



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, February 2, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

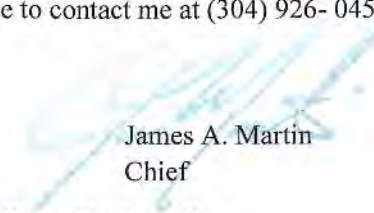
TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANONSBURG, PA 15317

Re: Permit approval for HUDSON S-14HU
47-051-02327-00-00

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-14HU
Farm Name: CNX LAND LLC
U.S. WELL NUMBER: 47-051-02327-00-00
Horizontal 6A New Drill
Date Issued: 2/2/2021

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.

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west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

December 21, 2020

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

RE: Application for Deep Well Permit – API #47-051-02327

COMPANY: Tug Hill Operating, LLC

FARM: CNX Land, LLC Hudson S-14HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion. Pooling Docket No. 300-304**

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

1. Comments to Notice of Deviation filed? Yes; withdrawn at or prior to the hearing.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes
4. Provided a plat showing that the productive interval of the well meets the requirements of the Rules of the Commission W. Va. C.S.R. § 39-1-4.2.

Sincerely,

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

Susan Rose
Administrator

** Hudson S-11HU 47-051-02296; Hudson S-13HU 47-051-02293; Hudson S-12HU 47-051-02292; Ten High 1N-20HU 47-051-02021, Ten High 1N-13HU 47-051-01965; Ten High 1S-17HU 47-051-02033; Fitzgerald S-18HU 47-051-02325; Fitzgerald S-19HU 47-051-02326; Fitzgerald S-17HU 47-051-02324

WW-6B
(04/15)

API NO. 47-⁴⁷⁰⁵¹⁰²³²⁷
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

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-14HU Well Pad Name: Hudson

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

4) Elevation, current ground: 1370' Elevation, proposed post-construction: 1344.81'

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

(b) If Gas Shallow _____ Deep
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):

Point Pleasant is the target formation at a depth of 11,697' - 11,830' - thickness of 133' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,980'

9) Formation at Total Vertical Depth: Trenton, plug back to Reedsville

10) Proposed Total Measured Depth: 29,676'

11) Proposed Horizontal Leg Length: 17,342.43'

12) Approximate Fresh Water Strata Depths: 70' ; 978'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 886' ; Pittsburgh Coal - 972'

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

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: 1059' TVD and 291' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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18) **CASING AND TUBING PROGRAM**

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1070'	1070'	1,719FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2800'	2800'	1,974FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,670'	10,670'	3,481FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	29,676'	29,676'	6,980FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,469'	
Liners							

JM 9/23/2020

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,624	11,385		
Liners							

PACKERS

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

WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

Handwritten signature and date: 3/11/2020

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (10,969'). 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 43,347,500 lb proppant and 670,184 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

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 third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

*See Attachment

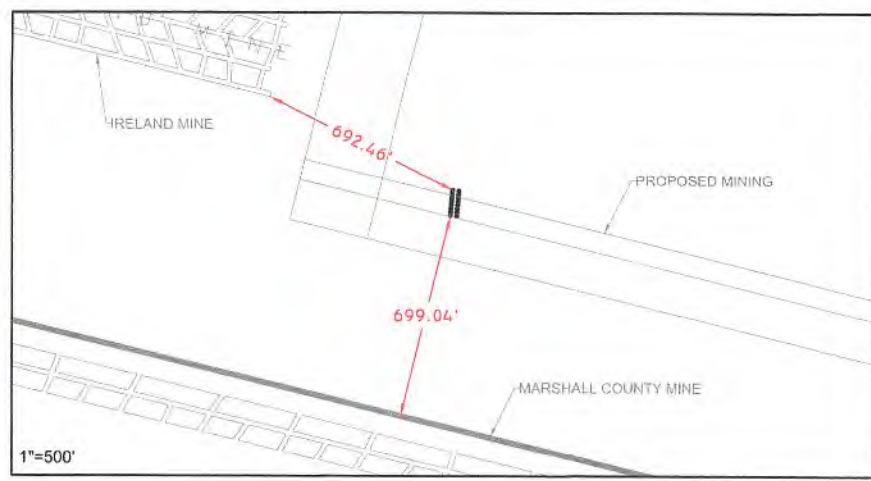
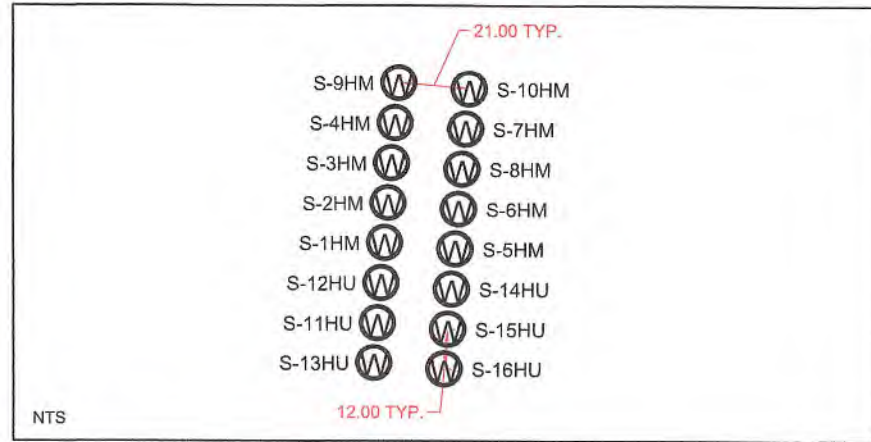
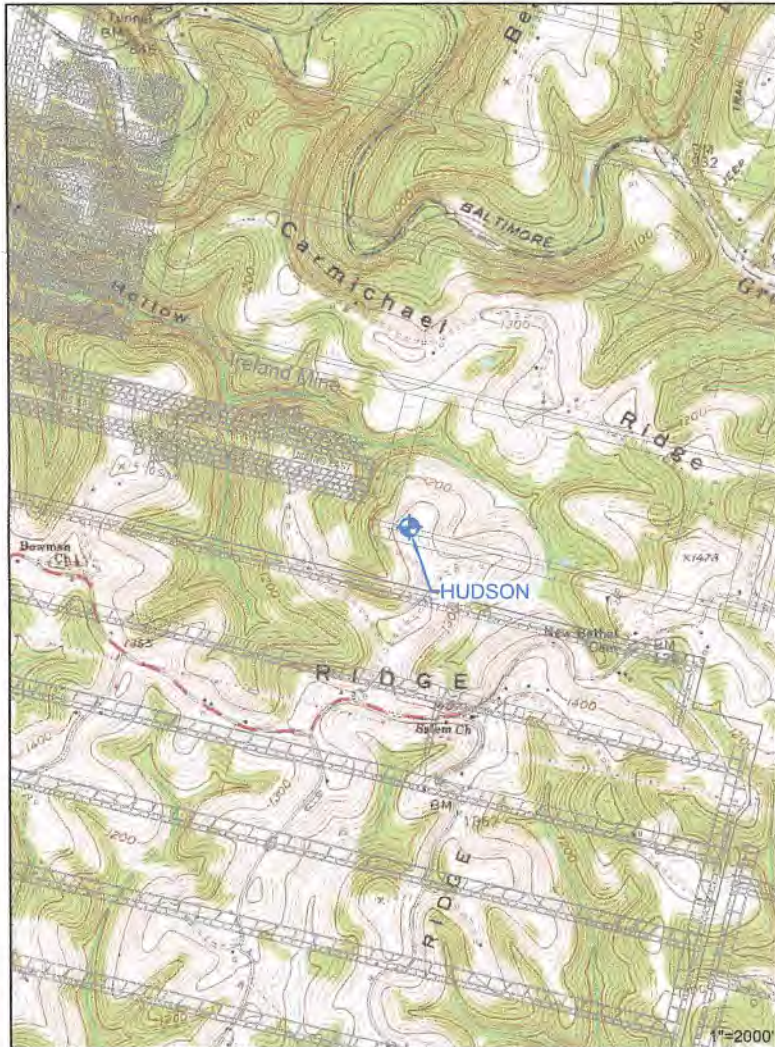
25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

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GENERAL NOTES:
 ALL DIMENSIONS RELATED TO COAL LOCATION (EXISTING AND/OR PROPOSED) ARE BASED ON INFO PROVIDED BY MURRAY ENERGY CORPORATION. THIS INFO MAY NOT BE CURRENT WITH MINING PLANS. ANY QUESTIONS OR CONCERNS PERTAINING TO THE LOCATION OF COAL SHOULD BE DIRECTED TO MURRAY ENERGY CORPORATION.

NOTE: DRAWING WAS CREATED ON 8.5x14 INCH PAPER.

THRASHER
 8005 MASON BRIDGE HIGHWAY
 HARTON, WV 26028
 PHONE: 606-462-4466
 FAX: 606-462-7020

TUG HILL OPERATING, INC.
 380 STATE ST. SUITE 200
 CANONSBURG, PA 15317

REVISIONS	
DATE	TYPE

HUDSON
 COAL EXHIBIT

DRAWN BY: DEC
 CHECKED BY: MCH
 DATE: 06/13/19
 SCALE: AS SHOWN
 JOB NO:
 DRAWING NAME:
 TUGHILL_COAL_EXHIBIT

1 OF 3

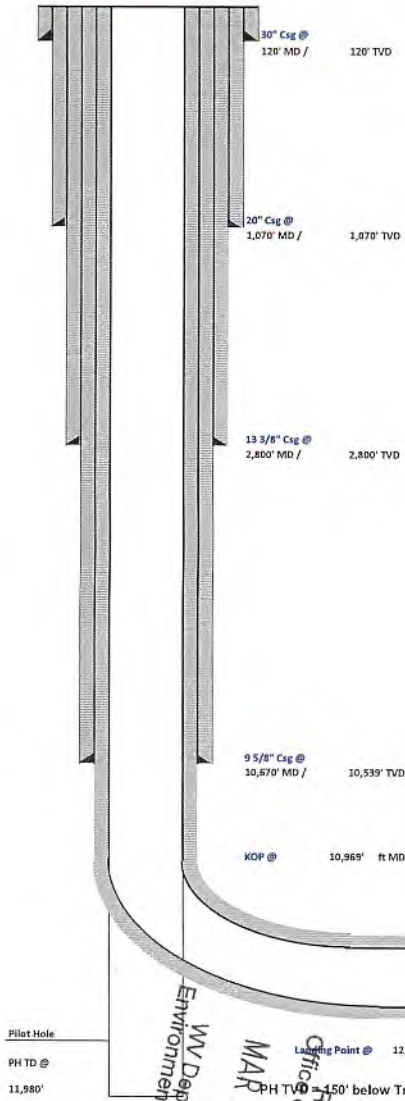


WELL NAME: Hudson S-14HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,344' GL Elev: 1,344'
 TD: 29,676'
 TH Latitude: 39.826728
 TH Longitude: -80.672637
 BH Latitude: 39.788386
 BH Longitude: -80.636302

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	978'
Sewickley Coal	886'
Pittsburgh Coal	972'
Big Lime	2,146'
Berea	2,764'
Tully	6,710'
Marcellus	6,823'
Onondaga	6,875'
Salina	7,598'
Lockport	8,607'
Utica	11,429'
Point Pleasant	11,697'
Landing Depth	11,747'
Trenton	11,830'
Pilot Hole TD	11,980'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	1,070'	1,070'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,670'	10,539'	47	HPP110	Surface
Production	8 1/2	5 1/2	29,676'	12,050'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,854	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,910	A	14.5	Air	1 Centralizer every other jt
Production	6,235	A	15	Air / SOBMs	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to stc



Handwritten signature and date: 3/11/2020

Pilot Hole
 PH TD @ 11,980'
 Landing Point @ 12,337' MD / 11,747' TVD
 PH TD @ 11,980' is 150' below Trenton Top

Lateral TD @ 29,676' ft MD
 12,050' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Hudson S-14HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,070'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,670'	CTS
Production	5 1/2"	HCP110	8 1/2"	29,676'	CTS

Cement

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

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

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

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

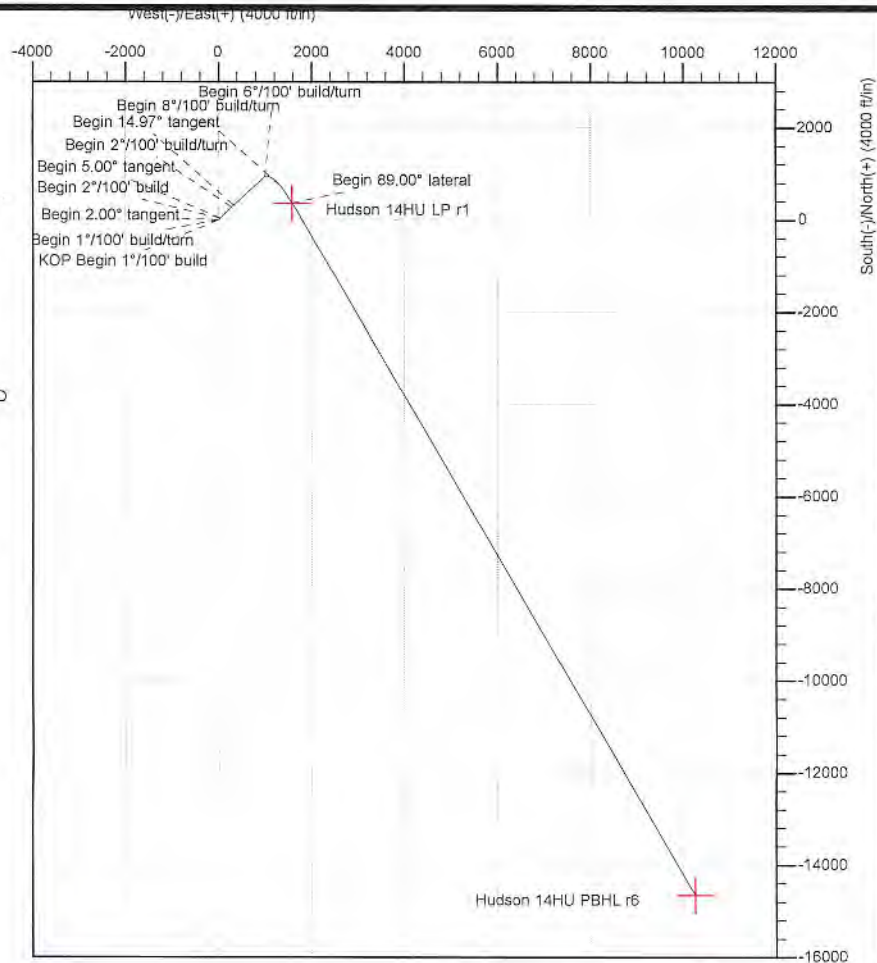
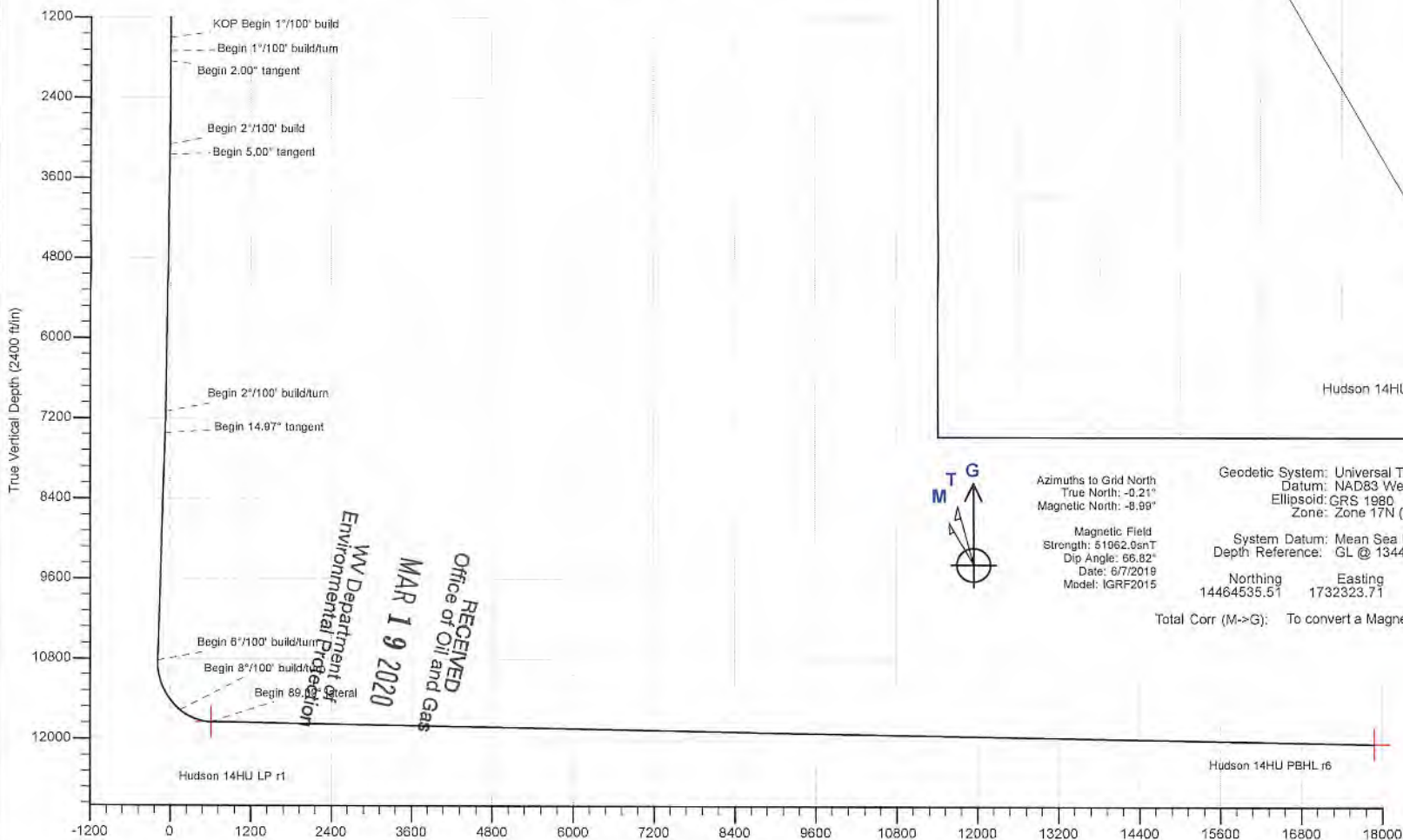
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Well: Hudson S-14 HU (slot N)
 Site: Hudson Alt North
 Project: Marshall County, West Virginia
 Design: rev6
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1500.00	0.00	0.000	1500.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 1°/100' build
3	1700.00	2.00	90.000	1699.96	0.00	3.49	1.00	90.000	2.00	Begin 1°/100' build/turn
4	1853.05	2.00	45.000	1852.92	1.89	8.05	1.00	-112.488	3.07	Begin 2.00° tangent
5	3100.88	2.00	45.000	3100.00	32.68	38.84	0.00	0.000	-4.49	Begin 2°/100' build
6	3250.88	5.00	45.000	3249.70	39.16	45.32	2.00	0.000	-6.08	Begin 5.00° tangent
7	7115.89	5.00	45.000	7100.00	277.35	283.51	0.00	0.000	-64.53	Begin 2°/100' build/turn
8	7448.52	14.97	47.878	7427.18	316.51	325.73	3.00	4.293	-72.39	Begin 14.97° tangent
9	10869.41	14.97	47.878	10828.59	926.50	1000.31	0.00	0.000	-185.04	Begin 6°/100' build/turn
10	11831.25	50.00	138.266	11573.11	742.13	1324.95	6.00	102.587	152.22	Begin 8°/100' build/turn
11	12336.68	89.00	149.996	11747.25	362.99	1591.32	8.00	18.264	615.57	Begin 89.00° lateral
12	29675.98	89.00	149.996	12050.00-14650.35	10260.78	0.00	0.000	7886.20		PBHL/TD 29675.98 MD/12050.00 TVD



Azimuths to Grid North
 True North: -0.21°
 Magnetic North: -8.99°

Magnetic Field
 Strength: 51962.9nT
 Dip Angle: 66.82°
 Date: 6/7/2019
 Model: IGRF2015

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

System Datum: Mean Sea Level
 Depth Reference: GL @ 1344.25ft

Northing: 14464535.51 Easting: 1732323.71 Latitude: 39.82872800 Longitude: -80.67263700

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.99°



4705102327



Planning Report - Geographic

4705102327

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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 "	Grid Convergence:	0.210 °

