14	6,955.55	-6,572.61	4,954.92	14,457,986.96	1,737,280.50	39.81069300	-80.65507166
15,600.00	89.00	150.14	6,957.30	-6,659.32	5,004.70	14,457,900.24	1,737,330.28	39.81045434	-80.65489560
15,700.00	89.00	150.14	6,959.05	-6,746.04	5,054.48	14,457,813.53	1,737,380.06	39.81021568	-80.65471954
15,800.00	89.00	150.14	6,960.79	-6,832.75	5,104.26	14,457,726.82	1,737,429.84	39.80997702	-80.65454348
15,900.00	89.00	150.14	6,962.54	-6,919.46	5,154.03	14,457,640.10	1,737,479.61	39.80973836	-80.65436742
16,000.00	89.00	150.14	6,964.29	-7,006.18	5,203.81	14,457,553.39	1,737,529.39	39.80949970	-80.65419137
16,100.00	89.00	150.14	6,966.04	-7,092.89	5,253.59	14,457,466.68	1,737,579.17	39.80926103	-80.65401531
16,200.00	89.00	150.14	6,967.79	-7,179.60	5,303.36	14,457,379.97	1,737,628.94	39.80902237	-80.65383926
16,300.00	89.00	150.14	6,969.54	-7,266.32	5,353.14	14,457,293.25	1,737,678.72	39.80878371	-80.65366321
16,400.00	89.00	150.14	6,971.28	-7,353.03	5,402.92	14,457,206.54	1,737,728.50	39.80854504	-80.65348716
16,500.00	89.00	150.14	6,973.03	-7,439.74	5,452.70	14,457,119.83	1,737,778.28	39.80830638	-80.65331111
16,600.00	89.00	150.14	6,974.78	-7,526.46	5,502.47	14,457,033.11	1,737,828.05	39.80806772	-80.65313506
16,700.00	89.00	150.14	6,976.53	-7,613.17	5,552.25	14,456,946.40	1,737,877.83	39.80782905	-80.65295901
16,800.00	89.00	150.14	6,978.28	-7,699.88	5,602.03	14,456,859.69	1,737,927.61	39.80759039	-80.65278297
16,900.00	89.00	150.14	6,980.03	-7,786.59	5,651.81	14,456,772.98	1,737,977.38	39.80735172	-80.65260692
17,000.00	89.00	150.14	6,981.78	-7,873.31	5,701.58	14,456,686.26	1,738,027.16	39.80711306	-80.65243088
17,100.00	89.00	150.14	6,983.52	-7,960.02	5,751.36	14,456,599.55	1,738,076.94	39.80687439	-80.65225483
17,200.00	89.00	150.14	6,985.27	-8,046.73	5,801.14	14,456,512.84	1,738,126.72	39.80663573	-80.65207879
17,284.52	89.00	150.14	6,986.75	-8,120.02	5,843.21	14,456,439.55	1,738,168.79	39.80643401	-80.65193000

PBHL/TD 17284.52 MD 6986.75 TVD

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Hudson 06HM LP r1 - hit/miss target - Shape - Point	0.00	0.00	6,812.00	534.01	847.60	14,465,093.56	1,733,173.19	39.83025195	-80.66960397
- plan misses target center by 24.12ft at 7290.20ft MD (6811.98 TVD, 546.36 N, 868.31 E)									
Hudson 06HM PBHL r4 - plan hits target center - Point	0.00	0.00	6,986.75	-8,120.03	5,843.21	14,456,439.54	1,738,168.79	39.80643400	-80.65193000

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,501.75	1,501.75	0.00	0.00	KOP Begin 2°/100' build
2,001.75	1,999.22	24.96	35.65	Begin 2°/100' build
2,424.73	2,412.74	96.38	85.47	Begin 14.77° tangent
6,168.50	6,032.78	985.34	433.12	Begin 8°/100' build/turn
6,895.88	6,674.35	845.14	665.24	Begin 10°/100' build/turn
7,296.06	6,812.11	541.29	871.23	Begin 89.00° lateral
17,284.52	6,986.75	-8,120.02	5,843.21	PBHL/TD 17284.52 MD 6986.75 TVD

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

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

Data Sources Reviewed:

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

Contacted Adam Picard 724-485-9331, apicard@dpslandservices.com, DPS GIS (02/16/2021) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it is the best publicly available. See attached map he provided.

Request maps for:

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

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

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

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WV Department of
Environment Page 1 of 8

05/14/2021

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102248	Tug Hill Operating, LLC	6848' TVD, proposed	none	none	Yes, this is a proposed well in the Marcellus. Once completed proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	A permitted well on the pad that is not drilled or perforated.
4705102249	Tug Hill Operating, LLC	6862' TVD, proposed	none	none	Yes, this is a proposed well in the Marcellus. Once completed proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	A permitted well on the pad that is not drilled or perforated.
4705102250	Tug Hill Operating, LLC	6870' TVD, proposed	none	none	Yes, this is a proposed well in the Marcellus. Once completed proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	A permitted well on the pad that is not drilled or perforated.
4705102251	Tug Hill Operating, LLC	6886' TVD, proposed	none	none	Yes, this is a proposed well in the Marcellus. Once completed proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	A permitted well on the pad that is not drilled or perforated.

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API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102291	Tug Hill Operating, LLC	6914' TVD, proposed	none	none	Yes, this is a proposed well in the Marcellus. Once completed proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	A permitted well on the pad that is not drilled or perforated.
4705102292	Tug Hill Operating, LLC	11923' TVD, proposed	none	none	No, this is a proposed well in the Point Pleasant. Once completed the well will not be deep enough to be within the expected fracture propagation from a Marcellus stimulation.	A permitted well on the pad that is not drilled or perforated.
4705102293	Tug Hill Operating, LLC	11961' TVD, proposed	none	none	No, this is a proposed well in the Point Pleasant. Once completed the well will not be deep enough to be within the expected fracture propagation from a Marcellus stimulation.	A permitted well on the pad that is not drilled or perforated.
4705102296	Tug Hill Operating, LLC	11901' TVD, proposed	none	none	No, this is a proposed well in the Point Pleasant. Once completed the well will not be deep enough to be within the expected fracture propagation from a Marcellus stimulation.	A permitted well on the pad that is not drilled or perforated.
4705170638	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete.

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WV Geological & Economic Survey

Well: County = 51 Permit = 02248

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102248	Marshall	2248	Meade	Glen Easton	Cameron	39.828765	-80.672708	528007.2	4408803.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102248	1 As Proposed	528915	4405569.9	-80.662243	39.799602

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
4705102248	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-1HM	Hudson		Charlene L Barker et al	Tug Hill Operating, LLC	6848	Marcellus Fm

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	KOD	G_BEFO	G_AFTO
4705102248	-/-	-/-	1370	Ground Level														

WV Geological & Economic Survey

Well: County = 51 Permit = 02249

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102249	Marshall	2249	Meade	Glen Easton	Cameron	39.828798	-80.672705	528007.5	4408807

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102249	1 As Proposed	529095.5	4405714.6	-80.660128	39.800899

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
4705102249	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-2HM	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	6862	Marcellus Fm

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	KOD	G_BEFO	G_AFTO
4705102249	-/-	-/-	1370	Ground Level														

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Well: County = 51 Permit = 02250

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102250	Marshall	2250	Meade	Glen Easton	Cameron	39.828831	-80.672702	528007.7	4408810.7

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102250	1 As Proposed	528759.9	4406752.9	-80.664003	39.810266

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	TI
4705102250	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-3HM	Hudson		Charlene L Barker et al	Tug Hill Operating, LLC	6870	Marcellus Fm	

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	KOD	G_BEF	G_AFT	O
4705102250	-/-	-/-	1370	Ground Level															

WV Geological & Economic Survey

Well: County = 51 Permit = 02251

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102251	Marshall	2251	Meade	Glen Easton	Cameron	39.828864	-80.672698	528008.1	4408814.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102251	1 As Proposed	528811.5	4407120.8	-80.663384	39.813579

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	TI
4705102251	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-4HM	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	6886	Marcellus Fm	

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	KOD	G_BEF	G_AFT	O
4705102251	-/-	-/-	1370	Ground Level															

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Well: County = 51 Permit = 02291

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102291	Marshall	2291	Meade	Glen Easton	Cameron	39.828761	-80.672633	528013.7	4408802.9

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102291	1 As Proposed	528013.7	4408802.9	-80.672633	39.828761

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
4705102291	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-5HM	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	6914	Marcellus Fm

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	KOD	G_BEFO	G_AFTO
4705102291	-/-	-/-	1366	Ground Level														

WV Geological & Economic Survey

Well: County = 51 Permit = 02292

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102292	Marshall	2292	Meade	Glen Easton	Cameron	39.828733	-80.672711	528007	4408799.8

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102292	1 As Proposed	528726.7	4406996.2	-80.66438	39.812459

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
4705102292	-/-	Dvtd Wrkd Ovr	Permitted	CNX Land LLC		S-12HU	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	11923	Pt Pleasant Fm
4705102292	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-12HU	Hudson		C L Baker et al	Tug Hill Operating, LLC	11923	Pt Pleasant Fm

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	KOD	G_BEFO	G_AFTO
4705102292	-/-	-/-	1370	Ground Level														
4705102292	-/-	-/-	1370	Ground Level														

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WV Geological & Economic Survey

Well: County = 51 Permit = 02293

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102293	Marshall	2293	Meade	Gen Easton	Cameron	39.828667	-80.672718	528006.4	4408792.5

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102293	1 As Proposed	528974.7	4407331.6	-80.661468	39.815472