Well	Hudson S-14 HU (slot N)					
Well Position	+N/-S	0.00 ft	Northing:	14,464,535.51 usft	Latitude:	39.82872800
	+E/-W	0.00 ft	Easting:	1,732,323.71 usft	Longitude:	-80.67263700
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	1,344.25 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/7/2019	-8.780	66.819	51,962.88144416

Design	rev6			
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	144.993

Plan Survey Tool Program	Date	3/6/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	29,675.59 rev6 (Original Hole)	MWD MWD - Standard	

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MAR 19 2020
WV Department of
Environmental Protection

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Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,700.00	2.00	90.000	1,699.96	0.00	3.49	1.00	1.00	0.00	90.000	
1,853.05	2.00	45.000	1,852.92	1.89	8.05	1.00	0.00	-29.40	-112.488	
3,100.88	2.00	45.000	3,100.00	32.68	38.84	0.00	0.00	0.00	0.000	
3,250.88	5.00	45.000	3,249.70	39.16	45.32	2.00	2.00	0.00	0.000	
7,115.89	5.00	45.000	7,100.00	277.35	283.51	0.00	0.00	0.00	0.000	
7,448.52	14.97	47.878	7,427.18	316.51	325.73	3.00	3.00	0.87	4.293	
10,969.41	14.97	47.878	10,828.59	926.50	1,000.31	0.00	0.00	0.00	0.000	
11,831.26	50.00	138.266	11,573.11	742.13	1,324.95	6.00	4.06	10.49	102.587	
12,336.68	89.00	149.996	11,747.25	362.99	1,591.32	8.00	7.72	2.32	18.264	
29,675.98	89.00	149.996	12,050.00	-14,650.35	10,280.78	0.00	0.00	0.00	0.000	Hudson 14HU PBHL I

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Planning Report - Geographic

Database:	DB_Aug1919_V14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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	0.000	0.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
100.00	0.00	0.000	100.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
200.00	0.00	0.000	200.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
300.00	0.00	0.000	300.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
400.00	0.00	0.000	400.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
500.00	0.00	0.000	500.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
600.00	0.00	0.000	600.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
700.00	0.00	0.000	700.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
800.00	0.00	0.000	800.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
900.00	0.00	0.000	900.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,300.00	0.00	0.000	1,300.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,400.00	0.00	0.000	1,400.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	14,464,535.51	1,732,323.71	39.82872800	-80.67263700	
KOP Begin 1°/100' build										
1,600.00	1.00	90.000	1,599.99	0.00	0.87	14,464,535.51	1,732,324.59	39.82872799	-80.67263389	
1,700.00	2.00	90.000	1,699.96	0.00	3.49	14,464,535.51	1,732,327.20	39.82872797	-80.67262457	
Begin 1°/100' build/tum										
1,800.00	1.86	60.258	1,799.91	0.81	6.65	14,464,536.32	1,732,330.36	39.82873015	-80.67261332	
1,853.05	2.00	45.000	1,852.93	1.89	8.05	14,464,537.40	1,732,331.76	39.82873311	-80.67260830	
Begin 2.00° tangent										
1,900.00	2.00	45.000	1,899.85	3.05	9.21	14,464,538.56	1,732,332.92	39.82873628	-80.67260416	
2,000.00	2.00	45.000	1,999.79	5.51	11.68	14,464,541.03	1,732,335.39	39.82874303	-80.67259534	
2,100.00	2.00	45.000	2,099.72	7.98	14.14	14,464,543.50	1,732,337.86	39.82874978	-80.67258652	
2,200.00	2.00	45.000	2,199.66	10.45	16.61	14,464,545.96	1,732,340.32	39.82875653	-80.67257770	
2,300.00	2.00	45.000	2,299.60	12.92	19.08	14,464,548.43	1,732,342.79	39.82876329	-80.67256887	
2,400.00	2.00	45.000	2,399.54	15.39	21.55	14,464,550.90	1,732,345.26	39.82877004	-80.67256005	
2,500.00	2.00	45.000	2,499.48	17.85	24.01	14,464,553.37	1,732,347.73	39.82877679	-80.67255123	
2,600.00	2.00	45.000	2,599.42	20.32	26.48	14,464,555.84	1,732,350.20	39.82878354	-80.67254241	
2,700.00	2.00	45.000	2,699.36	22.79	28.95	14,464,558.30	1,732,352.66	39.82879030	-80.67253359	
2,800.00	2.00	45.000	2,799.30	25.26	31.42	14,464,560.77	1,732,355.13	39.82879705	-80.67252476	
2,900.00	2.00	45.000	2,899.24	27.72	33.89	14,464,563.24	1,732,357.60	39.82880380	-80.67251594	
3,000.00	2.00	45.000	2,999.18	30.19	36.35	14,464,565.71	1,732,360.07	39.82881055	-80.67250712	
3,100.00	2.00	45.000	3,099.12	32.66	38.82	14,464,568.17	1,732,362.53	39.82881730	-80.67249830	
3,100.88	2.00	45.000	3,100.00	32.66	38.84	14,464,568.20	1,732,362.56	39.82881736	-80.67249822	
Begin 2°/100' build										
3,200.00	3.98	45.000	3,198.98	36.34	42.50	14,464,571.85	1,732,366.21	39.82882737	-80.67248515	
3,250.88	5.00	45.000	3,249.70	39.16	45.32	14,464,574.67	1,732,369.03	39.82883508	-80.67247508	
Begin 5.00° tangent										
3,300.00	5.00	45.000	3,298.63	42.18	48.34	14,464,577.70	1,732,372.06	39.82884336	-80.67246425	
3,400.00	5.00	45.000	3,398.25	48.35	54.51	14,464,583.86	1,732,378.22	39.82886022	-80.67244222	
3,500.00	5.00	45.000	3,497.87	54.51	60.67	14,464,590.02	1,732,384.38	39.82887709	-80.67242019	
3,600.00	5.00	45.000	3,597.49	60.67	66.83	14,464,596.19	1,732,390.55	39.82889395	-80.67239816	
3,700.00	5.00	45.000	3,697.11	66.83	73.00	14,464,602.35	1,732,396.71	39.82891081	-80.67237613	
3,800.00	5.00	45.000	3,796.73	73.00	79.16	14,464,608.51	1,732,402.87	39.82892767	-80.67235410	
3,900.00	5.00	45.000	3,896.35	79.16	85.32	14,464,614.67	1,732,409.03	39.82894454	-80.67233207	
4,000.00	5.00	45.000	3,995.97	85.32	91.48	14,464,620.84	1,732,415.20	39.82896140	-80.67231003	
4,100.00	5.00	45.000	4,095.59	91.49	97.65	14,464,627.00	1,732,421.36	39.82897826	-80.67228800	
4,200.00	5.00	45.000	4,195.21	97.65	103.81	14,464,633.16	1,732,427.52	39.82899512	-80.67226597	
4,300.00	5.00	45.000	4,294.83	103.81	109.97	14,464,639.33	1,732,433.69	39.82901199	-80.67224394	
4,400.00	5.00	45.000	4,394.45	109.97	116.14	14,464,645.49	1,732,439.85	39.82902885	-80.67222191	
4,500.00	5.00	45.000	4,494.07	116.14	122.30	14,464,651.65	1,732,446.01	39.82904571	-80.67219988	

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 Design: rev6

Local Co-ordinate Reference: Well Hudson S-14 HU (slot N)
 TVD Reference: GL @ 1344.25ft
 MD Reference: GL @ 1344.25ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,600.00	5.00	45.000	4,593.68	122.30	128.46	14,464,657.81	1,732,452.17	39.82906257	-80.67217785
4,700.00	5.00	45.000	4,693.30	128.46	134.62	14,464,663.98	1,732,458.34	39.82907944	-80.67215581
4,800.00	5.00	45.000	4,792.92	134.63	140.79	14,464,670.14	1,732,464.50	39.82909630	-80.67213378
4,900.00	5.00	45.000	4,892.54	140.79	146.95	14,464,676.30	1,732,470.66	39.82911316	-80.67211175
5,000.00	5.00	45.000	4,992.16	146.95	153.11	14,464,682.47	1,732,476.83	39.82913002	-80.67208972
5,100.00	5.00	45.000	5,091.78	153.11	159.28	14,464,688.63	1,732,482.99	39.82914689	-80.67206769
5,200.00	5.00	45.000	5,191.40	159.28	165.44	14,464,694.79	1,732,489.15	39.82916375	-80.67204566
5,300.00	5.00	45.000	5,291.02	165.44	171.60	14,464,700.95	1,732,495.31	39.82918061	-80.67202362
5,400.00	5.00	45.000	5,390.64	171.60	177.76	14,464,707.12	1,732,501.48	39.82919747	-80.67200159
5,500.00	5.00	45.000	5,490.26	177.77	183.93	14,464,713.28	1,732,507.64	39.82921434	-80.67197956
5,600.00	5.00	45.000	5,589.88	183.93	190.09	14,464,719.44	1,732,513.80	39.82923120	-80.67195753
5,700.00	5.00	45.000	5,689.50	190.09	196.25	14,464,725.61	1,732,519.96	39.82924806	-80.67193550
5,800.00	5.00	45.000	5,789.12	196.25	202.42	14,464,731.77	1,732,526.13	39.82926492	-80.67191347
5,900.00	5.00	45.000	5,888.74	202.42	208.58	14,464,737.93	1,732,532.29	39.82928179	-80.67189143
6,000.00	5.00	45.000	5,988.36	208.58	214.74	14,464,744.09	1,732,538.45	39.82929865	-80.67186940
6,100.00	5.00	45.000	6,087.98	214.74	220.90	14,464,750.26	1,732,544.62	39.82931551	-80.67184737
6,200.00	5.00	45.000	6,187.60	220.91	227.07	14,464,756.42	1,732,550.78	39.82933237	-80.67182534
6,300.00	5.00	45.000	6,287.22	227.07	233.23	14,464,762.58	1,732,556.94	39.82934924	-80.67180331
6,400.00	5.00	45.000	6,386.84	233.23	239.39	14,464,768.75	1,732,563.10	39.82936610	-80.67178128
6,500.00	5.00	45.000	6,486.45	239.39	245.56	14,464,774.91	1,732,569.27	39.82938296	-80.67175924
6,600.00	5.00	45.000	6,586.07	245.56	251.72	14,464,781.07	1,732,575.43	39.82939982	-80.67173721
6,700.00	5.00	45.000	6,685.69	251.72	257.88	14,464,787.23	1,732,581.59	39.82941669	-80.67171518
6,800.00	5.00	45.000	6,785.31	257.88	264.04	14,464,793.40	1,732,587.76	39.82943355	-80.67169315
6,900.00	5.00	45.000	6,884.93	264.05	270.21	14,464,799.56	1,732,593.92	39.82945041	-80.67167112
7,000.00	5.00	45.000	6,984.55	270.21	276.37	14,464,805.72	1,732,600.08	39.82946727	-80.67164909
7,100.00	5.00	45.000	7,084.17	276.37	282.53	14,464,811.89	1,732,606.24	39.82948414	-80.67162705
7,115.89	5.00	45.000	7,100.00	277.35	283.51	14,464,812.86	1,732,607.22	39.82948682	-80.67162355
Begin 2°/100' build/turn									
7,200.00	7.52	46.443	7,183.60	283.74	290.09	14,464,819.25	1,732,613.80	39.82950428	-80.67160003
7,300.00	10.52	47.262	7,282.36	294.44	301.54	14,464,829.95	1,732,625.25	39.82953356	-80.67155912
7,400.00	13.51	47.721	7,380.15	308.50	316.89	14,464,844.01	1,732,640.60	39.82957201	-80.67150426
7,448.52	14.97	47.878	7,427.18	316.51	325.73	14,464,852.03	1,732,649.44	39.82959394	-80.67147265
Begin 14.97° tangent									
7,500.00	14.97	47.878	7,476.91	325.43	335.60	14,464,860.95	1,732,659.31	39.82961833	-80.67143741
7,600.00	14.97	47.878	7,573.52	342.76	354.76	14,464,878.27	1,732,678.47	39.82966572	-80.67136894
7,700.00	14.97	47.878	7,670.13	360.08	373.91	14,464,895.60	1,732,697.63	39.82971310	-80.67130047
7,800.00	14.97	47.878	7,766.73	377.41	393.07	14,464,912.92	1,732,716.79	39.82976049	-80.67123200
7,900.00	14.97	47.878	7,863.34	394.73	412.23	14,464,930.24	1,732,735.94	39.82980787	-80.67116353
8,000.00	14.97	47.878	7,959.95	412.06	431.39	14,464,947.57	1,732,755.10	39.82985525	-80.67109506
8,100.00	14.97	47.878	8,056.55	429.38	450.55	14,464,964.89	1,732,774.26	39.82990264	-80.67102659
8,200.00	14.97	47.878	8,153.16	446.71	469.71	14,464,982.22	1,732,793.42	39.82995002	-80.67095812
8,300.00	14.97	47.878	8,249.76	464.03	488.87	14,464,999.54	1,732,812.58	39.82999741	-80.67088965
8,400.00	14.97	47.878	8,346.37	481.36	508.03	14,465,016.87	1,732,831.74	39.83004479	-80.67082118
8,500.00	14.97	47.878	8,442.98	498.68	527.19	14,465,034.19	1,732,850.90	39.83009218	-80.67075271
8,600.00	14.97	47.878	8,539.58	516.00	546.35	14,465,051.52	1,732,870.06	39.83013956	-80.67068424
8,700.00	14.97	47.878	8,636.19	533.33	565.51	14,465,068.84	1,732,889.22	39.83018694	-80.67061577
8,800.00	14.97	47.878	8,732.80	550.65	584.66	14,465,086.17	1,732,908.38	39.83023433	-80.67054730
8,900.00	14.97	47.878	8,829.40	567.98	603.82	14,465,103.49	1,732,927.54	39.83028171	-80.67047883
9,000.00	14.97	47.878	8,926.01	585.30	622.98	14,465,120.82	1,732,946.69	39.83032910	-80.67041036
9,100.00	14.97	47.878	9,022.62	602.63	642.14	14,465,138.14	1,732,965.85	39.83037648	-80.67034189
9,200.00	14.97	47.878	9,119.22	619.95	661.30	14,465,155.47	1,732,985.01	39.83042386	-80.67027342
9,300.00	14.97	47.878	9,215.83	637.28	680.46	14,465,172.79	1,733,004.17	39.83047125	-80.67020495
9,400.00	14.97	47.878	9,312.43	654.60	699.62	14,465,190.12	1,733,023.33	39.83051863	-80.67013648
9,500.00	14.97	47.878	9,409.04	671.93	718.78	14,465,207.44	1,733,042.49	39.83056601	-80.67006800



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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	14.97	47.878	9,505.65	689.25	737.94	14,465,224.77	1,733,061.65	39.83061340	-80.66999953
9,700.00	14.97	47.878	9,602.25	706.58	757.10	14,465,242.09	1,733,080.81	39.83066078	-80.66993106
9,800.00	14.97	47.878	9,698.86	723.90	776.26	14,465,259.41	1,733,099.97	39.83070816	-80.66986259
9,900.00	14.97	47.878	9,795.47	741.23	795.42	14,465,276.74	1,733,119.13	39.83075555	-80.66979412
10,000.00	14.97	47.878	9,892.07	758.55	814.57	14,465,294.06	1,733,138.29	39.83080293	-80.66972565
10,100.00	14.97	47.878	9,988.68	775.88	833.73	14,465,311.39	1,733,157.44	39.83085032	-80.66965718
10,200.00	14.97	47.878	10,085.28	793.20	852.89	14,465,328.71	1,733,176.60	39.83089770	-80.66958871
10,300.00	14.97	47.878	10,181.89	810.53	872.05	14,465,346.04	1,733,195.76	39.83094508	-80.66952023
10,400.00	14.97	47.878	10,278.50	827.85	891.21	14,465,363.36	1,733,214.92	39.83099247	-80.66945176
10,500.00	14.97	47.878	10,375.10	845.18	910.37	14,465,380.69	1,733,234.08	39.83103985	-80.66938329
10,600.00	14.97	47.878	10,471.71	862.50	929.53	14,465,398.01	1,733,253.24	39.83108723	-80.66931482
10,700.00	14.97	47.878	10,568.32	879.83	948.69	14,465,415.34	1,733,272.40	39.83113461	-80.66924635
10,800.00	14.97	47.878	10,664.92	897.15	967.85	14,465,432.66	1,733,291.56	39.83118200	-80.66917787
10,900.00	14.97	47.878	10,761.53	914.47	987.01	14,465,449.99	1,733,310.72	39.83122938	-80.66910940
10,969.41	14.97	47.878	10,828.58	926.50	1,000.31	14,465,462.01	1,733,324.02	39.83126227	-80.66906187
Begin 6°/100' build/turn									
11,000.00	14.68	54.965	10,858.16	931.37	1,006.41	14,465,466.89	1,733,330.12	39.83127560	-80.66904007
11,100.00	15.27	78.232	10,954.85	941.34	1,029.69	14,465,476.85	1,733,353.40	39.83130273	-80.66895701
11,200.00	17.92	97.217	11,050.75	942.09	1,057.87	14,465,477.61	1,733,381.58	39.83130451	-80.66885664
11,300.00	21.90	110.493	11,144.80	933.63	1,090.62	14,465,469.14	1,733,414.33	39.83128092	-80.66874007
11,400.00	26.62	119.568	11,235.98	916.03	1,127.61	14,465,451.54	1,733,451.32	39.83123222	-80.66860856
11,500.00	31.74	125.987	11,323.28	889.49	1,168.41	14,465,425.01	1,733,492.12	39.83115893	-80.66846357
11,600.00	37.11	130.750	11,405.75	854.31	1,212.59	14,465,389.83	1,733,536.30	39.83108187	-80.66830668
11,700.00	42.62	134.448	11,482.49	810.87	1,259.66	14,465,346.39	1,733,583.37	39.83094210	-80.66813960
11,800.00	48.23	137.439	11,552.65	759.65	1,309.10	14,465,295.16	1,733,632.81	39.83080092	-80.66796418
11,831.25	50.00	138.266	11,573.11	742.13	1,324.95	14,465,277.65	1,733,648.66	39.83075265	-80.66790795
Begin 8°/100' build/turn									
11,900.00	55.24	140.361	11,614.83	700.70	1,360.52	14,465,236.22	1,733,684.23	39.83063851	-80.66778179
12,000.00	62.92	142.979	11,666.18	633.41	1,413.62	14,465,168.93	1,733,737.33	39.83045318	-80.66759355
12,100.00	70.64	145.259	11,705.58	558.98	1,467.39	14,465,094.50	1,733,791.10	39.83024823	-80.66740299
12,200.00	78.39	147.331	11,732.26	478.86	1,520.80	14,465,014.37	1,733,844.51	39.83002765	-80.66721383
12,300.00	86.15	149.290	11,745.70	394.60	1,572.80	14,464,930.12	1,733,896.51	39.82979573	-80.66702973
12,336.68	89.00	149.996	11,747.25	362.99	1,591.32	14,464,898.50	1,733,915.03	39.82970871	-80.66696418
Begin 89.00° lateral									
12,400.00	89.00	149.996	11,748.36	308.16	1,622.98	14,464,843.67	1,733,946.69	39.82955782	-80.66685214
12,500.00	89.00	149.996	11,750.10	221.57	1,672.98	14,464,757.09	1,733,996.69	39.82931953	-80.66667520
12,600.00	89.00	149.996	11,751.85	134.99	1,722.98	14,464,670.50	1,734,046.68	39.82908123	-80.66649827
12,700.00	89.00	149.996	11,753.59	48.40	1,772.97	14,464,583.92	1,734,096.68	39.82884294	-80.66632133
12,800.00	89.00	149.996	11,755.34	-38.18	1,822.97	14,464,497.33	1,734,146.68	39.82860464	-80.66614439
12,900.00	89.00	149.996	11,757.09	-124.77	1,872.97	14,464,410.75	1,734,196.68	39.82836635	-80.66596745
13,000.00	89.00	149.996	11,758.83	-211.35	1,922.97	14,464,324.16	1,734,246.68	39.82812805	-80.66579052
13,100.00	89.00	149.996	11,760.58	-297.94	1,972.97	14,464,237.58	1,734,296.68	39.82788975	-80.66561359
13,200.00	89.00	149.996	11,762.32	-384.53	2,022.97	14,464,150.99	1,734,346.68	39.82765146	-80.66543665
13,300.00	89.00	149.996	11,764.07	-471.11	2,072.97	14,464,064.40	1,734,396.68	39.82741316	-80.66525972
13,400.00	89.00	149.996	11,765.82	-557.70	2,122.97	14,463,977.82	1,734,446.67	39.82717486	-80.66508279
13,500.00	89.00	149.996	11,767.56	-644.28	2,172.97	14,463,891.23	1,734,496.67	39.82693656	-80.66490587
13,600.00	89.00	149.996	11,769.31	-730.87	2,222.96	14,463,804.65	1,734,546.67	39.82669827	-80.66472894
13,700.00	89.00	149.996	11,771.05	-817.45	2,272.96	14,463,718.06	1,734,596.67	39.82645997	-80.66455201
13,800.00	89.00	149.996	11,772.80	-904.04	2,322.96	14,463,631.48	1,734,646.67	39.82622167	-80.66437509
13,900.00	89.00	149.996	11,774.55	-990.62	2,372.96	14,463,544.89	1,734,696.67	39.82598337	-80.66419817
14,000.00	89.00	149.996	11,776.29	-1,077.21	2,422.96	14,463,458.31	1,734,746.67	39.82574507	-80.66402124
14,100.00	89.00	149.996	11,778.04	-1,163.80	2,472.96	14,463,371.72	1,734,796.67	39.82550677	-80.66384432
14,200.00	89.00	149.996	11,779.78	-1,250.38	2,522.96	14,463,285.14	1,734,846.67	39.82526847	-80.66366740
14,300.00	89.00	149.996	11,781.53	-1,336.97	2,572.96	14,463,198.55	1,734,896.66	39.82503018	-80.66349048

4705102327



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,400.00	89.00	149.996	11,783.28	-1,423.55	2,622.96	14,463,111.97	1,734,946.66	39.82479188	-80.66331357
14,500.00	89.00	149.996	11,785.02	-1,510.14	2,672.95	14,463,025.38	1,734,996.66	39.82455357	-80.66313665
14,600.00	89.00	149.996	11,786.77	-1,596.72	2,722.95	14,462,938.79	1,735,046.66	39.82431527	-80.66295974
14,700.00	89.00	149.996	11,788.51	-1,683.31	2,772.95	14,462,852.21	1,735,096.66	39.82407697	-80.66276282
14,800.00	89.00	149.996	11,790.26	-1,769.89	2,822.95	14,462,765.62	1,735,146.66	39.82383867	-80.66260591
14,900.00	89.00	149.996	11,792.01	-1,856.48	2,872.95	14,462,679.04	1,735,196.66	39.82360037	-80.66242900
15,000.00	89.00	149.996	11,793.75	-1,943.07	2,922.95	14,462,592.45	1,735,246.66	39.82336207	-80.66225209
15,100.00	89.00	149.996	11,795.50	-2,029.65	2,972.95	14,462,505.87	1,735,296.65	39.82312377	-80.66207518
15,200.00	89.00	149.996	11,797.24	-2,116.24	3,022.95	14,462,419.28	1,735,346.65	39.82288547	-80.66189827
15,300.00	89.00	149.996	11,798.99	-2,202.82	3,072.95	14,462,332.70	1,735,396.65	39.82264716	-80.66172136
15,400.00	89.00	149.996	11,800.74	-2,289.41	3,122.95	14,462,246.11	1,735,446.65	39.82240886	-80.66154446
15,500.00	89.00	149.996	11,802.48	-2,375.99	3,172.94	14,462,159.53	1,735,496.65	39.82217056	-80.66136756
15,600.00	89.00	149.996	11,804.23	-2,462.58	3,222.94	14,462,072.94	1,735,546.65	39.82193225	-80.66119065
15,700.00	89.00	149.996	11,805.97	-2,549.16	3,272.94	14,461,986.36	1,735,596.65	39.82169395	-80.66101375
15,800.00	89.00	149.996	11,807.72	-2,635.75	3,322.94	14,461,899.77	1,735,646.65	39.82145565	-80.66083685
15,900.00	89.00	149.996	11,809.47	-2,722.34	3,372.94	14,461,813.18	1,735,696.65	39.82121734	-80.66065995
16,000.00	89.00	149.996	11,811.21	-2,808.92	3,422.94	14,461,726.60	1,735,746.64	39.82097904	-80.66048305
16,100.00	89.00	149.996	11,812.96	-2,895.51	3,472.94	14,461,640.01	1,735,796.64	39.82074073	-80.66030616
16,200.00	89.00	149.996	11,814.70	-2,982.09	3,522.94	14,461,553.43	1,735,846.64	39.82050243	-80.66012926
16,300.00	89.00	149.996	11,816.45	-3,068.68	3,572.94	14,461,466.84	1,735,896.64	39.82026412	-80.65995237
16,400.00	89.00	149.996	11,818.20	-3,155.26	3,622.93	14,461,380.26	1,735,946.64	39.82002582	-80.65977547
16,500.00	89.00	149.996	11,819.94	-3,241.85	3,672.93	14,461,293.67	1,735,996.64	39.81978751	-80.65959858
16,600.00	89.00	149.996	11,821.69	-3,328.43	3,722.93	14,461,207.09	1,736,046.64	39.81954921	-80.65942169
16,700.00	89.00	149.996	11,823.43	-3,415.02	3,772.93	14,461,120.50	1,736,096.64	39.81931090	-80.65924480
16,800.00	89.00	149.996	11,825.18	-3,501.61	3,822.93	14,461,033.92	1,736,146.63	39.81907259	-80.65906791
16,900.00	89.00	149.996	11,826.93	-3,588.19	3,872.93	14,460,947.33	1,736,196.63	39.81883429	-80.65889103
17,000.00	89.00	149.996	11,828.67	-3,674.78	3,922.93	14,460,860.75	1,736,246.63	39.81859598	-80.65871414
17,100.00	89.00	149.996	11,830.42	-3,761.36	3,972.93	14,460,774.16	1,736,296.63	39.81835767	-80.65853726
17,200.00	89.00	149.996	11,832.17	-3,847.95	4,022.93	14,460,687.57	1,736,346.63	39.81811937	-80.65836037
17,300.00	89.00	149.996	11,833.91	-3,934.53	4,072.92	14,460,600.99	1,736,396.63	39.81788106	-80.65818349
17,400.00	89.00	149.996	11,835.66	-4,021.12	4,122.92	14,460,514.40	1,736,446.63	39.81764275	-80.65800661
17,500.00	89.00	149.996	11,837.40	-4,107.70	4,172.92	14,460,427.82	1,736,496.63	39.81740444	-80.65782973
17,600.00	89.00	149.996	11,839.15	-4,194.29	4,222.92	14,460,341.23	1,736,546.63	39.81716613	-80.65765285
17,700.00	89.00	149.996	11,840.90	-4,280.88	4,272.92	14,460,254.65	1,736,596.62	39.81692782	-80.65747598
17,800.00	89.00	149.996	11,842.64	-4,367.46	4,322.92	14,460,168.06	1,736,646.62	39.81668951	-80.65729910
17,900.00	89.00	149.996	11,844.39	-4,454.05	4,372.92	14,460,081.48	1,736,696.62	39.81645120	-80.65712223
18,000.00	89.00	149.996	11,846.13	-4,540.63	4,422.92	14,459,994.89	1,736,746.62	39.81621289	-80.65694535
18,100.00	89.00	149.996	11,847.88	-4,627.22	4,472.92	14,459,908.31	1,736,796.62	39.81597458	-80.65676848
18,200.00	89.00	149.996	11,849.63	-4,713.80	4,522.91	14,459,821.72	1,736,846.62	39.81573627	-80.65659161
18,300.00	89.00	149.996	11,851.37	-4,800.39	4,572.91	14,459,735.14	1,736,896.62	39.81549796	-80.65641474
18,400.00	89.00	149.996	11,853.12	-4,886.97	4,622.91	14,459,648.55	1,736,946.62	39.81525965	-80.65623787
18,500.00	89.00	149.996	11,854.86	-4,973.56	4,672.91	14,459,561.96	1,736,996.61	39.81502134	-80.65606100
18,600.00	89.00	149.996	11,856.61	-5,060.15	4,722.91	14,459,475.38	1,737,046.61	39.81478303	-80.65588414
18,700.00	89.00	149.996	11,858.36	-5,146.73	4,772.91	14,459,388.79	1,737,096.61	39.81454472	-80.65570727
18,800.00	89.00	149.996	11,860.10	-5,233.32	4,822.91	14,459,302.21	1,737,146.61	39.81430641	-80.65553041
18,900.00	89.00	149.996	11,861.85	-5,319.90	4,872.91	14,459,215.62	1,737,196.61	39.81406809	-80.65535355
19,000.00	89.00	149.996	11,863.59	-5,406.49	4,922.91	14,459,129.04	1,737,246.61	39.81382978	-80.65517668
19,100.00	89.00	149.996	11,865.34	-5,493.07	4,972.91	14,459,042.45	1,737,296.61	39.81359147	-80.65499982
19,200.00	89.00	149.996	11,867.09	-5,579.66	5,022.90	14,458,955.87	1,737,346.61	39.81335316	-80.65482297
19,300.00	89.00	149.996	11,868.83	-5,666.24	5,072.90	14,458,869.28	1,737,396.61	39.81311484	-80.65464611
19,400.00	89.00	149.996	11,870.58	-5,752.83	5,122.90	14,458,782.70	1,737,446.60	39.81287653	-80.65446925
19,500.00	89.00	149.996	11,872.32	-5,839.42	5,172.90	14,458,696.11	1,737,496.60	39.81263821	-80.65429240
19,600.00	89.00	149.996	11,874.07	-5,926.00	5,222.90	14,458,609.53	1,737,546.60	39.81239990	-80.65411554
19,700.00	89.00	149.996	11,875.82	-6,012.59	5,272.90	14,458,522.94	1,737,596.60	39.81216159	-80.65393869
19,800.00	89.00	149.996	11,877.56	-6,099.17	5,322.90	14,458,436.35	1,737,646.60	39.81192327	-80.65376184



Planning Report - Geographic

Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Hudson Alt North
 Well: Hudson S-14 HU (slot N)
 Wellbore: Original Hole
 Design: rev6

Local Co-ordinate Reference: Well Hudson S-14 HU (slot N)
 TVD Reference: GL @ 1344.25ft
 MD Reference: GL @ 1344.25ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,900.00	89.00	149.996	11,879.31	-6,185.76	5,372.90	14,458,349.77	1,737,696.60	39.81166496	-80.65358499
20,000.00	89.00	149.996	11,881.05	-6,272.34	5,422.90	14,458,263.18	1,737,746.60	39.81144664	-80.65340814
20,100.00	89.00	149.996	11,882.80	-6,358.93	5,472.89	14,458,176.60	1,737,796.60	39.81120833	-80.65323129
20,200.00	89.00	149.996	11,884.55	-6,445.51	5,522.89	14,458,090.01	1,737,846.59	39.81097001	-80.65305444
20,300.00	89.00	149.996	11,886.29	-6,532.10	5,572.89	14,458,003.43	1,737,896.59	39.81073169	-80.65287760
20,400.00	89.00	149.996	11,888.04	-6,618.69	5,622.89	14,457,916.84	1,737,946.59	39.81049338	-80.65270075
20,500.00	89.00	149.996	11,889.78	-6,705.27	5,672.89	14,457,830.26	1,737,996.59	39.81025506	-80.65252391
20,600.00	89.00	149.996	11,891.53	-6,791.86	5,722.89	14,457,743.67	1,738,046.59	39.81001674	-80.65234707
20,700.00	89.00	149.996	11,893.28	-6,878.44	5,772.89	14,457,657.09	1,738,096.59	39.80977843	-80.65217023
20,800.00	89.00	149.996	11,895.02	-6,965.03	5,822.89	14,457,570.50	1,738,146.59	39.80954011	-80.65199339
20,900.00	89.00	149.996	11,896.77	-7,051.61	5,872.89	14,457,483.91	1,738,196.59	39.80930179	-80.65181655
21,000.00	89.00	149.996	11,898.51	-7,138.20	5,922.88	14,457,397.33	1,738,246.59	39.80906347	-80.65163971
21,100.00	89.00	149.996	11,900.26	-7,224.78	5,972.88	14,457,310.74	1,738,296.58	39.80882515	-80.65146288
21,200.00	89.00	149.996	11,902.01	-7,311.37	6,022.88	14,457,224.16	1,738,346.58	39.80858684	-80.65128604
21,300.00	89.00	149.996	11,903.75	-7,397.96	6,072.88	14,457,137.57	1,738,396.58	39.80834852	-80.65110921
21,400.00	89.00	149.996	11,905.50	-7,484.54	6,122.88	14,457,050.99	1,738,446.58	39.80811020	-80.65093238
21,500.00	89.00	149.996	11,907.24	-7,571.13	6,172.88	14,456,964.40	1,738,496.58	39.80787188	-80.65075555
21,600.00	89.00	149.996	11,908.99	-7,657.71	6,222.88	14,456,877.82	1,738,546.58	39.80763356	-80.65057872
21,700.00	89.00	149.996	11,910.74	-7,744.30	6,272.88	14,456,791.23	1,738,596.58	39.80739524	-80.65040189
21,800.00	89.00	149.996	11,912.48	-7,830.88	6,322.88	14,456,704.65	1,738,646.58	39.80715692	-80.65022506
21,900.00	89.00	149.996	11,914.23	-7,917.47	6,372.88	14,456,618.06	1,738,696.57	39.80691860	-80.65004824
22,000.00	89.00	149.996	11,915.97	-8,004.05	6,422.87	14,456,531.48	1,738,746.57	39.80668028	-80.64987141
22,100.00	89.00	149.996	11,917.72	-8,090.64	6,472.87	14,456,444.89	1,738,796.57	39.80644196	-80.64969459
22,200.00	89.00	149.996	11,919.47	-8,177.23	6,522.87	14,456,358.30	1,738,846.57	39.80620364	-80.64951776
22,300.00	89.00	149.996	11,921.21	-8,263.81	6,572.87	14,456,271.72	1,738,896.57	39.80596531	-80.64934094
22,400.00	89.00	149.996	11,922.96	-8,350.40	6,622.87	14,456,185.13	1,738,946.57	39.80572699	-80.64916412
22,500.00	89.00	149.996	11,924.71	-8,436.98	6,672.87	14,456,098.55	1,738,996.57	39.80548867	-80.64898730
22,600.00	89.00	149.996	11,926.45	-8,523.57	6,722.87	14,456,011.96	1,739,046.57	39.80525035	-80.64881049
22,700.00	89.00	149.996	11,928.20	-8,610.15	6,772.87	14,455,925.38	1,739,096.57	39.80501202	-80.64863367
22,800.00	89.00	149.996	11,929.94	-8,696.74	6,822.87	14,455,838.79	1,739,146.56	39.80477370	-80.64845686
22,900.00	89.00	149.996	11,931.69	-8,783.32	6,872.86	14,455,752.21	1,739,196.56	39.80453538	-80.64828004
23,000.00	89.00	149.996	11,933.44	-8,869.91	6,922.86	14,455,665.62	1,739,246.56	39.80429706	-80.64810323
23,100.00	89.00	149.996	11,935.18	-8,956.50	6,972.86	14,455,579.04	1,739,296.56	39.80405873	-80.64792642
23,200.00	89.00	149.996	11,936.93	-9,043.08	7,022.86	14,455,492.45	1,739,346.56	39.80382041	-80.64774961
23,300.00	89.00	149.996	11,938.67	-9,129.67	7,072.86	14,455,405.87	1,739,396.56	39.80358208	-80.64757280
23,400.00	89.00	149.996	11,940.42	-9,216.25	7,122.86	14,455,319.28	1,739,446.56	39.80334376	-80.64739599
23,500.00	89.00	149.996	11,942.17	-9,302.84	7,172.86	14,455,232.69	1,739,496.56	39.80310543	-80.64721918
23,600.00	89.00	149.996	11,943.91	-9,389.42	7,222.86	14,455,146.11	1,739,546.55	39.80286711	-80.64704238
23,700.00	89.00	149.996	11,945.66	-9,476.01	7,272.86	14,455,059.52	1,739,596.55	39.80262878	-80.64686557
23,800.00	89.00	149.996	11,947.40	-9,562.59	7,322.85	14,454,972.94	1,739,646.55	39.80239046	-80.64668877
23,900.00	89.00	149.996	11,949.15	-9,649.18	7,372.85	14,454,886.35	1,739,696.55	39.80215213	-80.64651197
24,000.00	89.00	149.996	11,950.90	-9,735.77	7,422.85	14,454,799.77	1,739,746.55	39.80191380	-80.64633517
24,100.00	89.00	149.996	11,952.64	-9,822.35	7,472.85	14,454,713.18	1,739,796.55	39.80167548	-80.64615837
24,200.00	89.00	149.996	11,954.39	-9,908.94	7,522.85	14,454,626.60	1,739,846.55	39.80143715	-80.64598157
24,300.00	89.00	149.996	11,956.13	-9,995.52	7,572.85	14,454,540.01	1,739,896.55	39.80119882	-80.64580478
24,400.00	89.00	149.996	11,957.88	-10,082.11	7,622.85	14,454,453.43	1,739,946.55	39.80096050	-80.64562798
24,500.00	89.00	149.996	11,959.63	-10,168.69	7,672.85	14,454,366.84	1,739,996.54	39.80072217	-80.64545119
24,600.00	89.00	149.996	11,961.37	-10,255.28	7,722.85	14,454,280.26	1,740,046.54	39.80048384	-80.64527439
24,700.00	89.00	149.996	11,963.12	-10,341.86	7,772.84	14,454,193.67	1,740,096.54	39.80024551	-80.64509760
24,800.00	89.00	149.996	11,964.86	-10,428.45	7,822.84	14,454,107.08	1,740,146.54	39.80000719	-80.64492081
24,900.00	89.00	149.996	11,966.61	-10,515.04	7,872.84	14,454,020.50	1,740,196.54	39.79976886	-80.64474402
25,000.00	89.00	149.996	11,968.36	-10,601.62	7,922.84	14,453,933.91	1,740,246.54	39.79953053	-80.64456723
25,100.00	89.00	149.996	11,970.10	-10,688.21	7,972.84	14,453,847.33	1,740,296.54	39.79929220	-80.64439044
25,200.00	89.00	149.996	11,971.85	-10,774.79	8,022.84	14,453,760.74	1,740,346.54	39.79905387	-80.64421366
25,300.00	89.00	149.996	11,973.59	-10,861.38	8,072.84	14,453,674.16	1,740,396.53	39.79881554	-80.64403687