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
4705102293	-/-	Dvtd Wrkd Ovr	Permitted	CNX Land LLC		S-13HU	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	11957	Pt Pleasant Fm
4705102293	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-13HU	Hudson		C L Baker et al	Tug Hill Operating, LLC	11961	Pt Pleasant Fm

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	KOD	G_BEF	G_AFT	O
4705102293	-/-	-/-	1370	Ground Level															
4705102293	-/-	-/-	1370	Ground Level															

WV Geological & Economic Survey

Well: County = 51 Permit = 02296

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705102296	Marshall	2296	Meade	Glen Easton	Cameron	39.8287	-80.672714	528006.8	4408796.1

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705102296	1 As Proposed	529023.4	4405715.4	-80.66097	39.800909

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
4705102296	-/-	Dvtd Orgnl Loc	Permitted	CNX Land LLC		S-11HU	Hudson		C L Baker et al	Tug Hill Operating, LLC	11901	Pt Pleasant Fm
4705102296	-/-	Dvtd Wrkd Ovr	Permitted	CNX Land LLC		S-11HU	Hudson		Charlene L Baker et al	Tug Hill Operating, LLC	11901	Pt Pleasant Fm

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	KOD	G_BEF	G_AFT	O
4705102296	-/-	-/-	1370	Ground Level															
4705102296	-/-	-/-	1370	Ground Level															

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 Environmental Protection

WV Geological & Economic Survey

Well: County = 51 Permit = 70638

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705170638	Marshall	70638	Meade	Glen Easton	Cameron	39.815704	-80.659964	529103.3	4407357.8

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170638	--		unknown	Prpty Map John Chapman Jr		1225				----- unknown -----			

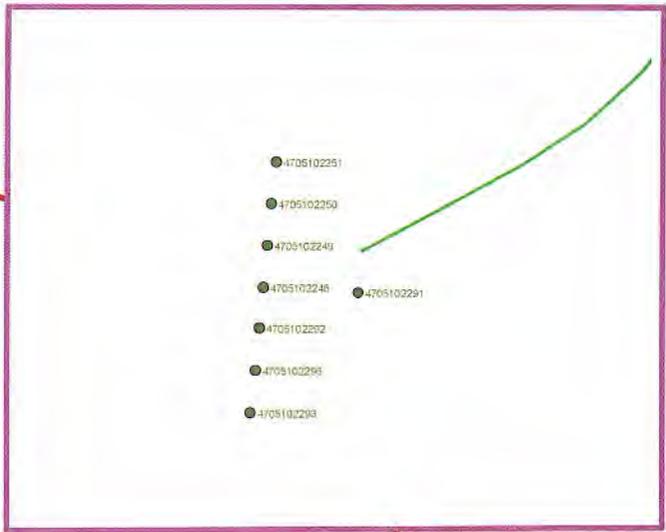
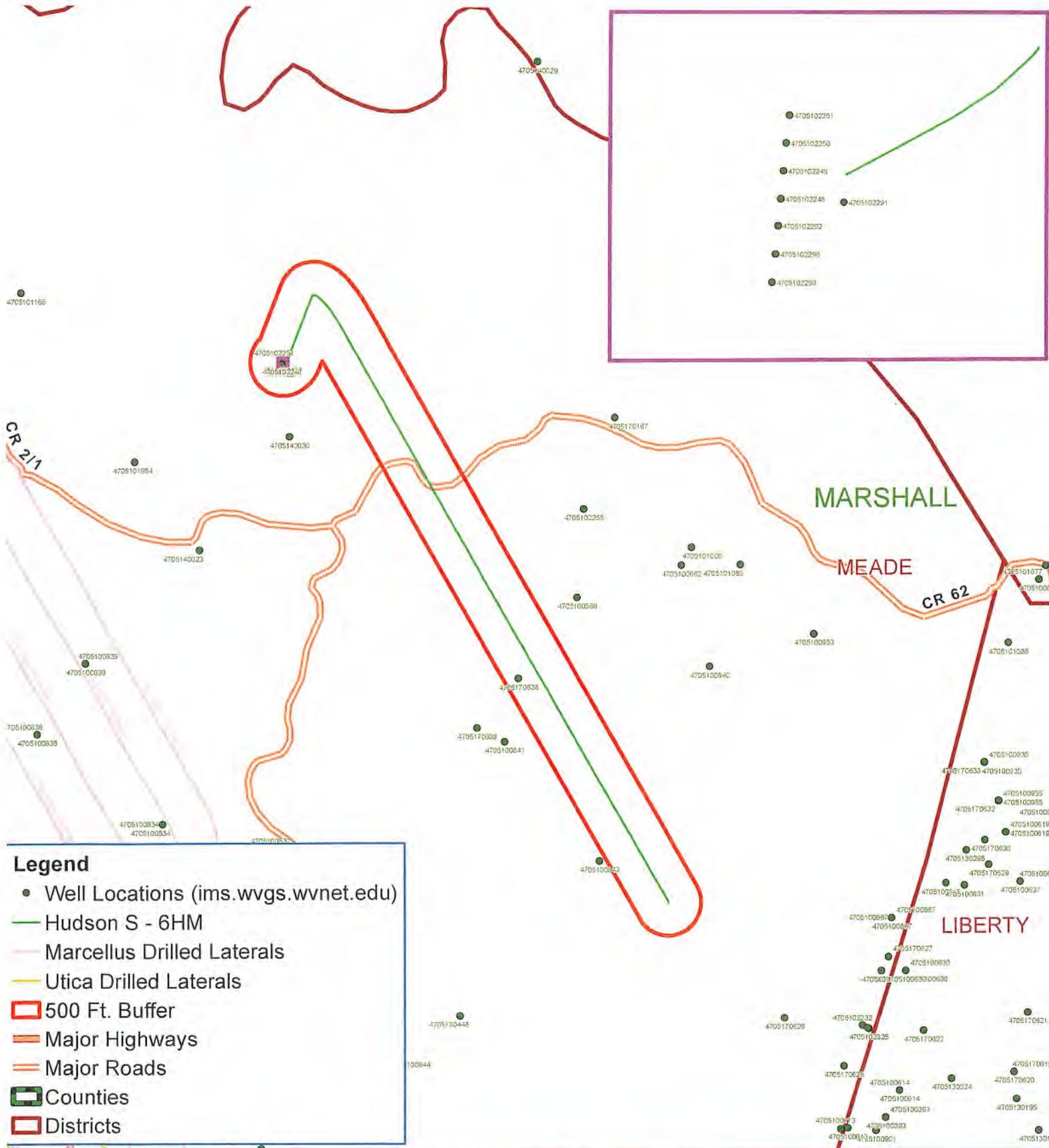
Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEFO	G_AFT
4705170638	--	--						unclassified	unclassified	not available	unknown	unknown						

WV Department of
 Environmental Protection

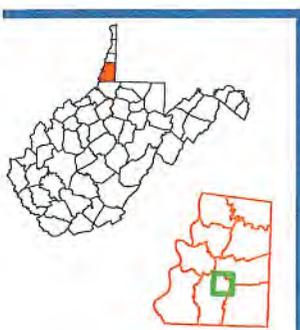
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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Hudson S - 6HM
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- 500 Ft. Buffer
- Major Highways
- Major Roads
- ▭ Counties
- ▭ Districts



Hudson S - 6HM Meade District Marshall County, WV



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

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Environmental Protection
Map Prepared by:

DPS
LAND SERVICES

05/14/2021

Map Created: February 16, 2021

4705102377

Form WW-9

Operator's Well No. Hudson S-6HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 22.94 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bony Stiller