Planning Report - Geographic

4705102327

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
25,400.00	89.00	149.996	11,975.34	-10,947.96	8,122.84	14,453,587.57	1,740,446.53	39.79857721	-80.64386009	
25,500.00	89.00	149.996	11,977.09	-11,034.55	8,172.84	14,453,500.99	1,740,496.53	39.79833888	-80.64368331	
25,600.00	89.00	149.996	11,978.83	-11,121.13	8,222.84	14,453,414.40	1,740,546.53	39.79810055	-80.64350653	
25,700.00	89.00	149.996	11,980.58	-11,207.72	8,272.83	14,453,327.82	1,740,596.53	39.79786222	-80.64332975	
25,800.00	89.00	149.996	11,982.32	-11,294.31	8,322.83	14,453,241.23	1,740,646.53	39.79762389	-80.64315297	
25,900.00	89.00	149.996	11,984.07	-11,380.89	8,372.83	14,453,154.65	1,740,696.53	39.79738555	-80.64297619	
26,000.00	89.00	149.996	11,985.82	-11,467.48	8,422.83	14,453,068.06	1,740,746.53	39.79714722	-80.64279942	
26,100.00	89.00	149.996	11,987.56	-11,554.06	8,472.83	14,452,981.47	1,740,796.53	39.79690889	-80.64262264	
26,200.00	89.00	149.996	11,989.31	-11,640.65	8,522.83	14,452,894.89	1,740,846.52	39.79667056	-80.64244587	
26,300.00	89.00	149.996	11,991.05	-11,727.23	8,572.83	14,452,808.30	1,740,896.52	39.79643223	-80.64226909	
26,400.00	89.00	149.996	11,992.80	-11,813.82	8,622.83	14,452,721.72	1,740,946.52	39.79619389	-80.64209232	
26,500.00	89.00	149.996	11,994.55	-11,900.40	8,672.83	14,452,635.13	1,740,996.52	39.79595556	-80.64191555	
26,600.00	89.00	149.996	11,996.29	-11,986.99	8,722.82	14,452,548.55	1,741,046.52	39.79571723	-80.64173878	
26,700.00	89.00	149.996	11,998.04	-12,073.58	8,772.82	14,452,461.96	1,741,096.52	39.79547889	-80.64156202	
26,800.00	89.00	149.996	11,999.78	-12,160.16	8,822.82	14,452,375.38	1,741,146.52	39.79524056	-80.64138525	
26,900.00	89.00	149.996	12,001.53	-12,246.75	8,872.82	14,452,288.79	1,741,196.52	39.79500222	-80.64120848	
27,000.00	89.00	149.996	12,003.28	-12,333.33	8,922.82	14,452,202.21	1,741,246.51	39.79476389	-80.64103172	
27,100.00	89.00	149.996	12,005.02	-12,419.92	8,972.82	14,452,115.62	1,741,296.51	39.79452556	-80.64085496	
27,200.00	89.00	149.996	12,006.77	-12,506.50	9,022.82	14,452,029.04	1,741,346.51	39.79428722	-80.64067820	
27,300.00	89.00	149.996	12,008.51	-12,593.09	9,072.82	14,451,942.45	1,741,396.51	39.79404889	-80.64050144	
27,400.00	89.00	149.996	12,010.26	-12,679.67	9,122.82	14,451,855.86	1,741,446.51	39.79381055	-80.64032468	
27,500.00	89.00	149.996	12,012.01	-12,766.26	9,172.81	14,451,769.28	1,741,496.51	39.79357221	-80.64014792	
27,600.00	89.00	149.996	12,013.75	-12,852.85	9,222.81	14,451,682.69	1,741,546.51	39.79333388	-80.63997116	
27,700.00	89.00	149.996	12,015.50	-12,939.43	9,272.81	14,451,596.11	1,741,596.51	39.79309554	-80.63979441	
27,800.00	89.00	149.996	12,017.24	-13,026.02	9,322.81	14,451,509.52	1,741,646.51	39.79285720	-80.63961765	
27,900.00	89.00	149.996	12,018.99	-13,112.60	9,372.81	14,451,422.94	1,741,696.50	39.79261887	-80.63944090	
28,000.00	89.00	149.996	12,020.74	-13,199.19	9,422.81	14,451,336.35	1,741,746.50	39.79238053	-80.63926415	
28,100.00	89.00	149.996	12,022.48	-13,285.77	9,472.81	14,451,249.77	1,741,796.50	39.79214219	-80.63908740	
28,200.00	89.00	149.996	12,024.23	-13,372.36	9,522.81	14,451,163.18	1,741,846.50	39.79190386	-80.63891065	
28,300.00	89.00	149.996	12,025.98	-13,458.94	9,572.81	14,451,076.60	1,741,896.50	39.79166552	-80.63873390	
28,400.00	89.00	149.996	12,027.72	-13,545.53	9,622.81	14,450,990.01	1,741,946.50	39.79142718	-80.63855715	
28,500.00	89.00	149.996	12,029.47	-13,632.12	9,672.80	14,450,903.43	1,741,996.50	39.79118884	-80.63838041	
28,600.00	89.00	149.996	12,031.21	-13,718.70	9,722.80	14,450,816.84	1,742,046.50	39.79095050	-80.63820366	
28,700.00	89.00	149.996	12,032.96	-13,805.29	9,772.80	14,450,730.25	1,742,096.49	39.79071216	-80.63802692	
28,800.00	89.00	149.996	12,034.71	-13,891.87	9,822.80	14,450,643.67	1,742,146.49	39.79047382	-80.63785018	
28,900.00	89.00	149.996	12,036.45	-13,978.46	9,872.80	14,450,557.08	1,742,196.49	39.79023548	-80.63767344	
29,000.00	89.00	149.996	12,038.20	-14,065.04	9,922.80	14,450,470.50	1,742,246.49	39.78999714	-80.63749670	
29,100.00	89.00	149.996	12,039.94	-14,151.63	9,972.80	14,450,383.91	1,742,296.49	39.78975880	-80.63731996	
29,200.00	89.00	149.996	12,041.69	-14,238.21	10,022.80	14,450,297.33	1,742,346.49	39.78952046	-80.63714322	
29,300.00	89.00	149.996	12,043.44	-14,324.80	10,072.80	14,450,210.74	1,742,396.49	39.78928212	-80.63696648	
29,400.00	89.00	149.996	12,045.18	-14,411.39	10,122.79	14,450,124.16	1,742,446.49	39.78904378	-80.63678975	
29,500.00	89.00	149.996	12,046.93	-14,497.97	10,172.79	14,450,037.57	1,742,496.49	39.78880544	-80.63661302	
29,600.00	89.00	149.996	12,048.67	-14,584.56	10,222.79	14,449,950.99	1,742,546.48	39.78856710	-80.63643628	
29,675.98	89.00	149.996	12,050.00	-14,650.34	10,260.78	14,449,865.20	1,742,584.47	39.78832861	-80.63625954	

PBHL/TD 29675.98 MD/12050.00 TVD



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Hudson S-14 HU (slot N)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1344.25ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1344.25ft
Site:	Hudson Alt North	North Reference:	Grid
Well:	Hudson S-14 HU (slot N)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev6		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Hudson 14HU LP r1	0.00	0.000	11,747.25	362.99	1,591.32	14,464,898.51	1,733,915.03	39.82970873	-80.66696417
- plan misses target center by 0.01ft at 12336.67ft MD (11747.25 TVD, 362.99 N, 1591.32 E)									
- Point									
Hudson 14HU PBHL r6	0.00	0.000	12,050.00	-14,650.35	10,260.78	14,449,885.20	1,742,584.47	39.78838600	-80.63630200
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 1°/100' build
1,700.00	1,699.96	0.00	3.49	Begin 1°/100' build/turn
1,853.05	1,852.93	1.89	8.05	Begin 2.00° tangent
3,100.88	3,100.00	32.68	38.84	Begin 2°/100' build
3,250.88	3,249.70	39.16	45.32	Begin 5.00° tangent
7,115.89	7,100.00	277.35	283.51	Begin 2°/100' build/turn
7,448.52	7,427.18	316.51	325.73	Begin 14.97° tangent
10,969.41	10,828.58	926.50	1,000.31	Begin 6°/100' build/turn
11,831.25	11,573.11	742.13	1,324.95	Begin 8°/100' build/turn
12,336.68	11,747.25	362.99	1,591.32	Begin 89.00° lateral
29,675.98	12,050.00	-14,650.34	10,260.78	PBHL/TD 29675.98 MD/12050.00 TVD

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Office of Oil and Gas
MAR 19 2020
WV Department of
Environmental Protection

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature James A Pancake

Company Official (Typed Name) James Pancake

Company Official Title Vice President - Geoscience

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Office of Oil and Gas

MAR 19 2020

WV Department of
Environmental Protection

Subscribed and sworn before me this 25th day of February, 2020

[Signature]

Notary Public

Commonwealth of Pennsylvania - Notary Seal
Chester Arthur West IV, Notary Public
Washington County
My commission expires February 10, 2024
Commission number 1267179
Member, Pennsylvania Association of Notaries

My commission expires 2-10-2024

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: [Signature]

Comments:

[Blank lines for comments]

Title: Oil and Gas Inspector

Date: 3/11/2020

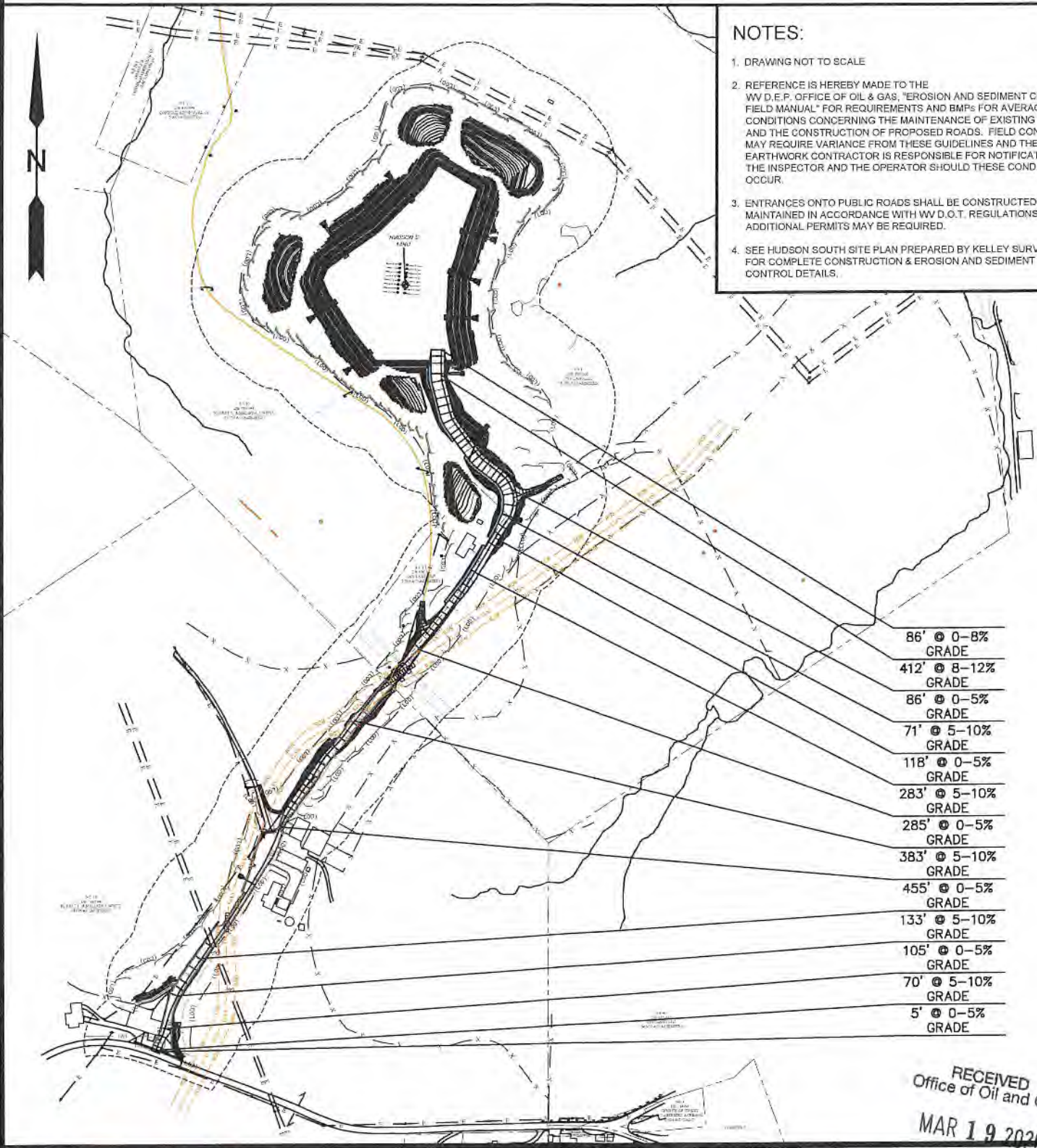
Field Reviewed? (X) Yes () No

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PROPOSED HUDSON S - 14HU

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.



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MAR 19 2020

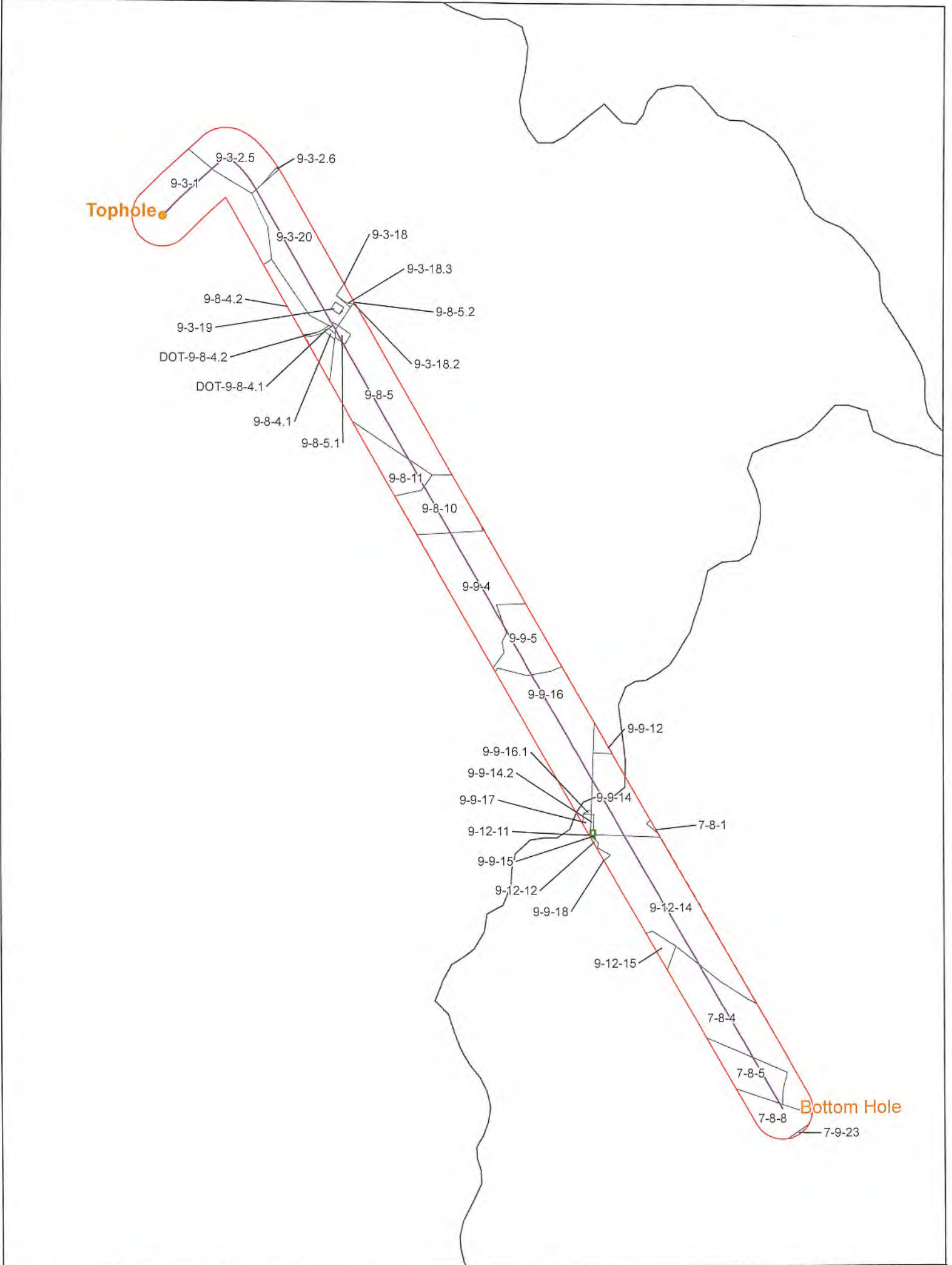


12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsww.com

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	03/10/20	NONE



WV Department of
Environmental Protection
TUG HILL
OPERATING



Coordinate System: NAD 1983 UTM Zone 17N
 Projection: Transverse Mercator
 Datum: North American 1983
 False Easting: 156250.000000
 False Northing: 0.000000
 Central Meridian: -81.000000
 Scale Factor: 0.999600
 Latitude Of Origin: 0.000000
 Units: Feet US

CONFIDENTIAL

- Utica Well
- Force Pool
- 500' Buffer



Hudson S-14HU
 Operators within 500 Feet of Well Borehole



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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (03/09/2020) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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

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

Permit well - Hudson S-14HU

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
47-051-70626	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 Point Pleasant well.	State records are incomplete.
47-051-70625	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 Point Pleasant well.	State records are incomplete.
47-051-00613	Consolidation Coal Co.	2907' TVD	Unknown	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation. Well is plugged.	Well was plugged 11/8/2004.
47-051-00636	Consolidation Coal Co.	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 Point Pleasant well. Well is plugged.	Well was plugged 6/7/2005.
47-051-00901	Consolidation Coal Co.	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 Point Pleasant well. Well is plugged.	Well was plugged 3/20/2003.
47-051-00934	Consolidation Coal Co.	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 Point Pleasant well. Well is plugged.	Well was plugged 9/16/2004.
47-051-00963	Consolidation Coal Co.	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 Point Pleasant well. Well is plugged.	Well was plugged 10/12/2005.
47-051-00965	Consolidation Coal Co.	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 Point Pleasant well. Well is plugged.	Well was plugged 9/2/2005.
47-051-70053	South Penn Oil (S. Penn Nat. Gas)	3411' TVD	Speecheley	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	State records are incomplete.
47-051-70604	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 Point Pleasant well.	State records are incomplete.
47-051-70606	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 Point Pleasant well.	State records are incomplete.
47-051-70607	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 Point Pleasant well.	State records are incomplete.
47-051-70608	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 Point Pleasant well.	State records are incomplete.
47-051-70613	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 Point Pleasant well.	State records are incomplete.
47-051-70614	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 Point Pleasant well.	State records are incomplete.

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47-051-02251	Tug Hill Operating, LLC	None	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
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Page 2 of 6

47-051-02250	Tug Hill Operating, LLC	None	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
47-051-02249	Tug Hill Operating, LLC	None	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
47-051-02248	Tug Hill Operating, LLC	None	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.
47-051-02291	Tug Hill Operating, LLC	None	None	None	No, existing Marcellus permit. The well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Currently a permit.

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WV Department of Environmental Protection

Well: County = 51 Permit = 70626

Report Date: Tuesday, March 13, 2012 1:44 PM

Well Name: ...

There is no Debris Hole Location data for this well

Owner Information

Completion Information

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well

There is no Production NGL data for this well

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wellbore (E-Leg) data for this well

There is no Logging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 70625

Report Date: Tuesday, March 13, 2012 1:44 PM

Well Name: ...

There is no Debris Hole Location data for this well

Owner Information

Completion Information

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well

There is no Production NGL data for this well

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wellbore (E-Leg) data for this well

There is no Logging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 00613

Report Date: Tuesday, March 13, 2012 1:51 PM

Well Name: ...

There is no Debris Hole Location data for this well

Owner Information

Completion Information

There is no Pay data for this well

Production Gas Information Reported to EPLD

Production Oil Information Reported to EPLD

There is no Production NGL data for this well

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wellbore (E-Leg) data for this well

There is no Logging data for this well

There is no Sample data for this well

Well: County = 51 Permit = 00636

Report Date: Tuesday, March 13, 2012 1:51 PM

Well Name: ...