Comments: _____

Title: Oil and Gas Inspector

Date: 3-24-21

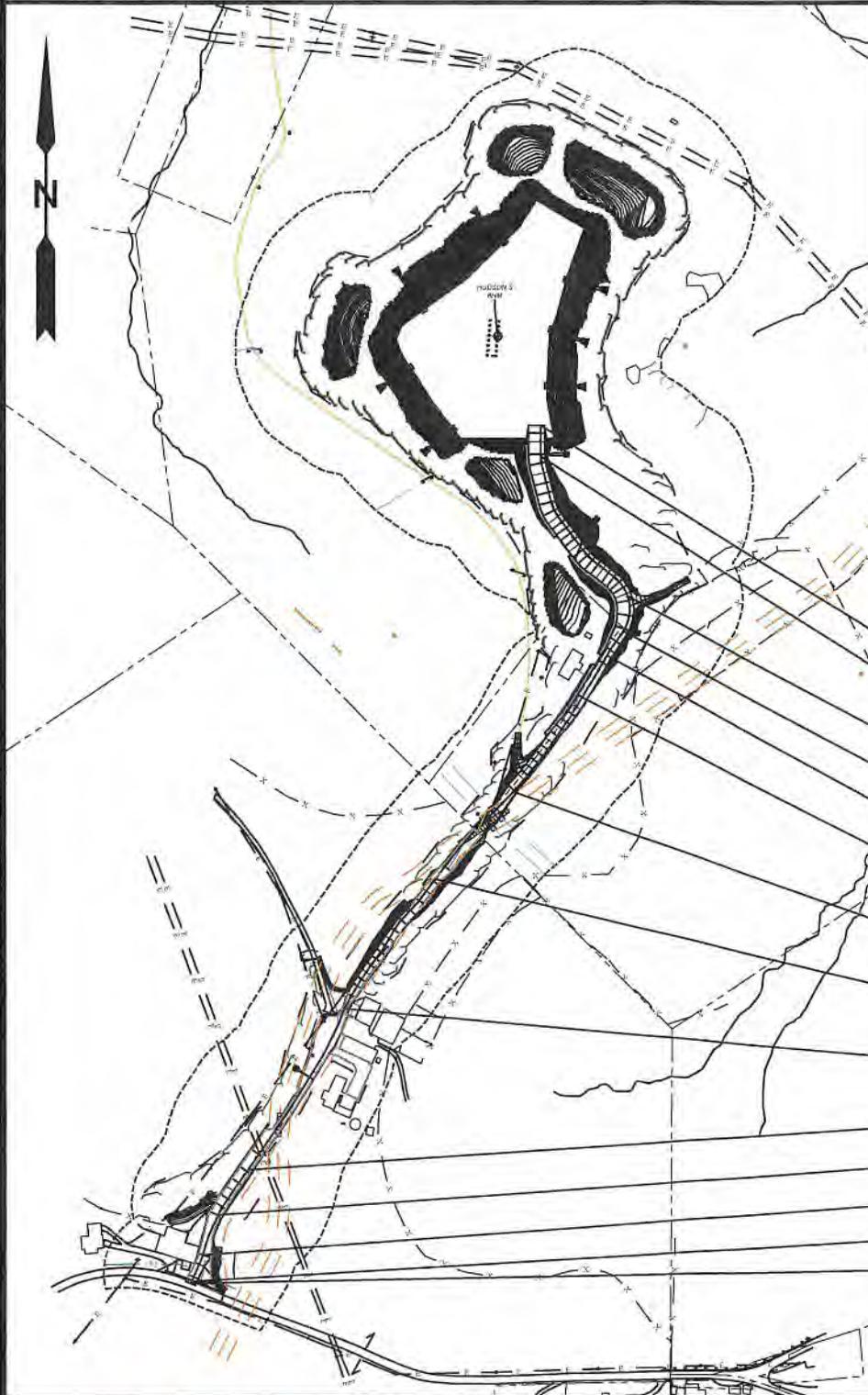
Field Reviewed? Yes No

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PROPOSED HUDSON S - 6HM



NOTES:

1. DRAWING NOT TO SCALE
2. 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.
3. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
4. SEE HUDSON SOUTH SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.

86'	0-8%	GRADE
412'	8-12%	GRADE
86'	0-5%	GRADE
71'	5-10%	GRADE
118'	0-5%	GRADE
283'	5-10%	GRADE
285'	0-5%	GRADE
383'	5-10%	GRADE
455'	0-5%	GRADE
133'	5-10%	GRADE
105'	0-5%	GRADE
70'	5-10%	GRADE
5'	0-5%	GRADE



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26331 | 504.467.5634
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 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, L.L.C 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8911	02/18/21	NONE



WV Department of Environmental Protection
 05/14/2021



Well Site Safety Plan

Tug Hill Operating, LLC

B.S. 3-16-21

Well Name: Hudson S-6HM

Pad Location: Hudson Pad

Marshall County, West Virginia

UTM (meters , NAD83, Zone 17:

Northing: 4,408,806.56

Easting: 528,013.88

February 2021

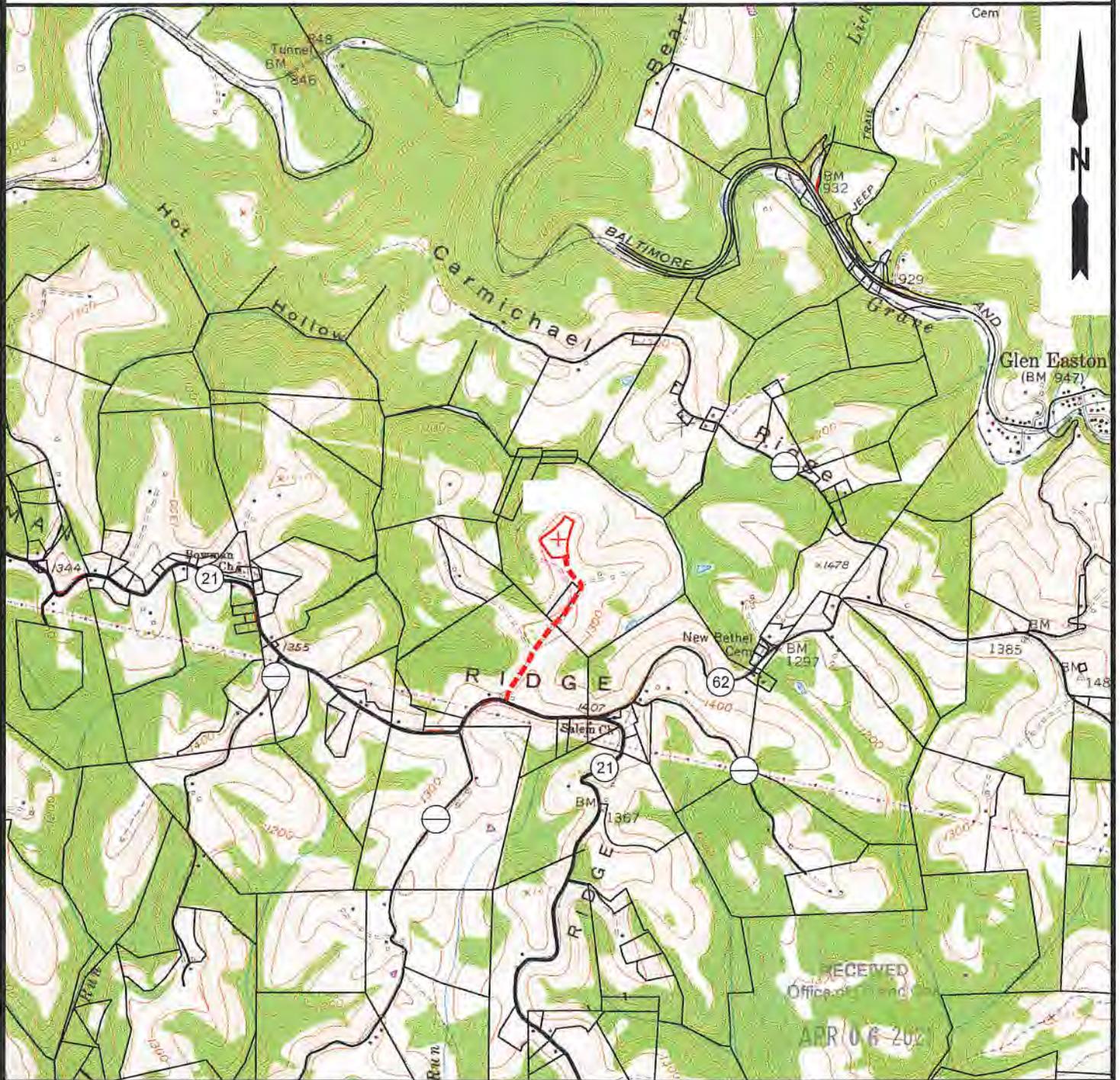
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Environmental Protection

05/14/2021

PROPOSED HUDSON S - 6HM



NOTE: CLOSEST WATER PURVEYOR
CITY OF CAMERON - FRANK WALKER RESERVOIR
CAMDEN, WV

LAT: 39.829865
LON: -80.573724
LOCATED: N 89°55'26" E AT 27,779.45' FROM THE CENTER OF HUDSON S WELL PAD LOCATION.

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12 Vanhook Drive | P.O. Box 150 | Glenville, WV 26031 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsw.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		02/18/2021	1" = 2000'



TUG HILL
OPERATING

05/14/2021

**HUDSON S
WELL 6HM
TUG HILL OPERATING**

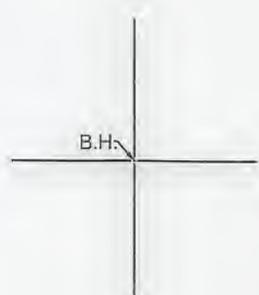
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°50'00"

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"

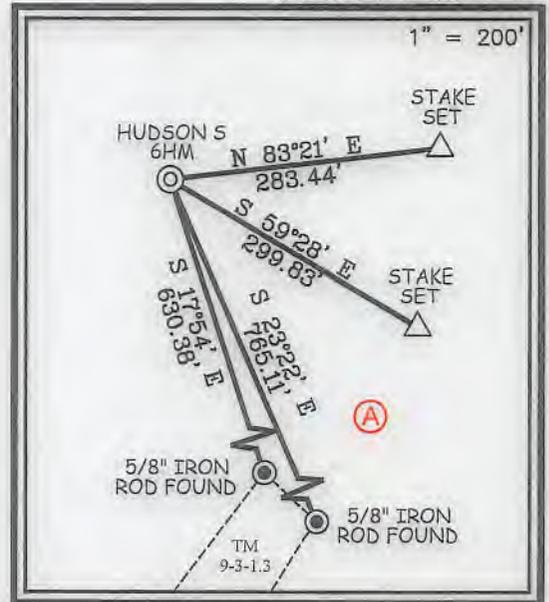
MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-2-9.2	CONSOLIDATION COAL CO.	1.00
9-2-10.1	CONSOLIDATION COAL CO.	2.00
9-3-1.1	CONSOLIDATION COAL CO.	5.00
9-3-1.2	CONSOLIDATION COAL CO.	1.00
9-3-2.1	FEDERAL HOME LOAN MORT CORP	0.940
9-3-2.2	JOHN W. & RACHEL A. HOLPP	0.483
9-3-2.3	STEPHEN W. JOHNSON, III	0.591
9-3-2.4	JOHN W. & RACHEL A. HOLPP	0.618
9-8-3	CHURCH OF CHRIST	NO ASSD. AC. 0.424 (CALC.)