There is no Debris Hole Location data for this well

Owner Information

Completion Information

There is no Pay data for this well

Production Gas Information Reported to EPLD

Production Oil Information Reported to EPLD

There is no Production NGL data for this well

There is no Production Water data for this well

There is no Stratigraphy data for this well

There is no Wellbore (E-Leg) data for this well

There is no Logging data for this well

There is no Sample data for this well

There is no Sample data for this well

RECEIVED Office of Oil and Gas MAR 19 2012 WV Department of Environmental Protection

WV Department of Environmental Protection
Division of Air Quality
1000 University Blvd., Charleston, WV 25304
Phone: 304.261.6000
Fax: 304.261.6001
www.dep.wv.gov

Well: County = 51 Permit = 00901

Report Date: Tuesday, March 19, 2019 10:18 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 00934

Report Date: Tuesday, March 19, 2019 10:20 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 00963

Report Date: Tuesday, March 19, 2019 10:20 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 00965

Report Date: Tuesday, March 19, 2019 10:20 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 70553

Report Date: Tuesday, March 19, 2019 10:22 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
There is no Plugging data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 70564

Report Date: Tuesday, March 19, 2019 10:22 AM

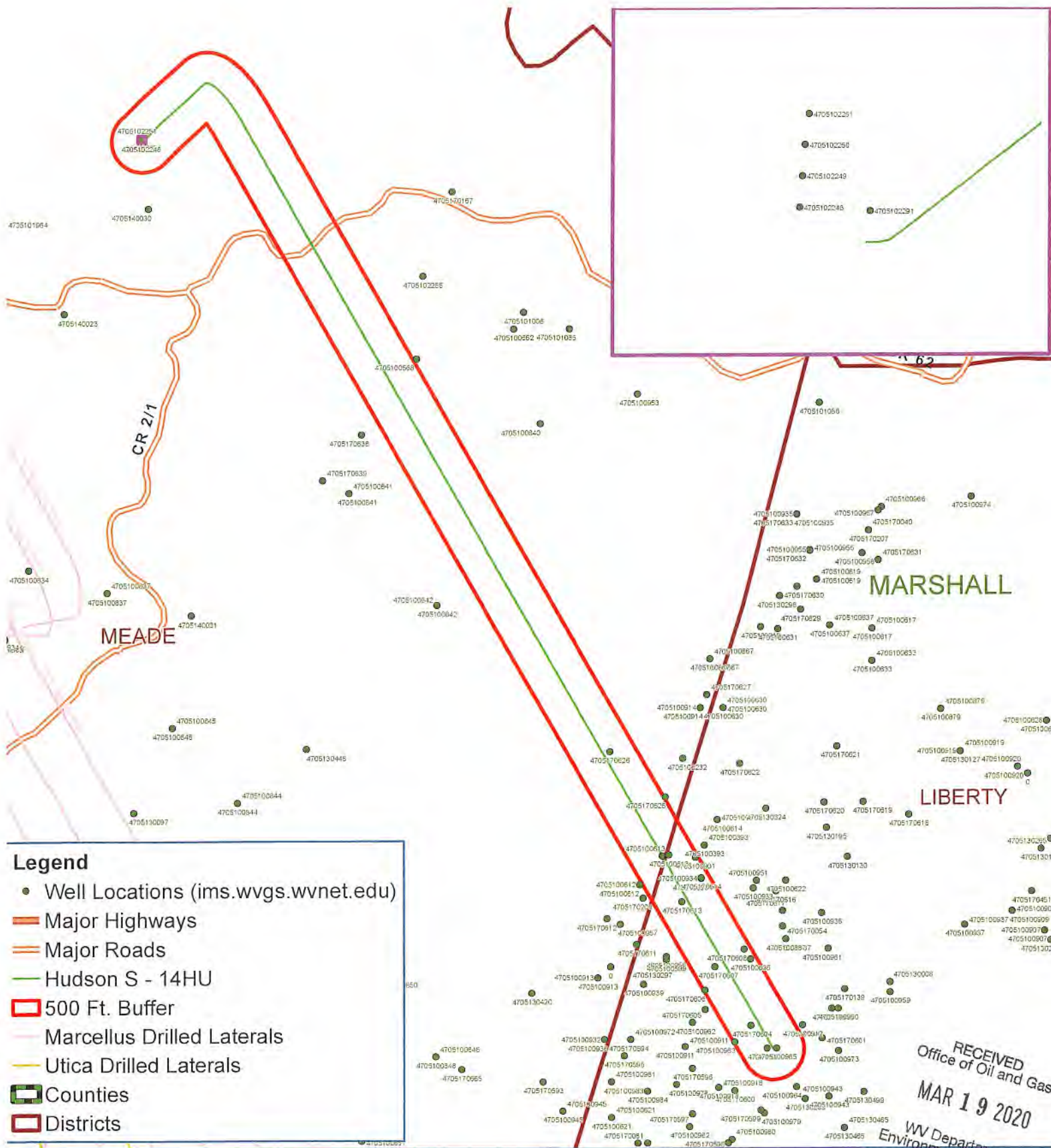
There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
There is no Plugging data for this well.
Physical Information
There is no Sample data for this well.

Well: County = 51 Permit = 70566

Report Date: Tuesday, March 19, 2019 10:22 AM

There is no Bottom Hole Location data for this well.
Completion Information
There is no Pay data for this well.
There is no Production Gas data for this well. * some operators may have reported NGL under Oil
There is no Production NGL data for this well. * some operators may have reported NGL under Oil
There is no Production Water data for this well.
There is no Oil Stripping data for this well.
There is no Wetback (E Log) data for this well.
There is no Plugging data for this well.
Physical Information
There is no Sample data for this well.

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Environmental Protection



- Legend**
- Well Locations (ims.wvgs.wvnet.edu)
 - Major Highways
 - Major Roads
 - Hudson S - 14HU
 - 500 Ft. Buffer
 - Marcellus Drilled Laterals
 - Utica Drilled Laterals
 - ▭ Counties
 - ▭ Districts



Hudson S - 14HU
 Meade District
 Marshall County, WV



Notes:

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 MAR 19 2020
 WV Department of
 Environmental Protection



4705102327

**Offset Operators within 500'
Hudson S - 14HU**

County	District	Parcel	Owner	Address
MARSHALL	LIBERTY	7-8-1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-8-4	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-8-5	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-8-8	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	LIBERTY	7-9-23	SOUTHWESTERN PRODUCTION COMPANY LLC	10000 Energy Drive Spring, TX 77389
MARSHALL	LIBERTY	7-9-23	EQUINOR USA ONSHORE PROPERTIES INC	2107 Citywest Blvd. Suite 100 Houston, TX 77042
MARSHALL	LIBERTY	7-9-23	COLUMBIA ENERGY VENTURES, LLC	700 Louisiana Street Suite 700 Houston, TX 77002
MARSHALL	MEADE	9-3-1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-2.5	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-2.6	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-18	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-18.2	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-18.3	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-19	TH EXPLORATION LLC	1321 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-3-20	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-4.1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	DOT - 9-8-4.1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-4.2	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	DOT - 9-8-4.2	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-5	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-5.1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-5.2	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-8-10	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

County	District	Parcel	Owner	Address
MARSHALL	MEADE	9-8-11	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-4	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-5	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-12	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-14	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-14.2	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-15	REORGANIZED CHURCH OF LATTER DAY SAINTS	843 Nauvoo Ridge Road Cameron, WV 26033
MARSHALL	MEADE	9-9-15	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-16	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-16.1	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-17	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-9-18	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-11	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-12	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-14	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
MARSHALL	MEADE	9-12-15	TH EXPLORATION LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107

4705102327



Well Site Safety Plan
Tug Hill Operating, LLC

JW
3/11/2020

Well Name: Hudson S-14HU

Location: Hudson Pad

Marshall County, West Virginia

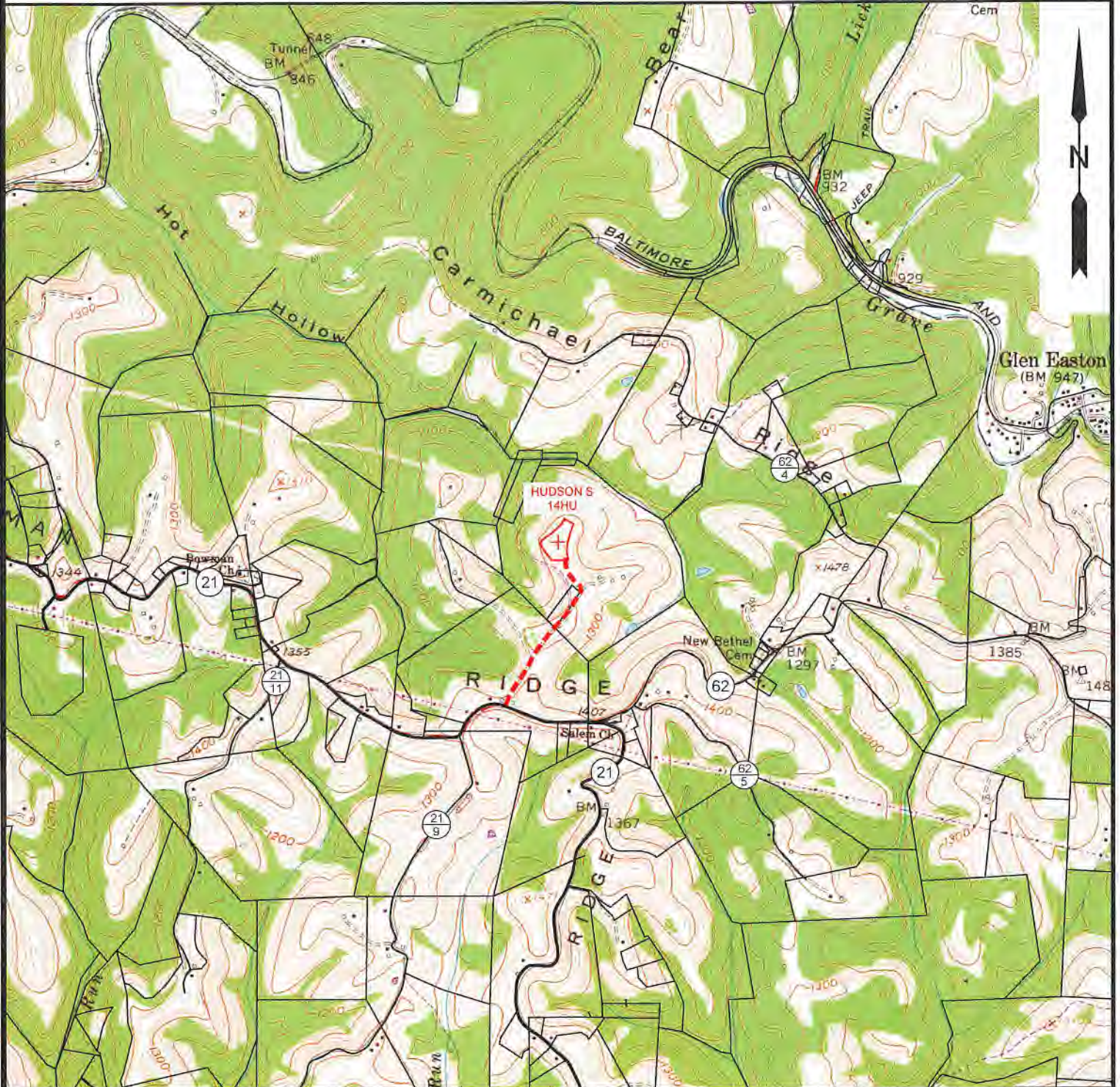
UTM (meters), NAD83, Zone 17:

Northing: 4,408,799.27

Easting: 528,013.36

February 2020

PROPOSED HUDSON S - 14HU



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.



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 | 304.255.5296
sllsw.com

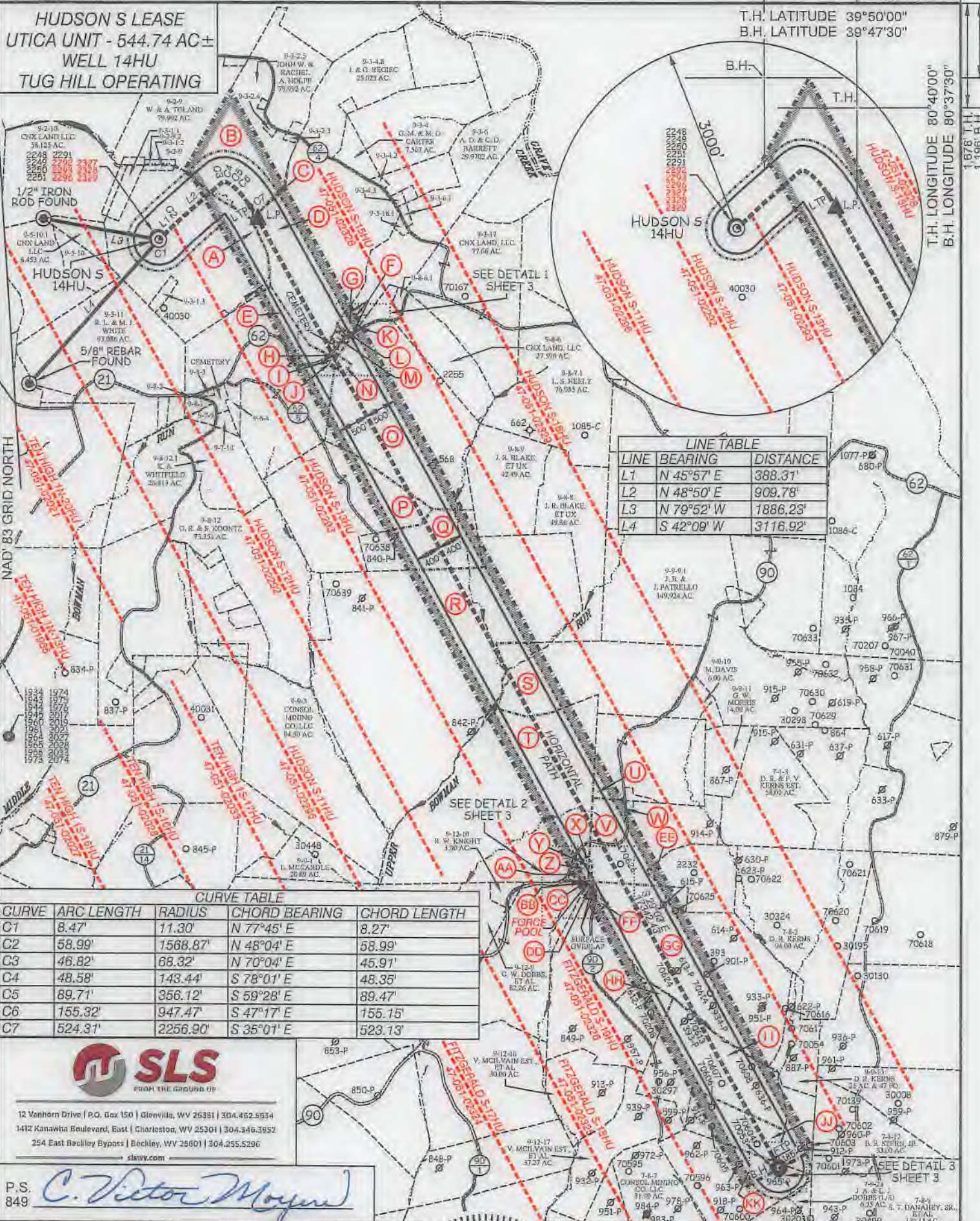
TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8911	03/10/2020	1" = 2000'



TUG HILL
OPERATING

**HUDSON S LEASE
UTICA UNIT - 544.74 AC±
WELL 14HU
TUG HILL OPERATING**

3,176' B.H. 1,677' T.H.
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"



LINE TABLE

LINE	BEARING	DISTANCE
L1	N 45°57' E	388.31'
L2	N 48°50' E	909.78'
L3	N 79°52' W	1886.23'
L4	S 42°09' W	3116.92'

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	8.47'	11.30'	N 77°45' E	8.27'
C2	58.99'	1568.87'	N 48°04' E	58.99'
C3	46.82'	68.32'	N 70°04' E	45.91'
C4	48.58'	143.44'	S 78°01' E	48.35'
C5	89.71'	356.12'	S 59°28' E	89.47'
C6	155.32'	947.47'	S 47°17' E	155.15'
C7	524.31'	2256.90'	S 35°01' E	523.13'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5934
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slawv.com

P.S. 849 *C. Victor Moyers*

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

NAD'83 S.P.C.(FT)	N. 486,114.40	E. 1,639,177.97
NAD'83 GEO.	LAT-(N) 39.828728	LONG-(W) 80.672637
NAD'83 UTM (M)	N. 4,408,799.24	E. 528,013.32
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 486,450.9	E. 1,640,775.7
NAD'83 GEO.	LAT-(N) 39.829709	LONG-(W) 80.666964
NAD'83 UTM (M)	N. 4,408,909.9	E. 528,498.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 471,289.7	E. 1,649,195.8
NAD'83 GEO.	LAT-(N) 39.788386	LONG-(W) 80.636302
NAD'83 UTM (M)	N. 4,404,333.8	E. 531,140.8



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

LEGEND

- UNIT BOUNDARY
- LEASED TRACTS INSIDE UNIT BOUNDARY
- SURFACE LINE
- PROPOSED UTICA WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- FORCE POOL TRACT
- CREEK
- ROAD
- PROPOSED FIRST TAKE POINT
- PROPOSED LAST TAKE POINT
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE ADDITIONAL SHEETS)

SCALE 1" = 2000' FILE NO. 891P14HUR4.dwg
HUDSON S-14HU REV6
DATE APRIL 2, 20 20
REVISED JULY 14, JULY 16, AUGUST 12, 20 20
OPERATORS WELL NO. HUDSON S-14HU
API WELL NO. 47 - 051 - 02327
NO. STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
H6A

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 NAME PERMIT

**HUDSON S LEASE
UTICA UNIT - 544.74 AC±
WELL 14HU
TUG HILL OPERATING**

3,176' B.H. 1,677' T.H.
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

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

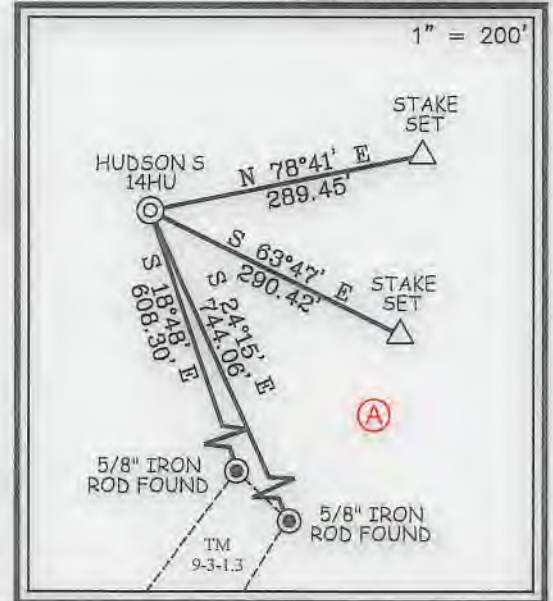
NAD'83 S.P.C.(FT)	N. 486,114.40	E. 1,639,177.97
NAD'83 GEO.	LAT-(N) 39.828728	LONG-(W) 80.672637
NAD'83 UTM (M)	N. 4,408,799.24	E. 528,013.32
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 486,450.9	E. 1,640,775.7
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NAD'83 UTM (M)	N. 4,408,909.9	E. 528,498.4
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 471,289.7	E. 1,649,195.8
NAD'83 GEO.	LAT-(N) 39.788386	LONG-(W) 80.636302
NAD'83 UTM (M)	N. 4,404,333.8	E. 531,140.8

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°37'30"
1,876' T.H.
1,196' B.H.