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

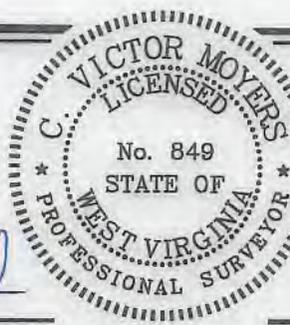
NAD'83 S.P.C.(FT)	N. 486,138.42	E. 1,639,180.25
NAD'83 GEO.	LAT-(N) 39.828794	LONG-(W) 80.672630
NAD'83 UTM (M)	N. 4,408,806.57	E. 528,013.90
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 486,865.2	E. 1,640,060.7
NAD'83 GEO.	LAT-(N) 39.830272	LONG-(W) 80.669520
NAD'83 UTM (M)	N. 4,408,971.6	E. 528,279.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 477,919.1	E. 1,644,888.9
NAD'83 GEO.	LAT-(N) 39.806434	LONG-(W) 80.651930
NAD'83 UTM (M)	N. 4,406,331.6	E. 529,794.9



REFERENCES



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.285.5296
slswv.com



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

P.S. 849 *C. Victor Moyers*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE FEBRUARY 22, 20 21
REVISED _____, 20 _____
OPERATORS WELL NO. HUDSON S-6HM
API WELL NO. 47 - 051 - 02377 HGA
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8911P6HM.dwg
HUDSON S-6HM REV5
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

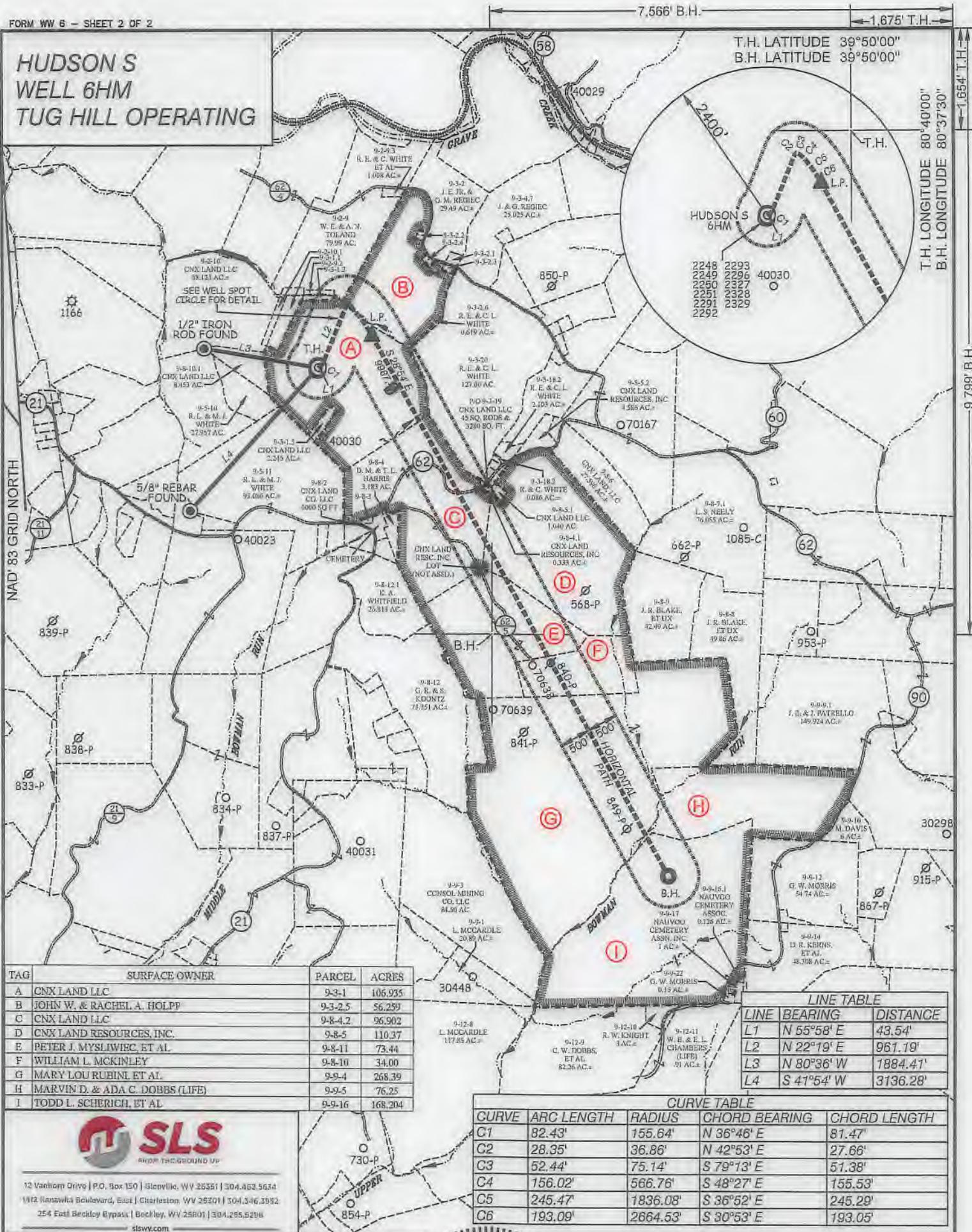
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,346.26' WATERSHED GRAVE CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
SURFACE OWNER CNX LAND LLC ACREAGE 106.935±
ROYALTY OWNER CHARLENE L. BAKER, ET AL ACREAGE 106.935±
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,931' / TMD: 17,285'

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

COUNTY NAME PERMIT

05/14/2021

**HUDSON S
WELL 6HM
TUG HILL OPERATING**



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

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 55°58' E	43.54'
L2	N 22°19' E	961.19'
L3	N 80°36' W	1884.41'
L4	S 41°54' W	3136.28'

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	82.43'	155.64'	N 36°46' E	81.47'
C2	28.35'	36.86'	N 42°53' E	27.66'
C3	52.44'	75.14'	S 79°13' E	51.38'
C4	156.02'	566.76'	S 48°27' E	155.53'
C5	245.47'	1836.08'	S 36°52' E	245.29'
C6	193.09'	2664.53'	S 30°53' E	193.05'

TAG	SURFACE OWNER	PARCEL	ACRES
A	CNX LAND LLC	9-3-1	106.935
B	JOHN W. & RACHEL A. HOLPP	9-3-2.5	56.259
C	CNX LAND LLC	9-8-2	96.902
D	CNX LAND RESOURCES, INC.	9-8-5	110.37
E	PETER J. MYSLIWIEC, ET AL.	9-8-11	73.44
F	WILLIAM L. MCKINLEY	9-8-10	34.00
G	MARY LOU RUBINI, ET AL.	9-9-4	268.39
H	MARVIN D. & ADA C. DOBBS (LIFE)	9-9-5	76.25
I	TODD L. SCHERICH, ET AL.	9-9-16	168.204



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 254 East Beckley Bypass | Beckley, WV 25801 | 304.295.6296
 slsvv.com



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

P.S. 849 *C. Victor Moyers*

LEGEND

- LEASE LINE [Symbol]
- SURFACE LINE [Symbol]
- WELL LATERAL [Symbol]
- OFFSET LINE [Symbol]
- TIE LINE [Symbol]
- CREEK [Symbol]
- ROAD [Symbol]
- COUNTY ROUTE [Symbol]
- PROPOSED WELL [Symbol]
- EXISTING WELL [Symbol]
- PERMITTED WELL [Symbol]
- TAX MAP-PARCEL [Symbol]
- SURFACE OWNER (SEE TABLE) [Symbol]
- LEASE # (SEE WW-6A1) [Symbol]

SCALE 1" = 2000' FILE NO. 8911P6HM.dwg
 HUDSON S-6HM REV5
 DATE FEBRUARY 22, 2021
 REVISED _____, 20____
 OPERATORS WELL NO. HUDSON S-6HM
 API WELL NO. 47-051-02577 HMA
 NO. STATE COUNTY PERMIT

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

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

COUNTY: WYOMING PERMIT: _____

05/14/2021

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

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

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

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

*See attached pages

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

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

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

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APR 06 2021

WV Department of
Environmental Protection

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

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

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment	
10*26041	9-3-1	A	FREDDIE C WHITE AND VIOLET L WHITE	CHESAPEAKE APPALACHIA LLC	1/8+	728	527	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 27/386	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26044	9-3-1	A	JOYCE A WALLACE	CHEVRON USA INC	1/8+	863	296	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26047	9-3-1	A	ROBERT D BLAKE AND ATHENA LIBERTY BLAKE	CHEVRON USA INC	1/8+	863	138	RECEIVED Office of Oil and Gas APR 06 2021	WV Department of Environmental Protection	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26048	9-3-1	A	LOIS J ELIAS AND LOUIS J ELIAS	CHEVRON USA INC	1/8+	861	599			N/A	N/A	N/A
10*26049	9-3-1	A	MARY H HUBBS	CHEVRON USA INC	1/8+	863	560	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26050	9-3-1	A	BERNARD O CROW AND KAREN S CROW	CHEVRON USA INC	1/8+	863	627	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26051	9-3-1	A	ROBERT W KIDNER	CHEVRON USA INC	1/8+	863	644	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26052	9-3-1	A	BETTY J BLAKE	CHEVRON USA INC	1/8+	863	545	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26057	9-3-1	A	JOHN PURDY AND BRENDA S PURDY	CHEVRON USA INC	1/8+	854	420	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*26058	9-3-1	A	CAROLE J WOOD	CHEVRON USA INC	1/8+	854	415	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26059	9-3-1	A	TERRY L BLAKE	CHEVRON USA INC	1/8+	854	215	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26060	9-3-1	A	ROBERT C BLAKE AND LYN BLAKE	CHEVRON USA INC	1/8+	854	333	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26061	9-3-1	A	RODNEY W AND LINDA L HUBBS	CHEVRON USA INC	1/8+	854	435	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26062	9-3-1	A	SHANNON ROGER AND LORRAINE HUBBS	CHEVRON USA INC	1/8+	854	233	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26063	9-3-1	A	PATTY L RINE AND FLOYD D RINE	CHEVRON USA INC	1/8+	854	238	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26064	9-3-1	A	CATHARINE LEE BLAKE	CHEVRON USA INC	1/8+	863	550	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26066	9-3-1	A	DANNY E AND MARVA L BEYSER	CHEVRON USA INC	1/8+	858	36	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26067	9-3-1	A	DONALD DEAN BEYSER	CHEVRON USA INC	1/8+	858	41	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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N/A
OFFICE OF ENVIRONMENTAL PROTECTION
APR 03 2021