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	RAYMOND E. & CINDY L. WHITE	9-3-2.6	0.619
D	RAYMOND E. & CINDY L. WHITE	9-3-20	127.00
E	CNX LAND LLC	9-8-4.2	96.902
F	LLOYD ANDREW BEE, ET UX	9-3-18	19.921
G	RAYMOND E. & CINDY L. WHITE	9-3-18.2	2.103
H	BOARD OF EDUCATION (NOT ASSESSED)	NA	NA
I	CNX LAND LLC	9-3-19	45 SQ RODS & 3280 SQ FT
J	CNX LAND RESOURCES, INC.	9-8-4.1	0.333
K	CNX LAND RESOURCES, INC.	9-8-5.2	4.586
L	RAYMOND E. & CINDY L. WHITE	9-3-18.3	0.086
M	CNX LAND LLC	P/O 9-3-19	0.5
N	CNX LAND LLC	9-8-5.1	1.040
O	CNX LAND RESOURCES, INC.	9-8-5	110.37
P	PETER J. MYSLIWEK, ET AL.	9-8-11	73.44
Q	JUDY KAY MCKINLEY	9-8-10	34.00
R	MARY LOU RUBIN, ET AL.	9-9-4	268.39
S	MARVIN D. & ADA C. DOBBS (LIFE), ET AL.	9-9-5	76.25
T	TODD L. SCHERICH, ET AL.	9-9-16	168.204
U	GARY W. MORRIS	9-9-12	54.74
V	DANNY R. & FRANCES V. KERNS ESTATE	9-9-14	48.308
W	AMERICAN ENERGY-MARCELLUS LLC	9-9-14.1	0.40
X	NAUVOO CEMETERY ASSOC. INC.	9-9-16.1	0.126
Y	NAUVOO CEMETERY ASSOC. INC.	9-9-14.2	0.292
Z	NAUVOO CEMETERY ASSOC. INC.	9-9-17	1.00
AA	GARY W. MORRIS	9-9-22	0.15
BB	WARREN BERYLE & ELEANOR LOU CHAMBERS - LIFE	9-12-11	91.00
CC	TRUSTEES OF THE REORGANIZED CHURCH OF LATTER DAY SAINTS	9-9-15	LOT
DD	WHIPKEY TRUST	9-12-12	61.00
EE	DANNY R. & FRANCES V. KERNS ESTATE	7-8-1	27.00
FF	VIRGINIA MCILVAIN ESTATE & THE WHIPKEY TRUST	9-9-18	LOT
GG	CONSOL MINING CO., LLC	9-12-14	127.61
HH	WHIPKEY TRUST	9-12-15	12.00
II	JOHN ALFRED & LEORA JEAN DOBBS - LIFE	7-8-4	65.65
JJ	JOHN ALFRED & LEORA JEAN DOBBS - LIFE	7-8-5	24.00
KK	JOHN ALFRED & LEORA JEAN DOBBS - LIFE	7-8-8	51.97

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-2-9.2	CONSOLIDATION COAL CO.	1.00
9-3-1.1	CONSOLIDATION COAL CO.	5.00
9-3-1.2	CONSOLIDATION COAL CO.	1.00
9-3-1.3	CNX LAND CO. LLC	2.245
9-3-2.2	JOHN W. & RACHEL A. HOLPP	0.483
9-3-2.3	JOHN W. & RACHEL A. HOLPP	0.591
9-3-2.4	JOHN W. & RACHEL A. HOLPP	0.618
9-3-4.2	GRANT M. & MALISSA D. CARTER	0.720
9-3-4.3	JOHN W. & RACHEL A. HOLPP	0.870
9-3-6.1	JOSEPH L. MILETO, II	1.0468
9-3-18.1	LLOYD ANDREW BEE, ET UX	1.010
9-5-10	ROBERT J. & MELINDA J. WHITE	27.957
9-7-9	CNX LAND CO. LLC	2.00
9-7-10	DONALD M. & THERESA L. HARRIS	3.00
9-8-1	CNX LAND CO. LLC	P/O 1.00
9-8-2	CNX LAND CO. LLC	6000 SQ. FT.
9-8-3	CHURCH OF CHRIST	NO ASSD. AC.
9-8-4	DONALD M. & THERESA L. HARRIS	3.183
9-8-6.1	MARK E. WOOD & SUNNI H. HARTLEY	1.423

REFERENCES



NOTES ON SURVEY

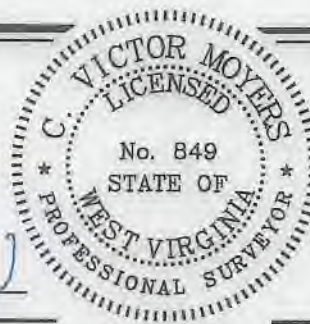
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF HUDSON S-14HU (47-051-02327) IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF HUDSON S-11HU (47-051-02296), HUDSON S-12HU (47-051-02292), HUDSON S-13HU (47-051-02293), HUDSON S-15HU (47-051-02328), HUDSON S-16HU (47-051-02329), FITZGERALD S-18HU (47-051-02325), FITZGERALD S-19HU (47-051-02326).
- MINIMUM OFFSET SPACING REQUIREMENTS EXEMPTED BY WAIVER WITH THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS AND OFFSET LEASEHOLDER AGREEMENTS AS PROVIDED BY TUG HILL OPERATING.
- WVDOT/DOH OWNERSHIP WITHIN UNIT SET FORTH IN WW-6A-1.



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 | 304.255.5296
slaww.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 APRIL 2, 20 20
REVISED JULY 14, JULY 16, AUGUST 12, 20 20
OPERATORS WELL NO. HUDSON S-14HU
API WELL NO. 47 - 051 - 02327
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8911P14HUR4.dwg
HUDSON S-14HU REV6
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 INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: GROUND = 1,366.50' ELEVATION PROPOSED = 1,344.81' WATERSHED HOT HOLLOW OF 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: LEASE NO. SEE WW-6A1
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH TVD: 11,980' / TMD: 29,676'

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

COUNTY NAME PERMIT

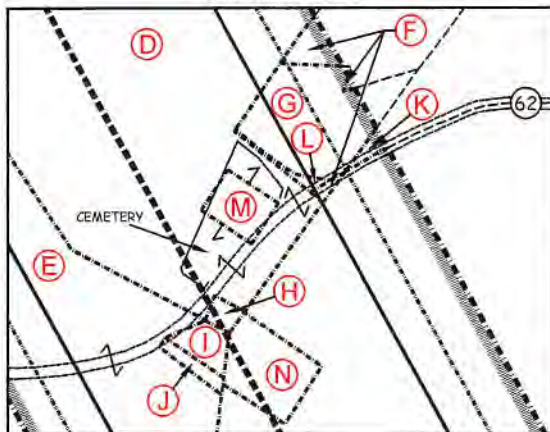
**HUDSON S LEASE
UTICA UNIT - 544.74 AC±
WELL 14HU
TUG HILL OPERATING**



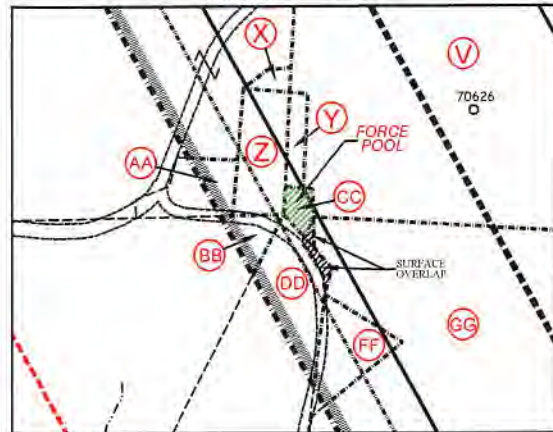
12 Van Horn Drive | P.O. Box 150 | Glenview, WV 26021 | 808.462.5634
1413 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.7952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slswv.com

NO.	Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Deed Book/Page
1	10*26041	9-3-1	A	FREDDIE C WHITE AND VIOLET L WHITE, ET AL	728 527
2	10*28190	9-3-2.5	B	J RUSSELL LOGSDON, ET AL	1068 309
3	10*28190	9-3-2.6	C	J RUSSELL LOGSDON, ET AL	1068 309
4	10*21345	9-3-20	D	AARON PARRY SR AND JANA PARRY TRUSTEES AARON PARRY SR & JANA PARRY REV LIV TRUS, ET AL	957 280
5	10*28092	9-8-4.2	E	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, ET AL	1073 370
6	10*21412	9-3-18	F	GARY DOBBS AND SUSAN DOBBS, ET AL	957 270
7	10*21412	9-3-18.2	G	GARY DOBBS AND SUSAN DOBBS, ET AL	957 270
8	10*28092	9-3-19	H	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY, ET AL	1073 370
9	10*28092	9-3-19	I	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY, ET AL	1073 370
10	10*22760	9-8-4.1	J	DONALD MAND THERESA L HARRIS, ET AL	968 294
11	10*21602	9-8-5.2	K	CAROL STACY SAUNDERS, ET AL	959 289
12	10*21412	9-3-18.3	L	GARY DOBBS AND SUSAN DOBBS, ET AL	957 270
13	10*3100	9-3-19	M	CHARLOTTE A WHITE	738 474
14	10*31000	9-8-5.1	N	CHARLOTTE A WHITE	738 474
15	10*23739	9-8-5	O	APPALACHIAN BASIN MINERALS LP, ET AL	1011 538
16	10*22745	9-8-11	P	BONNIE J JENKINS, ET AL	968 288
17	10*21246	9-8-10	Q	THE ESTATE OF THERESA M ROGERSON CHARLES J ROGERSON EXECUTOR, ET AL	952 422
18	10*31001	9-9-4	R	ERIC KATZMEYER, ET AL	791 226
19	10*28244	9-9-5	S	MICHAEL D DOBBS AND STEPHANIE J DOBBS, ET AL	1068 569
20	10*19987	9-9-16	T	LESLEY D BALLA, ET AL	955 103
21	10*21859	9-9-12	U	GARY WAYNE MORRIS	960 192
22	10*28697	9-9-14	V	DANNY S KERNS, ET AL	1075 134
23	10*28697	9-9-14.1	W	DANNY S KERNS, ET AL	1075 134
24	10*19987	9-9-16.1	X	LESLEY D BALLA, ET AL	955 103
25	10*27299	9-9-14.2	Y	NAUVOO CEMETERY ASSOCIATION	1057 357
26	10*27299	9-9-17	Z	NAUVOO CEMETERY ASSOCIATION	1057 357
27	10*24535	9-9-22	AA	BOARD OF EDUCATION OF MARSHALL COUNTY	1026 64
28	10*15494	9-12-11	BB	CHRISTOPHER SINGER AND SHEREA SINGER, ET AL	898 433
29	NA	9-9-15	CC	TRUSTEES OF THE REORGANIZED CHURCH OF LATTER DAY SAINTS	NA NA
30	10*19557	9-12-12	DD	TERRY L BLAKE, ET AL	944 649
31	10*25518	7-8-1	EE	DANNY S KERNS, ET AL	1010 532
32	10*27774	9-9-18	FF	RESOURCE MINERALS HEADWATER I LP	1063 258
33	10*18339	9-12-14	GG	RESOURCE MINERALS HEADWATER I LP, ET AL	940 448
34	10*21512	9-12-15	HH	THE WHIPKEY TRUST, ET AL	949 266
35	10*18988	7-8-4	II	MICHAEL R DOBBS AND LEANNE DOBBS, ET AL	957 307 940 238
36	10*21112	7-8-5	JJ	CLARENCE C STOVER JR AND LOU E STOVER, ET AL	952 382
37	10*21112	7-8-8	KK	CLARENCE C STOVER JR AND LOU E STOVER, ET AL	952 382

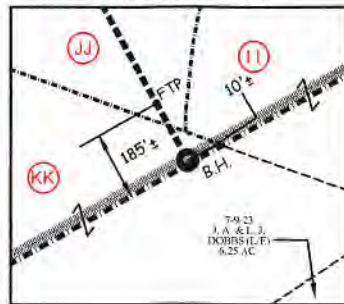
DETAIL 1
SCALE: 1" = 500'



DETAIL 2
SCALE: 1" = 500'



DETAIL 3
SCALE: 1" = 500'



FILE NO. 8911P14HUR4.dwg
HUDSON S-14HU REV6

DATE APRIL 2, 20 20

REVISED JULY 14, JULY 16, AUGUST 12, 20 20

OPERATORS WELL NO. HUDSON S-14HU

API WELL NO. 47 - 051 - 02327
STATE COUNTY PERMIT



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



P.S. 849 *C. Victor Moyers*

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

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

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Hudson S-14HU

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

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

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

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

**Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.*

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

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

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

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

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

WW-6A1 Well Bore Tracts

Operator's Well No. Hudson S - 14HU

4705102327

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/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	N/A	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	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
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*26053	9-3-1	A	ANTHONY T MOORE	CHEVRON USA INC	1/8+	854	343	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26054	9-3-1	A	HIRAM VERNON MOORE	CHEVRON USA INC	1/8+	854	353	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26055	9-3-1	A	LARRY W MOORE SR	CHEVRON USA INC	1/8+	854	348	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*26056	9-3-1	A	RONALD W MOORE	CHEVRON USA INC	1/8+	854	338	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
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

WW-6A1 Well Bore Tracts

4705102327

Operator's Well No. Hudson S - 14HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment
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
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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment
10*26074	9-3-1	A	RANDYLYN MOORE AKA RANDY MOORE	CHEVRON USA INC	1/8+	860	166	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
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 - W/H	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
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

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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 - W/H	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
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	N/A	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

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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
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
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	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95

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10*26299	9-3-1	A	BETTY WILKINSON DANIEL A MCVANE AIF	CHEVRON USA INC	1/8+	886	432	N/A	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 HENNER 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	RONALD W MOORE	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*21345	9-3-20	D	AARON PARRY SR AND JANA PARRY TRUSTEES AARON PARRY SR & JANA PARRY REV LIV TRUS	TH EXPLORATION LLC	1/8+	957	280	N/A	N/A	N/A	N/A
10*22474	9-3-20	D	DAVID W PHILLIPS AND ROSEMARIE PHILLIPS	TH EXPLORATION LLC	1/8+	964	17	N/A	N/A	N/A	N/A
10*22820	9-3-20	D	ROBERT J APPLIGATE AND JOANNE APPLIGATE	TH EXPLORATION LLC	1/8+	983	603	N/A	N/A	N/A	N/A
10*22821	9-3-20	D	GILMER B JOHNSON AND ELIZABETH D JOHNSON	TH EXPLORATION LLC	1/8+	983	609	N/A	N/A	N/A	N/A
10*22867	9-3-20	D	ALAN J MOORE AND BARBARA A MOORE	TH EXPLORATION LLC	1/8+	977	73	N/A	N/A	N/A	N/A
10*22868	9-3-20	D	JAMES L PHILLIPS AND CHERYL A PHILLIPS	TH EXPLORATION LLC	1/8+	977	77	N/A	N/A	N/A	N/A
10*22869	9-3-20	D	ERIC J GONZALES AND DIANA J GONZALES	TH EXPLORATION LLC	1/8+	977	81	N/A	N/A	N/A	N/A
10*28092	9-3-19	H	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY	TH EXPLORATION LLC	1/8+	1073	370	N/A	N/A	N/A	N/A
10*31000	9-3-19	H	CHAROLETTE A WHITE	TRIENERGY HOLDINGS LLC	1/8+	738	474	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to TH Exploration II LLC: 45/593
47051.109.0	9-3-19	H	DONALD M HARRIS AND THERESA L HARRIS	TH EXPLORATION LLC	1/8+	859	440	N/A	N/A	N/A	N/A
10*28092	9-3-19	I	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAY	TH EXPLORATION LLC	1/8+	1073	370	N/A	N/A	N/A	N/A
10*31000	9-3-19	I	CHAROLETTE A WHITE	TRIENERGY HOLDINGS LLC	1/8+	738	474	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to TH Exploration II LLC: 45/593
47051.109.0	9-3-19	I	DONALD M HARRIS AND THERESA L HARRIS	TH EXPLORATION LLC	1/8+	859	440	N/A	N/A	N/A	N/A
10*31000	9-8-5.1	N	CHAROLETTE A WHITE	TRIENERGY HOLDINGS LLC	1/8+	738	474	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to TH Exploration II LLC: 45/593
10*23739	9-8-5	O	APPALACHIAN BASIN MINERALS LP	TH EXPLORATION LLC	1/8+	1011	538	N/A	N/A	N/A	N/A
10*23740	9-8-5	O	PENNMARC RESOURCES II LP	TH EXPLORATION LLC	1/8+	1011	532	N/A	N/A	N/A	N/A
10*23741	9-8-5	O	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	O	PURPLEBURGH VENTURES, LLC	TH EXPLORATION LLC	1/8+	1011	536	N/A	N/A	N/A	N/A
10*23743	9-8-5	O	WILDES MINERAL INTERESTS LLC	TH EXPLORATION LLC	1/8+	1011	534	N/A	N/A	N/A	N/A
10*23749	9-8-5	O	MARCELLUS TX MINERAL PRTRNR LTD	TH EXPLORATION LLC	1/8+	1012	193	N/A	N/A	N/A	N/A
10*28092	9-8-5	O	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	1073	370	N/A	N/A	N/A	N/A
10*22745	9-8-11	P	BONNIE J JENKINS	TH EXPLORATION LLC	1/8+	968	288	N/A	N/A	N/A	N/A

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10*23314	9-8-11	P	CYNTHIA WATSON	TH EXPLORATION LLC	1/8+	988	499	N/A	N/A	N/A	N/A
10*23353	9-8-11	P	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	P	KATHLEEN JEANNE B JENKINS	TH EXPLORATION LLC	1/8+	1035	13	N/A	N/A	N/A	N/A
10*25719	9-8-11	P	NICHOLE M JENKINS	TH EXPLORATION LLC	1/8+	1035	17	N/A	N/A	N/A	N/A
10*26025	9-8-11	P	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	P	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	P	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	P	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	P	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	P	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	P	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	P	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	P	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	9-8-11	P	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	P	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	P	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	P	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

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10*26040	9-8-11	P	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	P	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	P	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	P	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	P	JOHN P JENKINS	TH EXPLORATION LLC	1/8+	1037	434	N/A	N/A	N/A	N/A
10*27524	9-8-11	P	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 II LLC & TH Exploration LLC: 43/95
10*27527	9-8-11	P	PETER J & JUDY B MYSLIWIEC	CHEVRON USA INC	1/8+	784	285	N/A	N/A	N/A	Chevron USA Inc to TH Exploration II LLC & TH Exploration LLC: 43/95
10*21246	9-8-10	Q	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	Q	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	Q	DAVID E MYSLIWIEC	TH EXPLORATION LLC	1/8+	952	426	N/A	N/A	N/A	N/A
10*22745	9-8-10	Q	BONNIE J JENKINS	TH EXPLORATION LLC	1/8+	968	288	N/A	N/A	N/A	N/A
10*22764	9-8-10	Q	GARY D OLSON AND ILENE J OLSON	TH EXPLORATION LLC	1/8+	970	74	N/A	N/A	N/A	N/A
10*22765	9-8-10	Q	KRIS E OLSON AND BOBBI L OLSON	TH EXPLORATION LLC	1/8+	970	72	N/A	N/A	N/A	N/A
10*22766	9-8-10	Q	TOD E OLSON AND COLLEEN G OLSON	TH EXPLORATION LLC	1/8+	970	70	N/A	N/A	N/A	N/A
10*23314	9-8-10	Q	CYNTHIA WATSON	TH EXPLORATION LLC	1/8+	988	499	N/A	N/A	N/A	N/A
10*23353	9-8-10	Q	SHARON E MCDONALD AND HAROLD S MCDONALD	TH EXPLORATION LLC	1/8+	988	495	N/A	N/A	N/A	N/A
10*24552	9-8-10	Q	KELLI S CALKINS	TH EXPLORATION LLC	1/8+	1025	415	N/A	N/A	N/A	N/A
10*25718	9-8-10	Q	KATHLEEN JEANNE B JENKINS	TH EXPLORATION LLC	1/8+	1035	13	N/A	N/A	N/A	N/A
10*25719	9-8-10	Q	NICHOLE M JENKINS	TH EXPLORATION LLC	1/8+	1035	17	N/A	N/A	N/A	N/A
10*26025	9-8-10	Q	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	Q	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	Q	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

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10*26028	9-8-10	Q	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	Q	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	Q	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	Q	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	9-8-10	Q	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	Q	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	Q	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	Q	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	Q	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	Q	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	Q	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	Q	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	Q	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	9-8-10	Q	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	Q	JOHN P JENKINS	TH EXPLORATION LLC	1/8+	1037	434	N/A	N/A	N/A	N/A
10*27140	9-8-10	Q	ROGER C PATTAN AND TARA I PATTAN	TH EXPLORATION LLC	1/8+	1052	498	N/A	N/A	N/A	N/A

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10*27466	9-8-10	Q	TANICE J SCHNIER	CHEVRON USA INC	1/8+	898	273	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27467	9-8-10	Q	ROBIN K JASA	CHEVRON USA INC	1/8+	899	502	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27468	9-8-10	Q	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	Q	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*27470	9-8-10	Q	HARLAN OLSON AND LYNNETTE OLSON	CHEVRON USA INC	1/8+	899	244	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27471	9-8-10	Q	KENNETH IREY	CHEVRON USA INC	1/8+	904	341	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27472	9-8-10	Q	KAREN K KRUSE	CHEVRON USA INC	1/8+	899	258	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27473	9-8-10	Q	JOYCE A NELSEN	CHEVRON USA INC	1/8+	902	538	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27474	9-8-10	Q	DANNY OLSON	CHEVRON USA INC	1/8+	902	535	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27475	9-8-10	Q	ALAN S PALLAS	CHEVRON USA INC	1/8+	898	470	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 44/357
10*27515	9-8-10	Q	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*27755	9-8-10	Q	*THE UNKNOWN HEIRS OF WILLIAM CLIFFORD OLSON ET AL	TH EXPLORATION LLC	1/8+	1060	468	N/A	N/A	N/A	N/A
10*28301	9-8-10	Q	*NADINE I STEVENSON	TH EXPLORATION LLC	1/8+	1067	374	N/A	N/A	N/A	N/A
10*31001	9-9-4	R	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	R	DAVID & SHIRLEY 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	R	MARY LOU RUBINI FKA MILLER	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	S	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	S	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	T	LESLEY D BALLA	TH EXPLORATION LLC	1/8+	955	103	N/A	N/A	N/A	N/A
10*19993	9-9-16	T	DIANA D COSLICK	TH EXPLORATION LLC	1/8+	955	105	N/A	N/A	N/A	N/A
10*19994	9-9-16	T	ELAINE A FONTES	TH EXPLORATION LLC	1/8+	960	36	N/A	N/A	N/A	N/A
10*21117	9-9-16	T	JOELLYN JOHNSON	TH EXPLORATION LLC	1/8+	952	392	N/A	N/A	N/A	N/A
10*21322	9-9-16	T	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	T	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	T	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