WV Department of
Environmental Protection

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*26068	9-3-1	A	GARY F BLAKE AND DORIS E BLAKE	CHEVRON USA INC	1/8+	858	31	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26069	9-3-1	A	MARILYN SUE REILLEY	CHEVRON USA INC	1/8+	857	597	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26070	9-3-1	A	MARY W HOLMES	CHEVRON USA INC	1/8+	857	602	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26071	9-3-1	A	CHARLENE LORRAINE BAKER	CHEVRON USA INC	1/8+	857	607	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26072	9-3-1	A	JAMES L BLAKE	CHEVRON USA INC	1/8+	857	616	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26073	9-3-1	A	DARLENE L BEYSER	CHEVRON USA INC	1/8+	860	176	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26075	9-3-1	A	BETTY JOANN CECIL	CHEVRON USA INC	1/8+	860	119	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26076	9-3-1	A	DORIS IMOGENE GARRISON	CHEVRON USA INC	1/8+	860	114	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26077	9-3-1	A	DOROTHY J AND ROBERT M BLAKE	CHEVRON USA INC	1/8+	860	104	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*26078	9-3-1	A	VELMA RUTH HARRIS	CHEVRON USA INC	1/8+	860	228	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26079	9-3-1	A	MARY O'DESSA HARRIS LOUDEN	CHEVRON USA INC	1/8+	860	109	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26080	9-3-1	A	SHARON DIANE HOLMES JAHN AND WILLIAM HENRY JAHN III	CHEVRON USA INC	1/8+	860	217	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26081	9-3-1	A	CYNTHIA JEAN AND EDDIE W WILSON	CHEVRON USA INC	1/8+	861	545	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26082	9-3-1	A	BRIAN C AND SARA M LUTZ	CHEVRON USA INC	1/8+	861	550	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26083	9-3-1	A	WILLIAM S BLAKE JR	CHEVRON USA INC	1/8+	861	535	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26084	9-3-1	A	CYNTHIA A AND JAMES O DAVIDSON	CHEVRON USA INC	1/8+	889	46	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26085	9-3-1	A	CLYDE R AND JANA HIGGINS	CHEVRON USA INC	1/8+	861	508	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26086	9-3-1	A	DELMAS W AND ROSE HIGGINS	CHEVRON USA INC	1/8+	861	503	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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APR 06 2021

WV Department of
Environmental Protection

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10*26087	9-3-1	A	JERRY L AND DENISE HIGGINS	CHEVRON USA INC	1/8+	861	526	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26088	9-3-1	A	SHIRL W AND DORIS HIGGINS	CHEVRON USA INC	1/8+	861	540	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26089	9-3-1	A	ALVA L AND SHIRLEY HIGGINS	CHEVRON USA INC	1/8+	861	521	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26090	9-3-1	A	H DEAN AND KAREN HIGGINS	CHEVRON USA INC	1/8+	861	516	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26091	9-3-1	A	JOELENE M MANN	CHEVRON USA INC	1/8+	864	55	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26092	9-3-1	A	SHAWN J AND SARAH E CREWS	CHEVRON USA INC	1/8+	864	50	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26093	9-3-1	A	JOYCE HOLMES CONE AND WILLIAM CONE	CHEVRON USA INC	1/8+	861	493	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26094	9-3-1	A	MARK L CURRY	CHEVRON USA INC	1/8+	865	102	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26095	9-3-1	A	CHRISTINA C MUNSON	CHEVRON USA INC	1/8+	865	107	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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Environmental Protection

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

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10*26097	9-3-1	A	DAVID L BEYSER	CHEVRON USA INC	1/8+	865	173	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26098	9-3-1	A	KIMBERLY J HOLDER	CHEVRON USA INC	1/8+	867	87	RECEIVED N/A Office of Oil and Gas APR 06 2021	WV Department of Environmental Protection	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26099	9-3-1	A	CAROL TROWBRIDGE ET VIR	CHEVRON USA INC	1/8+	866	138			N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26100	9-3-1	A	JOSEPH L AND ROSE MARIE MAUPIN	CHEVRON USA INC	1/8+	866	67			N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26120	9-3-1	A	JAMES D AND LINDA D YOCUM	CHEVRON USA INC	1/8+	884	635	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26121	9-3-1	A	BETTY BRYNER	CHEVRON USA INC	1/8+	871	64	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26236	9-3-1	A	GERALD W QUIGLEY AND VICKI L QUIGLEY	CHEVRON USA INC	1/8+	884	50	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26237	9-3-1	A	FREDA L CAMPBELL	CHEVRON USA INC	1/8+	889	40	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26238	9-3-1	A	MARSHA L MERCER	CHEVRON USA INC	1/8+	883	639	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

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10*26287	9-3-1	A	IVAN R AND MARY A BLAKE	CHEVRON USA INC	1/8+	888	542	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26288	9-3-1	A	REBECCA J BLAKE	CHEVRON USA INC	1/8+	888	571	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26289	9-3-1	A	DUANETTA B BLAKE FROMHART	CHEVRON USA INC	1/8+	888	574	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26291	9-3-1	A	BARBARA A BLAKE MASON	CHEVRON USA INC	1/8+	901	125	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26292	9-3-1	A	JUDITH L BLAKE	CHEVRON USA INC	1/8+	882	329	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26293	9-3-1	A	JAY C CURRY	CHEVRON USA INC	1/8+	882	433	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26294	9-3-1	A	JOAN A GIEGER	CHEVRON USA INC	1/8+	880	509	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26295	9-3-1	A	ARTHUR LEE WARYCK	CHEVRON USA INC	1/8+	880	512	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26296	9-3-1	A	CARL G CALDWELL	CHEVRON USA INC	1/8+	883	530	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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WV Department of
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WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

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10*26297	9-3-1	A	DIANA L MCKINNEY	CHEVRON USA INC	1/8+	885	560	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95		
10*26298	9-3-1	A	JANE HENDRICKSON	CHEVRON USA INC	1/8+	886	429	RECEIVED Office of Oil & Gas APR 06 2021	WV Department of Environmental Protection	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26299	9-3-1	A	BETTY WILKINSON DANIEL A MCVANE AIF	CHEVRON USA INC	1/8+	886	432			N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95	
10*26300	9-3-1	A	JILL LORI HENNEN BARNETT	CHEVRON USA INC	1/8+	886	439			N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*27180	9-3-1	A	TAMALA SCOLLIK	TH EXPLORATION LLC	1/8+	1053	1			N/A	N/A	N/A	N/A
10*27181	9-3-1	A	CRYSTAL THOMAS	TH EXPLORATION LLC	1/8+	1052	648	N/A	N/A	N/A	N/A		
10*27703	9-3-1	A	DOROTHY MAXINE MOORE TRUST	TH EXPLORATION LLC	1/8+	1061	255	N/A	N/A	N/A	N/A		
10*28190	9-3-2.5	B	J RUSSELL LOGSDON	TH EXPLORATION LLC	1/8+	1068	309	N/A	N/A	N/A	N/A		
10*28191	9-3-2.5	B	JANICE L EARNEST	TH EXPLORATION LLC	1/8+	1068	307	N/A	N/A	N/A	N/A		
10*28192	9-3-2.5	B	SHAREE SAMS	TH EXPLORATION LLC	1/8+	1068	305	N/A	N/A	N/A	N/A		
10*28193	9-3-2.5	B	SHIRLEY E BURTON AND OKLA D BURTON	TH EXPLORATION LLC	1/8+	1068	303	N/A	N/A	N/A	N/A		
10*28194	9-3-2.5	B	LLOYD L & DONNA F EARNEST	TH EXPLORATION LLC	1/8+	1068	301	N/A	N/A	N/A	N/A		
10*28442	9-3-2.5	B	WILLIAM N LOSDON AND SHIRLEY A LOGSDON	TH EXPLORATION LLC	1/8+	1072	377	N/A	N/A	N/A	N/A		
10*28092	9-8-4.2	C	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	1073	370	N/A	N/A	N/A	N/A		
10*47051.109.0	9-8-4.2	C	DONALD M AND THERESA L HARRIS	TH EXPLORATION LLC	1/8+	859	440	N/A	N/A	N/A	N/A		
10*23739	9-8-5	D	APPALACHIAN BASIN MINERALS LP	TH EXPLORATION LLC	1/8+	1011	538	N/A	N/A	N/A	N/A		
10*23740	9-8-5	D	PENNMARC RESOURCES II LP	TH EXPLORATION LLC	1/8+	1011	532	N/A	N/A	N/A	N/A		
10*23741	9-8-5	D	MCCROW ENERGY PARTNERS II LLC	TH EXPLORATION LLC	1/8+	1011	515	N/A	N/A	N/A	N/A		
10*23742	9-8-5	D	PURPLEBURGH VENTURES, LLC	TH EXPLORATION LLC	1/8+	1011	536	N/A	N/A	N/A	N/A		
10*23743	9-8-5	D	WILDES MINERAL INTERESTS LLC	TH EXPLORATION LLC	1/8+	1011	534	N/A	N/A	N/A	N/A		
10*23749	9-8-5	D	MARCELLUS TX MINERAL PRTRNR LTD	TH EXPLORATION LLC	1/8+	1012	193	N/A	N/A	N/A	N/A		
10*22745	9-8-11	E	BONNIE J JENKINS	TH EXPLORATION LLC	1/8+	968	288	N/A	N/A	N/A	N/A		
10*23314	9-8-11	E	CYNTHIA WATSON	TH EXPLORATION LLC	1/8+	988	499	N/A	N/A	N/A	N/A		
10*23353	9-8-11	E	SHARON E MCDONALD AND HAROLD S MCDONALD	TH EXPLORATION LLC	1/8+	988	495	N/A	N/A	N/A	N/A		
10*25718	9-8-11	E	KATHLEEN JEANNE B JENKINS	TH EXPLORATION LLC	1/8+	1035	13	N/A	N/A	N/A	N/A		
10*25719	9-8-11	E	NICHOLE M JENKINS	TH EXPLORATION LLC	1/8+	1035	17	N/A	N/A	N/A	N/A		