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10*22202	9-9-16	T	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
10*22203	9-9-16	T	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	T	BARBARA FURFARI	TH EXPLORATION LLC	1/8+	964	528	N/A	N/A	N/A	N/A
10*22528	9-9-16	T	RONALD DAKAN	TH EXPLORATION LLC	1/8+	964	530	N/A	N/A	N/A	N/A
10*22553	9-9-16	T	DAVID H DAKAN	TH EXPLORATION LLC	1/8+	966	130	N/A	N/A	N/A	N/A
10*22783	9-9-16	T	SUZANNE SWIFT	TH EXPLORATION LLC	1/8+	972	85	N/A	N/A	N/A	N/A
10*23315	9-9-16	T	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	T	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	T	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	T	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	T	BRADLEY S SCHERICH AND LEIGH SCHERICH	TH EXPLORATION LLC	1/8+	1023	157	N/A	N/A	N/A	N/A
10*28697	9-9-14	V	DANNY S KERNS	TH EXPLORATION LLC	1/8+	1075	134	N/A	N/A	N/A	N/A
10*28698	9-9-14	V	DEENA JANINE PALOMO	TH EXPLORATION LLC	1/8+	1075	140	N/A	N/A	N/A	N/A
10*28699	9-9-14	V	REGINA D FIGUEROA	TH EXPLORATION LLC	1/8+	1075	137	N/A	N/A	N/A	N/A
10*18339	9-12-14	GG	RESOURCE MINERALS HEADWATER I LP	TH EXPLORATION LLC	1/8+	940	448	N/A	N/A	N/A	N/A
10*22524	9-12-14	GG	ALYCE LYNNE MCGUFFIE	TH EXPLORATION LLC	1/8+	964	446	N/A	N/A	N/A	N/A
10*18988	7-8-4	II	MICHAEL R DOBBS AND LEANNE DOBBS	TH EXPLORATION LLC	1/8+	940	238	N/A	N/A	N/A	N/A
10*18989	7-8-4	II	GREGG ALAN MILLER AND BETH ANN MILLER	TH EXPLORATION LLC	1/8+	940	236	N/A	N/A	N/A	N/A
10*19499	7-8-4	II	CARLTON DOBBS JR AND MIKHAIL PROKOPENKO	TH EXPLORATION LLC	1/8+	943	21	N/A	N/A	N/A	N/A
10*21875	7-8-4	II	MELVIN J FRANCIS	TH EXPLORATION LLC	1/8+	960	113	N/A	N/A	N/A	N/A
10*21876	7-8-4	II	JAMES L STOUT	TH EXPLORATION LLC	1/8+	960	117	N/A	N/A	N/A	N/A
10*21877	7-8-4	II	THOMAS BRIAN WARRICK	TH EXPLORATION LLC	1/8+	960	115	N/A	N/A	N/A	N/A
10*22061	7-8-4	II	WILLIAM A WESTEN AND VICKIE D WESTEN	TH EXPLORATION LLC	1/8+	960	54	N/A	N/A	N/A	N/A
10*22062	7-8-4	II	TIMMY LEE STOUT AND DOROTHY MARIE STOUT	TH EXPLORATION LLC	1/8+	960	50	N/A	N/A	N/A	N/A
10*22063	7-8-4	II	CHARLOTTE E MARRINER	TH EXPLORATION LLC	1/8+	960	56	N/A	N/A	N/A	N/A
10*22087	7-8-4	II	CHESTNUT HOLDINGS INC	TH EXPLORATION LLC	1/8+	963	483	N/A	N/A	N/A	N/A
10*22145	7-8-4	II	WAYLON L MURPHREE AND ANGELA J MURPHREE	TH EXPLORATION LLC	1/8+	961	520	N/A	N/A	N/A	N/A
10*22146	7-8-4	II	GLADYS E DOBBS	TH EXPLORATION LLC	1/8+	961	522	N/A	N/A	N/A	N/A
10*22148	7-8-4	II	ROBERT E ROUSH AND SARAH M ROUSH	TH EXPLORATION LLC	1/8+	961	528	N/A	N/A	N/A	N/A
10*22197	7-8-4	II	GARY DOBBS AND PEGGY LEE DOBBS	TH EXPLORATION LLC	1/8+	953	545	N/A	N/A	N/A	N/A
10*22251	7-8-4	II	BRIAN WILLIAM DOBBS AND LISA DOBBS	TH EXPLORATION LLC	1/8+	961	530	N/A	N/A	N/A	N/A
10*22262	7-8-4	II	EDWARD S ROSENTHAL AND NANCY ANN GOLDBERG ROSENTHAL	TH EXPLORATION LLC	1/8+	961	524	N/A	N/A	N/A	N/A
10*22298	7-8-4	II	JAMES C DORIA AND DEIRDE G DORIA	TH EXPLORATION LLC	1/8+	961	526	N/A	N/A	N/A	N/A
10*22299	7-8-4	II	PAUL RUSSELL AND MARY LOU RUSSELL	TH EXPLORATION LLC	1/8+	962	219	N/A	N/A	N/A	N/A
10*22306	7-8-4	II	KAREN SUE BLAKE	TH EXPLORATION LLC	1/8+	963	416	N/A	N/A	N/A	N/A
10*22383	7-8-4	II	CHARLES S CUNNINGHAM AND CORA CUNNINGHAM	TH EXPLORATION LLC	1/8+	962	582	N/A	N/A	N/A	N/A
10*22390	7-8-4	II	JANA K PARRY AND AARON R PARRY	TH EXPLORATION LLC	1/8+	962	580	N/A	N/A	N/A	N/A

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10*22391	7-8-4	II	PAUL CRAIG CUNNINGHAM	TH EXPLORATION LLC	1/8+	964	481	N/A	N/A	N/A	N/A
10*22392	7-8-4	II	KEVIN W RANDOLPH AND BONNIE J RANDOLPH	TH EXPLORATION LLC	1/8+	963	94	N/A	N/A	N/A	N/A
10*22393	7-8-4	II	CAREY J KENDALL AND HAZEL M KENDALL	TH EXPLORATION LLC	1/8+	962	584	N/A	N/A	N/A	N/A
10*22398	7-8-4	II	JERRY L AND DONNA J GOLDBERG	TH EXPLORATION LLC	1/8+	963	101	N/A	N/A	N/A	N/A
10*22421	7-8-4	II	DAVD LEE SCOTT AND MARGARET TANISE SCOTT	TH EXPLORATION LLC	1/8+	963	103	N/A	N/A	N/A	N/A
10*22423	7-8-4	II	KATHARYN ANNETTE LILLY LAING AND FREDDIE JOE LAING	TH EXPLORATION LLC	1/8+	963	426	N/A	N/A	N/A	N/A
10*22428	7-8-4	II	WILLIAM C WEST AND DEBRA WEST	TH EXPLORATION LLC	1/8+	965	532	N/A	N/A	N/A	N/A
10*22475	7-8-4	II	JAMES D KIMBREL AND PORTIA CONWAY KIMBREL	TH EXPLORATION LLC	1/8+	965	515	N/A	N/A	N/A	N/A
10*22476	7-8-4	II	ROBERT E WEST	TH EXPLORATION LLC	1/8+	965	517	N/A	N/A	N/A	N/A
10*22483	7-8-4	II	BEVERLY A LEDBETTER	TH EXPLORATION LLC	1/8+	965	530	N/A	N/A	N/A	N/A
10*22486	7-8-4	II	RUDOLPH H PARSONS	TH EXPLORATION LLC	1/8+	965	534	N/A	N/A	N/A	N/A
10*22529	7-8-4	II	MARY V DOBBS	TH EXPLORATION LLC	1/8+	964	479	N/A	N/A	N/A	N/A
10*22530	7-8-4	II	MARK A CUNNINGHAM AND JOAN CUNNINGHAM	TH EXPLORATION LLC	1/8+	964	483	N/A	N/A	N/A	N/A
10*22532	7-8-4	II	CHRISTOPHER L WRIGHT	TH EXPLORATION LLC	1/8+	966	179	N/A	N/A	N/A	N/A
10*22552	7-8-4	II	DENNIS LEE WRIGHT AND MELINDA ANN WRIGHT	TH EXPLORATION LLC	1/8+	966	181	N/A	N/A	N/A	N/A
10*22554	7-8-4	II	HARRY R WRIGHT JR	TH EXPLORATION LLC	1/8+	966	184	N/A	N/A	N/A	N/A
10*22555	7-8-4	II	ANNA M WRIGHT	TH EXPLORATION LLC	1/8+	966	186	N/A	N/A	N/A	N/A
10*22621	7-8-4	II	WILLIAM K MERRITT AND LINDA J MERRITT	TH EXPLORATION LLC	1/8+	965	507	N/A	N/A	N/A	N/A
10*22622	7-8-4	II	RONALD L CROW AND GLENDA F CROW	TH EXPLORATION LLC	1/8+	965	505	N/A	N/A	N/A	N/A
10*22623	7-8-4	II	ROGER L GARRISON AND MARILYN L GARRISON	TH EXPLORATION LLC	1/8+	965	503	N/A	N/A	N/A	N/A
10*22624	7-8-4	II	CHARLES WARRICK AND LISA WARRICK	TH EXPLORATION LLC	1/8+	965	512	N/A	N/A	N/A	N/A
10*22625	7-8-4	II	MARVIN JERRY BLAKE AND LINDA D BLAKE	TH EXPLORATION LLC	1/8+	965	509	N/A	N/A	N/A	N/A
10*22626	7-8-4	II	BRIAN K MASTERS AND MELINDA D MASTERS	TH EXPLORATION LLC	1/8+	965	501	N/A	N/A	N/A	N/A
10*22722	7-8-4	II	DOROTHY L CUNNINGHAM	TH EXPLORATION LLC	1/8+	968	266	N/A	N/A	N/A	N/A
10*22798	7-8-4	II	TREVOR HOOKS	TH EXPLORATION LLC	1/8+	970	80	N/A	N/A	N/A	N/A
10*22799	7-8-4	II	ELIZABETH HALEY LEEK	TH EXPLORATION LLC	1/8+	972	100	N/A	N/A	N/A	N/A
10*22805	7-8-4	II	DILLEN HENRY	TH EXPLORATION LLC	1/8+	972	91	N/A	N/A	N/A	N/A
10*22806	7-8-4	II	KIMBERLY HENRY	TH EXPLORATION LLC	1/8+	972	94	N/A	N/A	N/A	N/A
10*22807	7-8-4	II	DUSTIN HENRY	TH EXPLORATION LLC	1/8+	972	97	N/A	N/A	N/A	N/A
10*22823	7-8-4	II	RONALD A WYCINSKI	TH EXPLORATION LLC	1/8+	974	192	N/A	N/A	N/A	N/A
10*22838	7-8-4	II	JOHN THOMAS ERAZMUS AND JEAN R ERAZMUS	TH EXPLORATION LLC	1/8+	974	194	N/A	N/A	N/A	N/A
10*22985	7-8-4	II	KURT J WENNEMAN & DEBRA A WENNEMAN	TH EXPLORATION LLC	1/8+	977	344	N/A	N/A	N/A	N/A
10*23095	7-8-4	II	CHARLES B MASTER AND KIMBERLY MASTERS	TH EXPLORATION LLC	1/8+	983	564	N/A	N/A	N/A	N/A
10*23104	7-8-4	II	STEVEN D MASTERS AND MONICA M MASTERS	TH EXPLORATION LLC	1/8+	983	567	N/A	N/A	N/A	N/A
10*23147	7-8-4	II	FRANCES V CARPENTER	TH EXPLORATION LLC	1/8+	983	643	N/A	N/A	N/A	N/A
10*23151	7-8-4	II	BRADY J MCCORT	TH EXPLORATION LLC	1/8+	983	645	N/A	N/A	N/A	N/A
10*23153	7-8-4	II	BENJAMIN MATHER AND REBECCA MATHER	TH EXPLORATION LLC	1/8+	983	647	N/A	N/A	N/A	N/A
10*23177	7-8-4	II	JOSEPH F CHMIELEWSKI AND SANDRA CHMIELEWSKI	TH EXPLORATION LLC	1/8+	984	1	N/A	N/A	N/A	N/A
10*23182	7-8-4	II	SHIRLEY ANN DOBBS	TH EXPLORATION LLC	1/8+	984	545	N/A	N/A	N/A	N/A
10*23267	7-8-4	II	KATHARYN DAY LILLY	TH EXPLORATION LLC	1/8+	984	534	N/A	N/A	N/A	N/A
10*23281	7-8-4	II	ALLEN R L DAVIS AND DIANA LEE PATTERSON DAVIS	TH EXPLORATION LLC	1/8+	984	543	N/A	N/A	N/A	N/A

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10*23282	7-8-4	II	CARL J CHMIELEWSKI AND KATHLEEN A CHMIELEWSKI	TH EXPLORATION LLC	1/8+	984	3	N/A	N/A	N/A	N/A
10*23283	7-8-4	II	DEAN E GARRISON	TH EXPLORATION LLC	1/8+	984	539	N/A	N/A	N/A	N/A
10*23351	7-8-4	II	BONNIE SUE PATTERSON SWISHER	TH EXPLORATION LLC	1/8+	988	109	N/A	N/A	N/A	N/A
10*23352	7-8-4	II	KENNETH R DOBBS	TH EXPLORATION LLC	1/8+	988	111	N/A	N/A	N/A	N/A
10*23354	7-8-4	II	LAWRENCE W CROW JR AND WANDA F CROW	TH EXPLORATION LLC	1/8+	984	541	N/A	N/A	N/A	N/A
10*23417	7-8-4	II	JOHN RUSSELL BECKER	TH EXPLORATION LLC	1/8+	1008	26	N/A	N/A	N/A	N/A
10*23418	7-8-4	II	PAULA BANKS AND PAUL BANKS	TH EXPLORATION LLC	1/8+	1008	28	N/A	N/A	N/A	N/A
10*23636	7-8-4	II	JAMES MATHER	TH EXPLORATION LLC	1/8+	1009	116	N/A	N/A	N/A	N/A
10*23641	7-8-4	II	BARBARA L ANDERSON	TH EXPLORATION LLC	1/8+	1009	114	N/A	N/A	N/A	N/A
10*23689	7-8-4	II	STEPHEN B LEEK AND CYNTHIA S LEEK	TH EXPLORATION LLC	1/8+	1010	334	N/A	N/A	N/A	N/A
10*23758	7-8-4	II	LUCY P SULLIVAN	TH EXPLORATION LLC	1/8+	1012	199	N/A	N/A	N/A	N/A
10*23898	7-8-4	II	JAMES W CUNNINGHAM JR	TH EXPLORATION LLC	1/8+	1017	590	N/A	N/A	N/A	N/A
10*23899	7-8-4	II	JORDAN LEE CUNNINGHAM	TH EXPLORATION LLC	1/8+	1017	588	N/A	N/A	N/A	N/A
10*23919	7-8-4	II	EDDA JO DOBBS	TH EXPLORATION LLC	1/8+	1019	479	N/A	N/A	N/A	N/A
10*23950	7-8-4	II	JUSTIN VAN METER	TH EXPLORATION LLC	1/8+	1020	362	N/A	N/A	N/A	N/A
10*23951	7-8-4	II	CHRISTOPHER VAN METER	TH EXPLORATION LLC	1/8+	1020	201	N/A	N/A	N/A	N/A
10*24015	7-8-4	II	SCOTT D GOLDMAN	TH EXPLORATION LLC	1/8+	1019	477	N/A	N/A	N/A	N/A
10*24036	7-8-4	II	PAULA JO WRIGHT	TH EXPLORATION LLC	1/8+	1020	203	N/A	N/A	N/A	N/A
10*24037	7-8-4	II	CHRISTOPHER A KELLY & MICHELLE A WRIGHT	TH EXPLORATION LLC	1/8+	1020	205	N/A	N/A	N/A	N/A
10*24038	7-8-4	II	CHARLES GREGORY WRIGHT	TH EXPLORATION LLC	1/8+	1020	207	N/A	N/A	N/A	N/A
10*24084	7-8-4	II	EDWIN M MICHEL AND KIMBERLY B MICHEL	TH EXPLORATION LLC	1/8+	1020	364	N/A	N/A	N/A	N/A
10*24201	7-8-4	II	PATRICIA RUTTER	TH EXPLORATION LLC	1/8+	1023	510	N/A	N/A	N/A	N/A
10*24348	7-8-4	II	BARBARA H SIMMONS	TH EXPLORATION LLC	1/8+	1024	307	N/A	N/A	N/A	N/A
10*24649	7-8-4	II	WILLIAM L LEEK	TH EXPLORATION LLC	1/8+	1026	215	N/A	N/A	N/A	N/A
10*24660	7-8-4	II	LARRY D FROST AND LORAIN L FROST	TH EXPLORATION LLC	1/8+	1026	217	N/A	N/A	N/A	N/A
10*24662	7-8-4	II	RAMONA K SPRINGER AND RICHARD D SPRINGER	TH EXPLORATION LLC	1/8+	1026	220	N/A	N/A	N/A	N/A
10*24664	7-8-4	II	LISA L SHEAKS AND JAMES C SHEAKS	TH EXPLORATION LLC	1/8+	1026	226	N/A	N/A	N/A	N/A
10*24670	7-8-4	II	SUZANNE FROST	TH EXPLORATION LLC	1/8+	1026	223	N/A	N/A	N/A	N/A
10*24692	7-8-4	II	DAVID ROSARIO JR AND JULIE A ROSARIO	TH EXPLORATION LLC	1/8+	1027	130	N/A	N/A	N/A	N/A
10*24915	7-8-4	II	BETTY G TREMELLING	TH EXPLORATION LLC	1/8+	1028	594	N/A	N/A	N/A	N/A
10*24916	7-8-4	II	BRENDA L NEUHART	TH EXPLORATION LLC	1/8+	1028	591	N/A	N/A	N/A	N/A
10*25003	7-8-4	II	LINDA L POTTS AND DONALD D POTTS	TH EXPLORATION LLC	1/8+	1028	621	N/A	N/A	N/A	N/A
10*25572	7-8-4	II	ERICA S OWEN AND MATTHEW J OWEN	TH EXPLORATION LLC	1/8+	1033	121	N/A	N/A	N/A	N/A
10*25653	7-8-4	II	GLADYS FRAZIER KING	TH EXPLORATION LLC	1/8+	1033	308	N/A	N/A	N/A	N/A
10*25717	7-8-4	II	DONALD A FRAZIER	TH EXPLORATION LLC	1/8+	1034	581	N/A	N/A	N/A	N/A
10*26501	7-8-4	II	DAVID GIBSON AND REBECCA FRAZIER GIBSON	TH EXPLORATION LLC	1/8+	1037	444	N/A	N/A	N/A	N/A
10*26561	7-8-4	II	GARI JO STACKHOUSE	TH EXPLORATION LLC	1/8+	1038	508	N/A	N/A	N/A	N/A
10*26894	7-8-4	II	PATRICK T HOWELL	TH EXPLORATION LLC	1/8+	1045	446	N/A	N/A	N/A	N/A
10*27139	7-8-4	II	BRENDA LOU BOYD	TH EXPLORATION LLC	1/8+	1052	500	N/A	N/A	N/A	N/A
10*27246	7-8-4	II	CARROLL W FRAZIER *	TH EXPLORATION LLC	1/8+	1053	7	N/A	N/A	N/A	N/A
10*27351	7-8-4	II	ELBERT ROBERT FRAZIER	TH EXPLORATION LLC	1/8+	1058	393	N/A	N/A	N/A	N/A
10*27620	7-8-4	II	ANNABELL B CROW ET AL *	TH EXPLORATION LLC	1/8+	1058	529	N/A	N/A	N/A	N/A
10*27942	7-8-4	II	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	559	N/A	N/A	N/A	N/A