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10*26025	9-8-11	E	DAVID D MURRAY	CHEVRON USA INC	1/8+	791	45	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26026	9-8-11	E	JUDITH ELLEN DOTY	CHEVRON USA INC	1/8+	787	249	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26027	9-8-11	E	DANIEL W CHAPMAN	CHEVRON USA INC	1/8+	788	111	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26028	9-8-11	E	DAVID W CHAPMAN	CHEVRON USA INC	1/8+	788	104	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26029	9-8-11	E	GREGORY L CHAPMAN	CHEVRON USA INC	1/8+	788	96	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26030	9-8-11	E	DONALD CARMICHAEL	CHEVRON USA INC	1/8+	787	471	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26031	9-8-11	E	SARAH LEONA MCGLONE	CHEVRON USA INC	1/8+	787	478	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26032	9-8-11	E	MARGARET ANN JONES	CHEVRON USA INC	1/8+	787	364	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26033	9-8-11	E	LINDA S COLEMAN	CHEVRON USA INC	1/8+	791	143	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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WV Department of
 Environmental Protection

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*26034	9-8-11	E	LUANN N HIMMELFARB	CHEVRON USA INC	1/8+	791	205	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26035	9-8-11	E	PATRICK P TRUEX	CHEVRON USA INC	1/8+	791	219	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26038	9-8-11	E	DOUGLAS A WAYSON	CHEVRON USA INC	1/8+	811	440	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26039	9-8-11	E	DAWNETTA M WAYSON	CHEVRON USA INC	1/8+	807	420	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26040	9-8-11	E	ROBERT BRANDT WAYSON	CHEVRON USA INC	1/8+	808	524	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26042	9-8-11	E	SHARON ANN PETERSON	CHEVRON USA INC	1/8+	838	396	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26043	9-8-11	E	GREGORY A CHAPMAN	CHEVRON USA INC	1/8+	834	354	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26204	9-8-11	E	COLE DALE GRIMM	CHEVRON USA INC	1/8+	889	244	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26494	9-8-11	E	JOHN P JENKINS	TH EXPLORATION LLC	1/8+	1037	434	N/A	N/A	N/A	N/A
10*27524	9-8-11	E	KEVIN A MYSLIWIEC AND SANDY L MYSLIWIEC	CHEVRON USA INC	1/8+	784	292	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27527	9-8-11	E	PETER J & JUDY B MYSLIWIEC	CHEVRON USA INC	1/8+	784	285	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357

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APR 06 2021

WV Department of Environmental Protection

WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

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10*21246	9-8-10	F	THE ESTATE OF THERESA M ROGERSON CHARLES J ROGERSON EXECUTOR	TH EXPLORATION LLC	1/8+	952	422	N/A	N/A	N/A	N/A
10*21326	9-8-10	F	DENISE L FASSETT AND RONALD L FASSETT	TH EXPLORATION LLC	1/8+	952	424	N/A	N/A	N/A	N/A
10*21331	9-8-10	F	DAVID E MYSLIWIEC	TH EXPLORATION LLC	1/8+	952	426	N/A	N/A	N/A	N/A
10*22745	9-8-10	F	BONNIE J JENKINS	TH EXPLORATION LLC	1/8+	968	288	N/A	N/A	N/A	N/A
10*23314	9-8-10	F	CYNTHIA WATSON	TH EXPLORATION LLC	1/8+	988	499	N/A	N/A	N/A	N/A
10*23353	9-8-10	F	SHARON E MCDONALD AND HAROLD S MCDONALD	TH EXPLORATION LLC	1/8+	988	495	N/A	N/A	N/A	N/A
10*25718	9-8-10	F	KATHLEEN JEANNE B JENKINS	TH EXPLORATION LLC	1/8+	1035	13	N/A	N/A	N/A	N/A
10*25719	9-8-10	F	NICHOLE M JENKINS	TH EXPLORATION LLC	1/8+	1035	17	N/A	N/A	N/A	N/A
10*26025	9-8-10	F	DAVID D MURRAY	CHEVRON USA INC	1/8+	791	45	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26026	9-8-10	F	JUDITH ELLEN DOTY	CHEVRON USA INC	1/8+	787	249	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26027	9-8-10	F	DANIEL W CHAPMAN	CHEVRON USA INC	1/8+	788	111	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26028	9-8-10	F	DAVID W CHAPMAN	CHEVRON USA INC	1/8+	788	104	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26029	9-8-10	F	GREGORY L CHAPMAN	CHEVRON USA INC	1/8+	788	96	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26030	9-8-10	F	DONALD CARMICHAEL	CHEVRON USA INC	1/8+	787	471	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26031	9-8-10	F	SARAH LEONA MCGLONE	CHEVRON USA INC	1/8+	787	478	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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10*26032	9-8-10	F	MARGARET ANN JONES	CHEVRON USA INC	1/8+	787	364	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26033	9-8-10	F	LINDA S COLEMAN	CHEVRON USA INC	1/8+	791	143	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26034	9-8-10	F	LUANN N HIMMELFARB	CHEVRON USA INC	1/8+	791	205	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26035	9-8-10	F	PATRICK P TRUEX	CHEVRON USA INC	1/8+	791	219	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26038	9-8-10	F	DOUGLAS A WAYSON	CHEVRON USA INC	1/8+	811	440	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26039	9-8-10	F	DAWNETTA M WAYSON	CHEVRON USA INC	1/8+	807	420	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26040	9-8-10	F	ROBERT BRANDT WAYSON	CHEVRON USA INC	1/8+	808	524	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26042	9-8-10	F	SHARON ANN PETERSON	CHEVRON USA INC	1/8+	838	396	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26043	9-8-10	F	GREGORY A CHAPMAN	CHEVRON USA INC	1/8+	834	354	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*26204	9-8-10	F	COLE DALE GRIMM	CHEVRON USA INC	1/8+	889	244	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26494	9-8-10	F	JOHN P JENKINS	TH EXPLORATION LLC	1/8+	1037	434	N/A	N/A	N/A	N/A
10*27468	9-8-10	F	PETER J & JUDY B MYSLIWIEC	CHEVRON USA INC	1/8+	882	200	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27469	9-8-10	F	KEVIN A MYSLIWIEC AND SANDY L MYSLIWIEC	CHEVRON USA INC	1/8+	882	197	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27515	9-8-10	F	WILLIAM L MCKINLEY	CHEVRON USA INC	1/8+	899	517	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*31001	9-9-4	G	ERIC KATZMEYER	CHEVRON USA INC	1/8+	791	226	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31003	9-9-4	G	DAVID KATZMEYER AND SHIRLEY A KATZMEYER	CHEVRON USA INC	1/8+	792	226	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*31004	9-9-4	G	MARY LOU RUBINI	CHEVRON USA INC	1/8+	793	287	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC: 45/593
10*28244	9-9-5	H	MICHAEL D DOBBS AND STEPHANIE J DOBBS	TH EXPLORATION LLC	1/8+	1068	569	N/A	N/A	N/A	N/A
10*28340	9-9-5	H	PAMELA POSTLETHWAIT AND SCOTT POSTLETHWAIT	TH EXPLORATION LLC	1/8+	1071	427	N/A	N/A	N/A	N/A
10*19987	9-9-16	I	LESLEY D BALLA	TH EXPLORATION LLC	1/8+	955	103	N/A	N/A	N/A	N/A
10*19993	9-9-16	I	DIANA D COSLICK	TH EXPLORATION LLC	1/8+	955	105	N/A	N/A	N/A	N/A
10*19994	9-9-16	I	ELAINE A FONTES	TH EXPLORATION LLC	1/8+	960	36	N/A	N/A	N/A	N/A
10*21117	9-9-16	I	JOELLYN JOHNSON	TH EXPLORATION LLC	1/8+	952	392	N/A	N/A	N/A	N/A
10*21322	9-9-16	I	PHILLIP H WAYT AND BILLIE A WAYT	TH EXPLORATION LLC	1/8+	953	293	N/A	N/A	N/A	N/A
10*22199	9-9-16	I	DONALD BROOKS WESLEY	BLUE ROAN RESOURCES LLC	1/8+	926	424	N/A	N/A	N/A	Blue Roan Resources LLC to TH Exploration LLC: 41/405
10*22201	9-9-16	I	FREDERICK MAXWELL YEATER	BLUE ROAN RESOURCES LLC	1/8+	926	422	N/A	N/A	N/A	Blue Roan Resources LLC to TH Exploration LLC: 41/405
10*22202	9-9-16	I	MARK DAVID HUNT	BLUE ROAN RESOURCES LLC	1/8+	935	109	N/A	N/A	N/A	Blue Roan Resources LLC to TH Exploration LLC: 41/405

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WW-6A1 Supplement

Operator's Well No. Hudson S - 6HM

Lease ID	TMP	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed BK/Page		Assignment	Assignment	Assignment	Assignment
10*22203	9-9-16	I	MELISSA ELAINE SCHROTH	BLUE ROAN RESOURCES LLC	1/8+	934	471	N/A	N/A	N/A	Blue Roan Resources LLC to TH Exploration LLC: 41/405
10*22526	9-9-16	I	BARBARA FURFARI	TH EXPLORATION LLC	1/8+	964	528	N/A	N/A	N/A	N/A
10*22528	9-9-16	I	RONALD DAKAN	TH EXPLORATION LLC	1/8+	964	530	N/A	N/A	N/A	N/A
10*22553	9-9-16	I	DAVID H DAKAN	TH EXPLORATION LLC	1/8+	966	130	N/A	N/A	N/A	N/A
10*22783	9-9-16	I	SUZANNE SWIFT	TH EXPLORATION LLC	1/8+	972	85	N/A	N/A	N/A	N/A
10*23315	9-9-16	I	TIM A WILLIS AND DIANE CLARE WILLIS	TH EXPLORATION LLC	1/8+	988	138	N/A	N/A	N/A	N/A
10*24047	9-9-16	I	BESSIE CARMICHAEL ET AL SHANE M MALLET, SPECIAL COMMISSIONER	TH EXPLORATION LLC	1/8+	1021	117	N/A	N/A	N/A	N/A
10*24397	9-9-16	I	MARK D CHAMBERS AND SHERYL CHAMBERS	TH EXPLORATION LLC	1/8+	1023	163	N/A	N/A	N/A	N/A
10*24398	9-9-16	I	TODD SCHERICH AND WANDA D SCHERICH	TH EXPLORATION LLC	1/8+	1023	160	N/A	N/A	N/A	N/A
10*24413	9-9-16	I	BRADLEY S SCHERICH AND LEIGH SCHERICH	TH EXPLORATION LLC	1/8+	1023	157	N/A	N/A	N/A	N/A

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STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

This ASSIGNMENT AND BILL OF SALE (this "Assignment") dated as of February 7, 2019 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on February 1, 2019 (the "Effective Date"), is made by Chevron U.S.A. Inc., a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") to TH Exploration II, LLC and TH Exploration, LLC, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively "Assignee") and is accepted by Assignee upon the following terms and conditions.

RECITALS

- A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor's Crawford 1 well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.
- B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor's oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignee's oil and gas leasehold interests located in Marshall County, West Virginia.
- C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

1. DEFINITIONS

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

"Acreage Trade Agreement" means that certain Acreage Trade Agreement by and between Chevron U.S.A. Inc. and TH Exploration, LLC with an Effective Date of February 1, 2019 to be contemporaneously executed with this Assignment.

"Act" has the meaning given to such term in Section 9.1(C).

"Affiliate" means any legal entity which controls, is controlled by, or is under common control with, another legal entity. An entity is deemed to "control" another if it owns directly or indirectly at least fifty percent of either of the following: (A) the shares entitled to vote at a general election of directors of such

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STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 19 day of August 2019 (the "Effective Date"), by and between CHEVRON U.S.A. INC., a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 (hereinafter "Assignor") and TH EXPLORATION, LLC, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

WITNESSETH:

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

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

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

A. Any portion of the Leases set forth in the column entitled "Less and Except" on Exhibit A.

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

2. No Warranty. The Assignment is made on an "as is, where is" basis without warranty of any kind. Assignor makes no, and expressly disclaims any, representation or warranty to Assignee regarding the Leases, whether express, statutory or implied, in fact, at law, common law, in equity or otherwise.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment, except Assignor has no obligation to defend title to the Leases.

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05/14/2021

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 24th day of June 2020 (the "**Effective Date**"), by and between **CHEVRON U.S.A. INC.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 (hereinafter "**Assignor**") and **TH EXPLORATION II, LLC**, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "**Assignee**").

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain oil and gas Leases situated in Marshall County, West Virginia, as described in **Exhibit "A"**, attached hereto and made a part hereof (hereinafter the "**Leases**"), subject to any applicable overriding royalty interests and midstream obligations;

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

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

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

2. **Payment.** Within 15 days of execution of this Assignment by both parties, Assignee agrees to tender payment to Assignor in the amount and manner described in **Exhibit "B"**.

3. **No Warranty.** The Assignment is made on an "as is, where is" basis without warranty of any kind and is subject to any existing liens, encumbrances or burdens, including specifically any overriding royalty interests or midstream dedications, attached to or affecting the Leases. Assignor makes no, and expressly disclaims any, representation or warranty to Assignee regarding the Leases or title thereto, whether express, statutory or implied, in fact, at law, common law, in equity or otherwise.

4. **Existing Obligations.** This Assignment is made subject to and Assignee agrees to accept and perform all obligations under any existing agreements that affect the Leases, including Assignor's remaining obligations under any gathering, processing or other midstream contracts as those contracts relate specifically to the Leases.

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ASSIGNMENT OF OIL AND GAS LEASES

This ASSIGNMENT OF OIL AND GAS LEASES (the "Assignment") is made and entered into this 8th day of March, 2018 (the "Effective Date"), from **Blue Roan Resources, LLC**, a West Virginia limited liability company, having an address at 3437 University Avenue, Morgantown, WV, 26505 (hereinafter "Assignor"), and **TH Exploration, LLC**, a Texas limited liability company, having an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "Assignee").

WITNESSETH:

WHEREAS, Assignor is the owner of the right, title, and interest in those certain Oil and Gas Leases situated in Marshall County, West Virginia, which are described in Exhibit "A" attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, subject to the exceptions and reservations herein contained, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases.

NOW, THEREFORE, for and in consideration of the sum of Ten Dollars (\$10.00), cash in hand paid, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, subject to the terms, reservations, waivers and provisions as hereinafter set forth, an undivided interest of all of Assignor's right, title and interest in and to the Leases and all oil, natural gas, natural gas liquids, condensate, casinghead gas and other liquefied or gaseous hydrocarbons or products ("Hydrocarbons") thereby held, in any and all depths and formations ("Assigned Formations"), together with any and all other rights that are reasonably necessary or convenient to explore for and produce Hydrocarbons from the Assigned Formations, including, but not limited to, the right of surface access, use and occupancy, the right of ingress and egress, the right to conduct geophysical and other exploratory activities, the right to lay pipeline, the right to drill through, but not perforate or stimulate, all other depths and formations necessary for the purpose of reaching the Assigned Formations and to conduct operations therein.

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

2. Representations and Warranties. Assignor represents and warrants that such Assignor has not conveyed or otherwise encumbered its interest in the Leases since the time that Assignor obtained its interests in the Leases.

Assignor represents and warrants that, as to its interests in the Leases, Assignor has paid all royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, including, but not limited to, the interests assigned hereunder, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all RELEVANT actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

APR 06 2021

Department of
Environmental Protection

05/14/2021



March 29, 2021

WV Department of Environmental Protection
Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304
Attention: Charles T. Brewer

RE: Hudson S-6HM

Subject: Road Crossing Letter

Dear Taylor:

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 62 in the area reflected on the Hudson S-6HM 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 amorris@tug-hillop.com.

Sincerely,

Amy Morris
Permit Specialist – Appalachia Region

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

Date of Notice Certification: 03/29/2021

API No. 47- 051 - _____

Operator's Well No. Hudson S-6HM

Well Pad Name: Hudson

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>528,013.90</u>
County: <u>Marshall</u>	Northing: <u>4,408,806.57</u>
District: <u>Meade</u>	Public Road Access: <u>Roberts Ridge Road (CR 21)</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>CNX Land, LLC</u>
Watershed: <u>Grave Creek (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><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>
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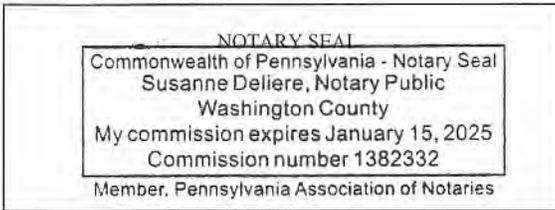
Required Attachments:

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

Certification of Notice is hereby given:

THEREFORE, I Amy L. Morris, 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><i>Amy L. Morris</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia Region</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amorris@tug-hill.com</u>



Subscribed and sworn before me this 29th day of March, 2021.
Susanne Deliere Notary Public
 My Commission Expires 1/15/2021

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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**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: 3/26/2021 **Date Permit Application Filed:** 3/29/2021

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: CNX Land Resources, LLC Attn: Casey Saunders (Well Pad)

Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name: _____

Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: Robert L. and Melinda J. White (Access Road)

Address: 129 Freddie's Lane
Glen Easton, WV 26039

Name: _____

Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____

Address: _____

COAL OWNER OR LESSEE

Name: Consolidation Coal Company

Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OPERATOR

Name: Murray American Energy, Inc. attn: Mason Smith

Address: 46226 National Road
St. Clairsville, OH 43905

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: *See attached list

Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____

Address: _____

*Please attach additional forms if necessary

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WV Department of
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05/14/2021

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

Department of Environmental Protection
05/14/2021

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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Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-051 - 02377
OPERATOR WELL NO. Hudson S-6HM
Well Pad Name: Hudson

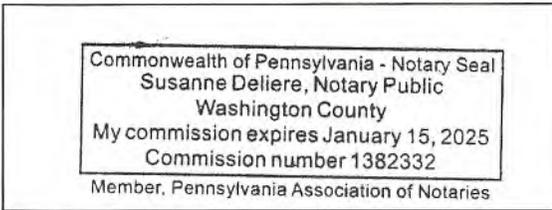
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amorris@lug-hillop.com *amy morris*

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 26th day of March, 2021.
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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Exhibit WW-6A

Supplement Pg. 1A

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

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

Well: Hudson S – 6HM
 District: Meade
 State: WV

There are four (4) residences, no business or commercial sites, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p>Residence (#1) TM 3 Pcl. 1.3 CNX Land LLC Phone: None Found Physical Address: 143 Freddie's Ln Proctor, WV 26055 Tax Address: 1000 Consol Energy Dr. Canonsburg, PA 15317-6506</p>	<p>Residence (#2) TM 5 Pcl. 11 Robert L. & Melinda J. White Phone: 740-667-3018; 304-845-2703 (Robert Andrew Williams – Reverse Address); 304-845-3756 (Melinda J. White); 304-845-4858 (Robert L. White) Physical Address: 129 Freddie's Ln Proctor, WV 26055 Tax Address: 129 Freddie's Ln Glen Easton, WV 26039</p>	<p>Residence (#3) TM 5 Pcl. 10 Robert L. & Melinda J. White Phone: 304-845-0562 (Charlotte A. Streight – Reverse Address) Physical Address: 443 Freddie's Ln Proctor, WV 26055 Tax Address: 129 Freddie's Ln Glen Easton, WV 26039</p>
<p>Residence (#4) TM 5 Pcl. 10 Robert L. & Melinda J. White Phone: 304-845-6068; 304-845-3756 (Robert L. White Jr. – Reverse Address); 304-845-3759 (Melinda J. White) Physical Address: 642 Freddie's Ln Proctor, WV 26055 Tax Address: 129 Freddie's Ln Glen Easton, WV 26039</p>		

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PROPOSED HUDSON S - 6HM



NOTE: THERE APPEARS TO BE FOUR (4) POSSIBLE WATER SOURCES WITHIN 2,000'.

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12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.253.5296
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8911	02/18/2021	1" = 1000'



WV Department of Environmental Protection
TUG HILL OPERATING

05/14/2021

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: 6/4/2019 **Date of Planned Entry:** 6/11/2019

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: CNX Land Resources, LLC Attn: Casey Saunders (Well Pad)
 Address: 1000 Consol Energy Drive
Canonsburg, PA 15317
 Name: Robert L. and Melinda J. White (Access Road)
 Address: 129 Freddie's Lane
Glen Easton, WV 26039
 Name: _____
 Address: _____

COAL OWNER OR LESSEE
 Name: Consolidation Coal Company
 Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)
 Name: Charlene L. Baker *See attached list
 Address: 5523 Roberts Ridge Road
Moundsville, WV 26041
 *please attach additional forms if necessary.

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.82881036; -80.67262857</u>
County: <u>Marshall</u>	Public Road Access: <u>Co. Route 21</u>
District: <u>Meade</u>	Watershed: <u>Grave Creek</u>
Quadrangle: <u>Glen Easton</u>	Generally used farm name: <u>CNX Land Resources, 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: Tug Hill Operating, LLC
 Telephone: 724-749-8388
 Email: amiller@tug-hillop.com

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

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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.

4705102377

**Additional Mineral Owners for Notice
WW-6A3
Hudson Pad**

Black Gold Group
P.O. Box 85
Strasburg, OH 44680

Catherine Lee Blake
101 Tomlinson Ave.
Moundsville, WV 26041

Ivan R. Blake
2315 Wolf Run Rd.
Cameron, WV 26033

Judith L. Blake
515 Meade Ave.
Akron, OH 44305

Robert C. Blake
1400 Third St.
Moundsville, WV 26041

Terry L. Blake
213 Birch Ave.
Moundsville, WV 26041

Betty Joan Cecil
200 Simmons Dr.
Moundsville, WV 26041

Bernard R. Crow
78 Dwight Ave.
Moundsville, WV 26041

Mark L. Curry
14 Pilgrims Way
Bentonville, VA 22610

Lois J. Elias
17 East Paxton Ave.
Wheeling, WV 26033

Dorothy J. Harris
2212 Turkey Run Rd.
Buckhannon, WV 26201

Jane Lynn Hendrickson
236 Westwood Dr.
Circleville, OH 43113

Betty J. Blake
2 Portsmouth Rd.
Front Royal, VA 22630

Gary F. Blake
3801 Needham Rd.
Mansfield, OH 44904

James L. Blake
P.O. Box 124
Farson, WY 82932

Rebecca J. Blake
1506 6th St.
Moundsville, WV 26041

Robert D. Blake
3757 Main St.
Weirton, WV 26062

William S. Blake Jr.
P.O. Box 349
Comfort, WV 25049

Shawn J. Crews
39 Branch Ln.
Broadway, NC 27505

Jay C. Curry
635 Minebanck Rd.
Middletown, VA 22645

Cynthia A. Davidson
7079 Hayes Orangeville Road NE
Burghill, OH 44404

Daunetta B. Fromhart
1309 Center St.
Moundsville, WV 26041

Velma Ruth Harris
3307 Bowman Ridge Rd.
Glen Easton, WV 26039

Jill Lori Hennen
2004 Baxter Ave.
Orlando, FL 32806

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Alva L. Higgins
4466 Templeton Road NW
Warren, OH 44481

H. Dean Higgins
9729 Gladstone Rd.
North Jackson, OH 44451

Jerry L. Higgins
3460 Park Avenue Ext.
Warren, OH 44481

Kimberly J. Holder
5815 Highway 217
Erwin, NC 28339

Rodney W. Hubbs
305 Sentimental Dr.
Moundsville, WV 26041

Robert W. Kidner
7757 Hansgrove Ct.
Dublin, OH 43016

Brian C. Lutz
364 Roseberry Ln.
Wheeling, WV 26003

Barbara A. Mason
363 Ridgeview Lane
Moundsville, WV 26041

Joseph L. Maupin
34626 Morning Glory Glen
Zephyrhills, FL 33541

Christina C. Munson
14 Pilgrims Way
Bentonville, VA 22610

Brenda S. Purdy
1404 Third St.
Moundsville, WV 26041

Carol J. Trowbridge
34710 Morning Glory Glen
Zephyrhills, FL 33541

Carol Jean Wood
106 Arlington Ave.
Moundsville, WV 26041

Clyde R. Higgins
2601 Milton Newton Rd.
Newton Falls, OH 44444

Delmas W. Higgins
7316 Elm St.
Newton Falls, OH 44444

Shirl W. Higgins
5241 Pritchard Ohltown Rd.
Newton Falls, OH 44444

Mary H. Hubbs
17 Hubbs Ln.
Moundsville, WV 26041

Shannon Roger Hubbs
27 Bowman Ridge
Moundsville, WV 26041

Mary O. Louden
10 Sandy Ave.
Moundsville, WV 26041

Jolene M. Mann
494 Longfellow Ave.
Worthington, OH 43085

Master Mineral Holdings II, L.P.
P.O. Box 10886
Midland, TX 79702

Diana L. McKinney
275 Skyline Dr.
Moundsville, WV 26041

Potomac Mineral Group LLC
615 Washington Rd. Ste 201
Pittsburgh, PA 15228

Patty L. Rine
801 Benton St.
Apt. 2204
Searcy, AR 72143

Cynthia Jean Wilson
1709 Bennis Church Place
Virginia Beach, VA 23455

Betty Bryner
P.O. Box 270
Bruceton Mills, WV 26525

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Betty Wilkinson
9271 Barn Swallow Lane
Marshall, VA 20115

Doris Garrison
28 Hickory Avenue
Moundsville, WV 26041

Arthur Lee Waryck
912 Tomlinson Avenue
Glen Dale, WV 26038

Larry Vernon Moore, Sr.
135 Clover Hill Ln
Newport, VA 24128

Dennis F. Moore
471 Peal Dr, 104
Proctor, WV 26055

Freda L. Campbell
307 Elizabeth Street
Glen Dale, WV 26038

Joan A. Gieger
621 Pepperdine Avenue
Edmond, OK 33013

Mary W. Holmes
197 Spindle Lane
Moundsville, WV 26041

Freddie C. White
RR 1 Box 59A
Glen Easton, WV 26039

Joyce A. Wallace
4107 Shoemaker Hollow Road
New Philadelphia, OH 44663

Linda G. Moore
720 3rd Avenue
Apt. 312
New Cumberland, WV 26047

Carl Caldwell
501 Morgantown Avenue
Apartment 201
Barnesville, OH 43713

Crystal Thomas
1402 Sixth Street
Moundsville, WV 26041

Hiram Vernon Moore
609 Pink Apartment Rd
Davenport, FL 33837

Ronald Wayne Moore
434 Moores Ln
New Cumberland, WV 26047

Anthony T. Moore
215 Ash Avenue
Moundsville, WV 26041

James D. Yocum
5200 NW 31st Avenue
Apartment B 38
Ft. Lauderdale, FL 33309

Joyce Elaine Cone
1831 Old Westminster Pike
Finksburg, MD 21048

Marilyn Sue Reilly
197 Spindle Lane
Moundsville, WV 26041

Sharon Diane Jahn
2802 Spindle Lane
Bowie, MD 20715

Tamala Schollick
112 Jennifer Drive
Moundsville, WV 26041

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

February 17, 2021 ✓

Byrd E. White, III
Secretary of Transportation

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

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

Subject: DOH Permit for the Hudson Pad, Marshall County
Hudson S-6HM Well site ✓

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2019-0353 issued to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 21 SLS MP10.57.

This operator is in compliance with §22-6A-20 of the WV Code. 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. This letter is valid for permitting purposes for one year from the date of this letter.

Very Truly Yours,

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

Cc: Amy L. Morris
Tug Hill Operating
CH, OM, D-6
File

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Hudson Wells

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

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