WW-6A1 Well Bore Tracts

4705102327

Operator's Well No. Hudson S - 14HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment
10*28114	7-8-4	II	BETTY LOU NOBLE	TH EXPLORATION LLC	1/8+	1067	414	N/A	N/A	N/A	N/A
10*28115	7-8-4	II	JANICE L KUHN	TH EXPLORATION LLC	1/8+	1067	412	N/A	N/A	N/A	N/A
10*28116	7-8-4	II	BARBARA DOBBS GORBY	TH EXPLORATION LLC	1/8+	1067	410	N/A	N/A	N/A	N/A
10*28117	7-8-4	II	SHERRILL R DOBBS AND ELLA V DOBBS	TH EXPLORATION LLC	1/8+	1067	408	N/A	N/A	N/A	N/A
10*28118	7-8-4	II	CHARLES R PETERS AND SHARON DOBBS PETERS	TH EXPLORATION LLC	1/8+	1067	406	N/A	N/A	N/A	N/A
10*28184	7-8-4	II	DORIS DOBBS	TH EXPLORATION LLC	1/8+	1067	397	N/A	N/A	N/A	N/A
10*28360	7-8-4	II	GLENDA COFFIELD AKA GLENDA G DOBBS	SOUTHWESTERN ENERGY COMPANY	1/8+	956	126	N/A	N/A	SWN Production Company LLC to TH Exploration LLC: 44/620	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/626
10*28374	7-8-4	II	DAVID DOBBS	SOUTHWESTERN ENERGY COMPANY	1/8+	956	122	N/A	N/A	SWN Production Company LLC to TH Exploration LLC: 44/620	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/626
10*28375	7-8-4	II	RONALD D DOBBS SOLE & SEPARATE PROPERTY	SOUTHWESTERN ENERGY COMPANY	1/8+	956	118	N/A	N/A	SWN Production Company LLC to TH Exploration LLC: 44/620	Equinor USA Onshore Properties Inc to TH Exploration LLC: 44/626
10*28531	7-8-4	II	GREGG S GOLDMAN *	TH EXPLORATION LLC	1/8+	1071	586	N/A	N/A	N/A	N/A
10*28575	7-8-4	II	DIANE LACKEY *	TH EXPLORATION LLC	1/8+	1071	580	N/A	N/A	N/A	N/A
10*28577	7-8-4	II	RUSSELL S & CATHY SUE CONNER *	TH EXPLORATION LLC	1/8+	1071	568	N/A	N/A	N/A	N/A
10*28579	7-8-4	II	BETTY DOBBS TRUST *	TH EXPLORATION LLC	1/8+	1071	562	N/A	N/A	N/A	N/A
10*28581	7-8-4	II	AUGUSTA SPIHER *	TH EXPLORATION LLC	1/8+	1071	556	N/A	N/A	N/A	N/A
10*28584	7-8-4	II	VIRGINIA L RAPOZA LIVING TRUST *	TH EXPLORATION LLC	1/8+	1071	592	N/A	N/A	N/A	N/A
10*28586	7-8-4	II	DAVID J MINOR *	TH EXPLORATION LLC	1/8+	1071	574	N/A	N/A	N/A	N/A
10*21112	7-8-5	JJ	CLARENCE C STOVER JR AND LOU E STOVER	TH EXPLORATION LLC	1/8+	952	382	N/A	N/A	N/A	N/A
10*21113	7-8-5	JJ	JAMES H STOVER AND LORETTA J STOVER	TH EXPLORATION LLC	1/8+	952	380	N/A	N/A	N/A	N/A
10*21114	7-8-5	JJ	JACK G ALEXANDER AND MARVIE S ALEXANDER	TH EXPLORATION LLC	1/8+	952	376	N/A	N/A	N/A	N/A
10*21116	7-8-5	JJ	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	TH EXPLORATION LLC	1/8+	952	378	N/A	N/A	N/A	N/A
10*25555	7-8-5	JJ	MARGIE M DAVENPORT	TH EXPLORATION LLC	1/8+	1033	124	N/A	N/A	N/A	N/A
10*26510	7-8-5	JJ	JOHN ALFRED DOBBS AND LEORA JEAN DOBBS	TH EXPLORATION LLC	1/8+	1037	440	N/A	N/A	N/A	N/A
10*27387	7-8-5	JJ	JULIA ANN WALTON AIF NANCY MARIKAR	TH EXPLORATION LLC	1/8+	1058	395	N/A	N/A	N/A	N/A
10*21112	7-8-8	KK	CLARENCE C STOVER JR AND LOU E STOVER	TH EXPLORATION LLC	1/8+	952	382	N/A	N/A	N/A	N/A
10*21113	7-8-8	KK	JAMES H STOVER AND LORETTA J STOVER	TH EXPLORATION LLC	1/8+	952	380	N/A	N/A	N/A	N/A
10*21114	7-8-8	KK	JACK G ALEXANDER AND MARVIE S ALEXANDER	TH EXPLORATION LLC	1/8+	952	376	N/A	N/A	N/A	N/A
10*21116	7-8-8	KK	CHARLES E RICHARDSON AND SHIRLEY S RICHARDSON	TH EXPLORATION LLC	1/8+	952	378	N/A	N/A	N/A	N/A
10*22250	7-8-8	KK	CATHERINE V GARRISON & VICTOR C GARRISON	TH EXPLORATION LLC	1/8+	961	518	N/A	N/A	N/A	N/A
10*22837	7-8-8	KK	ILA MAE MCCONAUGHEY	TH EXPLORATION LLC	1/8+	974	196	N/A	N/A	N/A	N/A
10*23746	7-8-8	KK	JAN K GRIMES SIMNACHER	TH EXPLORATION LLC	1/8+	1011	547	N/A	N/A	N/A	N/A
10*25555	7-8-8	KK	MARGIE M DAVENPORT	TH EXPLORATION LLC	1/8+	1033	124	N/A	N/A	N/A	N/A
10*26510	7-8-8	KK	JOHN ALFRED DOBBS AND LEORA JEAN DOBBS	TH EXPLORATION LLC	1/8+	1037	440	N/A	N/A	N/A	N/A
10*27387	7-8-8	KK	JULIA ANN WALTON AIF NANCY MARIKAR	TH EXPLORATION LLC	1/8+	1058	395	N/A	N/A	N/A	N/A
10*29323	7-8-8	KK	WV DOT DIV OF HIGHWAYS	TH EXPLORATION LLC	1/8+	PENDING	PENDING	N/A	N/A	N/A	N/A

*Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.

**Force Pool Tracts

470510282095

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE #45
CANNONBURG PA 15317-5841

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

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

4705102327

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.

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

4705108827

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.

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 actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from EQUINOR USA ONSHORE PROPERTIES INC., a Delaware corporation ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 9, 2019 (the "*Effective Date*"). Assignor and Assignee may be referred to herein collectively as the "*Parties*," or individually as a "*Party*." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated November 1, 2019 (the "*Acreage Trade Agreement*").

**ARTICLE 1
ASSIGNMENT OF ASSETS**

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "*Leases*") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

**ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS**

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY DESCRIPTIVE MEMORANDUM, OR ANY REPORT OF ANY OF ITS PETROLEUM ENGINEERING CONSULTANTS, OR ANY GEOLOGICAL OR SEISMIC DATA OR INTERPRETATION, RELATING TO THE LEASEHOLD RIGHTS, (III) THE QUANTITY, QUALITY OR RECOVERABILITY OF PETROLEUM SUBSTANCES IN OR FROM THE LEASEHOLD RIGHTS, (IV) THE EXISTENCE OF ANY PROSPECT, OR ANY RECOMPLETION, INFILL OR STEP-OUT DRILLING OPPORTUNITIES, (V) ANY ESTIMATES OF THE VALUE OF THE LEASEHOLD RIGHTS, (VI) THE PRODUCTION OF PETROLEUM SUBSTANCES FROM THE LEASEHOLD RIGHTS, OR ANY PRODUCTION OR DECLINE RATES, (VII) THE MAINTENANCE, REPAIR, CONDITION, QUALITY, SUITABILITY, DESIGN OR MARKETABILITY OF THE LEASEHOLD RIGHTS, (VIII) INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT, AND (IX) ANY OTHER MATERIALS OR INFORMATION THAT MAY HAVE BEEN MADE AVAILABLE OR COMMUNICATED TO ASSIGNEE OR ITS AFFILIATES, OR ITS OR THEIR RESPECTIVE

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TUG HILL

4705102327

March 18, 2020

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

RE: Hudson S-14HU

Subject: Marshall County Route 62 and County Route 90 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 62 and County Route 90 in the area reflected on the Hudson S-14HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

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

Date of Notice Certification: 05/16/2020

API No. 47- 051
Operator's Well No. Hudson S-14HU
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>528,013.36</u>
County:	<u>Marshall</u>		Northing:	<u>4,408,799.27</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 style="padding-left: 40px;"><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.

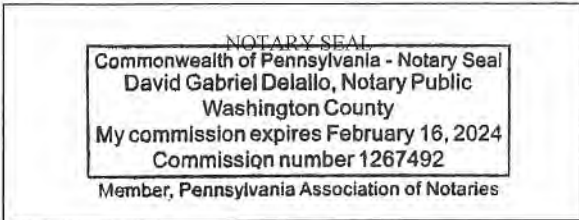
WV Department of
Environmental Protection

Certification of Notice is hereby given:

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

Well Operator: Tug Hill Operating, LLC
By: Amy L. Miller *[Signature]*
Its: Permitting Specialist - Appalachia Region
Telephone: 724-749-8388

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amiller@tug-hillop.com



Subscribed and sworn before me this 18 day of MARCH, 2020.
[Signature] Notary Public
My Commission Expires 2/16/2024

Oil and Gas Privacy Notice:

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

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API NO. 47- 051 -
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

**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: 3/16/2020 **Date Permit Application Filed:** 3/18/2020

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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4705102327
API NO. 47- 051
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

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

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API NO. 47-051 -
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

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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API NO. 47-051 -
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

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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API NO. 47-051
OPERATOR WELL NO. Hudson S-14HU
Well Pad Name: Hudson

Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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

Commonwealth of Pennsylvania - Notary Seal
Chester Arthur West IV, Notary Public
Washington County
My commission expires February 10, 2024
Commission number 1267179
Member, Pennsylvania Association of Notaries

Subscribed and sworn before me this 16th day of March, 2020.

[Signature] Notary Public

My Commission Expires 2-10-2024

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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 – 14HU
 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 - 14HU



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 | 304.255.5296
sllsw.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	03/10/2020	1" = 1000'



WV Department of Environmental Protection
TUG HILL OPERATING

**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-hilltop.com

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

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Office of Oil and Gas
MAR 19 2020
WV Department of
Environmental Protection

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.

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

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

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

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

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

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

Kimberly J. Holder
5815 Highway 217
Erwin, NC 28339

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

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

Shannon Roger Hubbs
27 Bowman Ridge
Moundsville, WV 26041

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

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

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

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

Barbara A. Mason
363 Ridgeview Lane
Moundsville, WV 26041

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

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

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

Christina C. Munson
14 Pilgrims Way
Bentonville, VA 22610

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

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

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

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

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

Carol Jean Wood
106 Arlington Ave.
Moundsville, WV 26041

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

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Betty Wilkinson
9271 Barn Swallow Lane
Marshall, VA 20115

Carl Caldwell
501 Morgantown Avenue
Apartment 201
Barnesville, OH 43713

Doris Garrison
28 Hickory Avenue
Moundsville, WV 26041

Crystal Thomas
1402 Sixth Street
Moundsville, WV 26041

Arthur Lee Waryck
912 Tomlinson Avenue
Glen Dale, WV 26038

Hiram Vernon Moore
609 Pink Apartment Rd
Davenport, FL 33837

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

Ronald Wayne Moore
434 Moores Ln
New Cumberland, WV 26047

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

Anthony T. Moore
215 Ash Avenue
Moundsville, WV 26041

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

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

Joan A. Gieger
621 Pepperdine Avenue
Edmond, OK 33013

Joyce Elaine Cone
1831 Old Westminster Pike
Finksburg, MD 21048

Mary W. Holmes
197 Spindle Lane
Moundsville, WV 26041

Marilyn Sue Reilly
197 Spindle Lane
Moundsville, WV 26041

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

Sharon Diane Jahn
2802 Spindle Lane
Bowie, MD 20715

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

Tamala Schollick
112 Jennifer Drive
Moundsville, WV 26041

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

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WW-6A5
(1/12)

4705102327
Operator Well No. Hudson S-14HU

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

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

Date of Notice: 03/18/2020 **Date Permit Application Filed:** 03/18/2020

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: 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

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 4,408,799.27
County: Marshall Northing: 528,013.36
District: Meade Public Road Access: Roberts Ridge Road (CR 21)
Quadrangle: Glen Easton 7.5' Generally used farm name: CNX Land, LLC
Watershed: Grave Creek (HUC 10)

This Notice Shall Include:

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

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

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

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WV Department of
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Oil and Gas Privacy Notice:

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

4705102327



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Byrd E. White, III
Secretary of Transportation

January 30, 2020

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-14HU 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.

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.

Very Truly Yours,

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

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

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

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WV Department of
Environmental Protection



TUG HILL

4705102327

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Hudson S-14HU

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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Hudson Well Site

Site Design, Construction Plan, & Erosion and Sediment Control Plans
Tug Hill Operating
Marshall County
Meade District
Latitude 39.82881036°
Longitude -80.67262857°
Grave Creek Watershed

APPROVED WVDEP OOG
11/4/2019

Pertinent Site Information
Hudson Well Site
Emergency Number 304-845-1920
Meade District, Marshall County, WV
Watershed: Grave Creek Watershed
Tug Hill Contact Number: 1-817-632-3400

Owner	Area (Acres)	Marshall County	Meade District
Robert A. Madsen	1.11	1.00	0.11
WV State	0.11	0.11	0.00
WV State	0.11	0.11	0.00
Total	1.33	1.22	0.11

Exhibit A: Final Design: Issue for Permitting

Site Location	Area (Acres)	Marshall County	Meade District
WV State	0.11	0.11	0.00
Robert A. Madsen	1.11	1.00	0.11
WV State	0.11	0.11	0.00
WV State	0.11	0.11	0.00
Total	1.33	1.22	0.11



Disturbance Area	Area (Acres)
Clearing	0.11
Excavation	0.11
Grading	0.11
Foundation	0.11
Access Road	0.11
Total	0.55

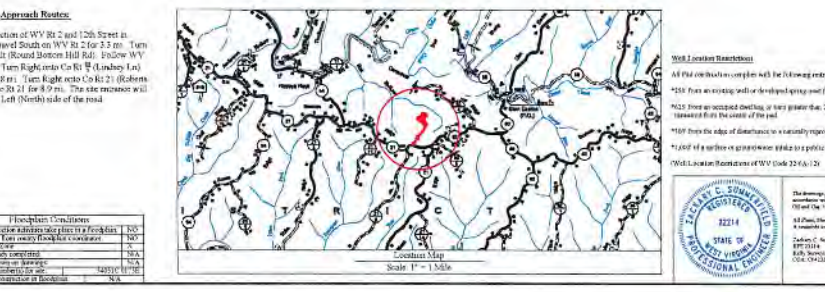
Site Location	Area (Acres)	Marshall County	Meade District
WV State	0.11	0.11	0.00
Robert A. Madsen	1.11	1.00	0.11
WV State	0.11	0.11	0.00
WV State	0.11	0.11	0.00
Total	1.33	1.22	0.11

Hudson Well Site Quantities	Quantity
Excavation	10,000 cu yd
Grading	5,000 cu yd
Foundation	2,000 cu yd
Access Road	1,000 cu yd
Total	18,000 cu yd

Project Contacts	Agency and Address
Regulatory Approval	West Virginia Department of Environmental Protection, 1500 Kanawha Blvd. S., Charleston, WV 25315
Site Preparation	811 One-Call System, 811.org
Construction Inspection	Meade District, 100 Main St., Moundsville, WV 26041
Environmental	West Virginia Department of Environmental Protection, 1500 Kanawha Blvd. S., Charleston, WV 25315
Miss Utility of West Virginia	1-800-251-4848
811	811.org



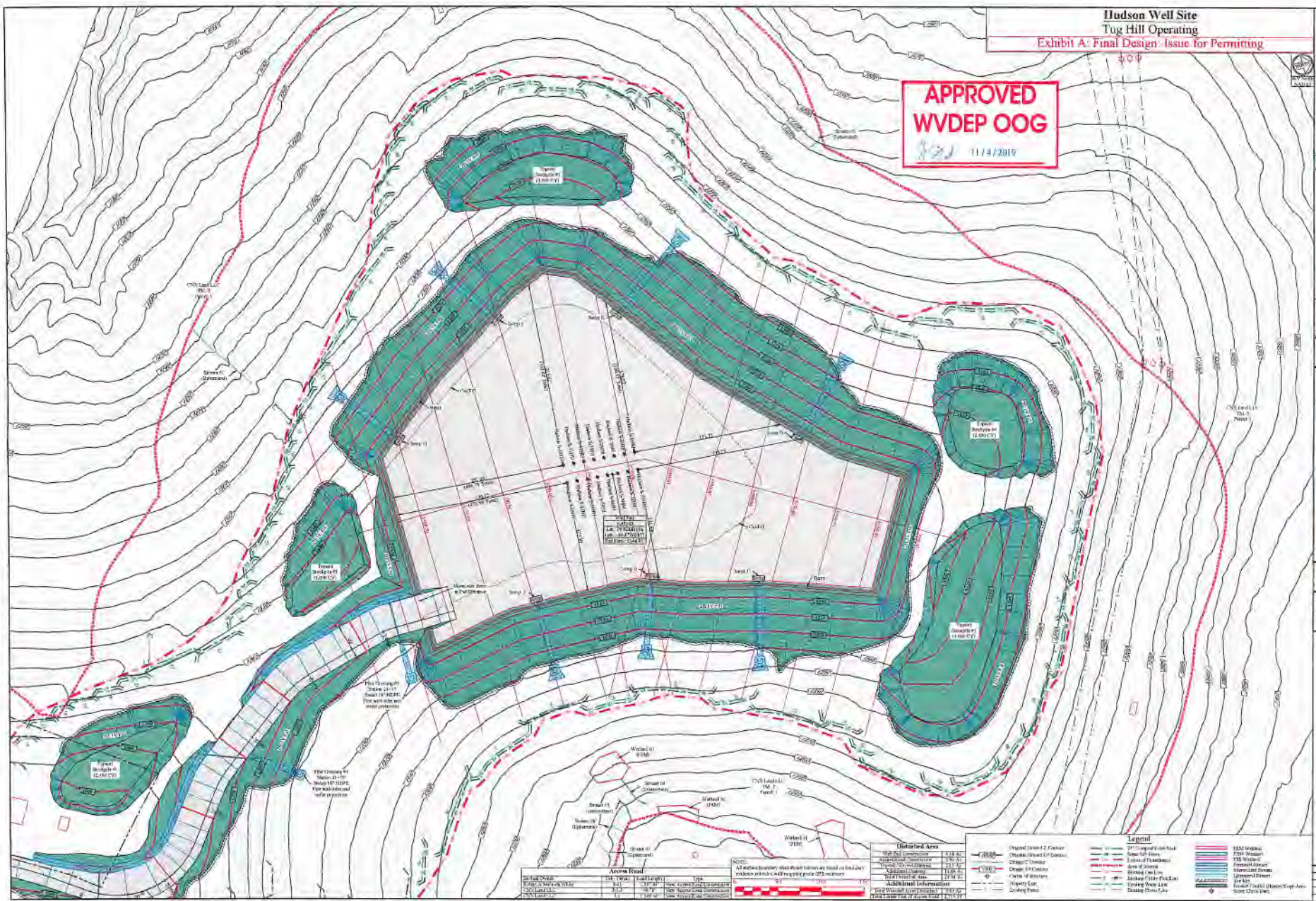
Site Location (NAD 27)	Site Location (NAD 83)
Station: 100+00.00 Easting: 579247.17 Northing: 407247.17	Station: 100+00.00 Easting: 579247.17 Northing: 407247.17



Sheet	Description
1	Cover Sheet
2	Schedule of Quantities
3	Site Plan
4	Pre-Construction Site Conditions
5	Clearing Exhibit
6	Excavation Exhibit
7	Foundation Exhibit
8	Access Road Exhibit
9	Site Key Exhibit
10-12	Plan View
13-14	Cross Sections - Well Pad
15-16	Cross Sections - Access Road
17-18	Geotechnical Exhibit
19	Foundation Exhibit
20-22	Erosion and Sediment Control Details
23	Access Road Details
24	Well Pad Details

TUG HILL OPERATING
THIS DOCUMENT PREPARED FOR TUG HILL OPERATING
K&S CONSULTANTS
Hudson Well Site
Meade District
Marshall County, WV
Cover Sheet
Scale: 1" = 100'
Designed by: J.S.
Date: 11/4/2019
Sheet 1 of 24

APPROVED
WVDEP OOG
11/14/2019



Access Road			
Width	14'	12'	10'
Surface	Gravel	Gravel	Gravel
Material	Gravel	Gravel	Gravel
Width	14'	12'	10'
Surface	Gravel	Gravel	Gravel
Material	Gravel	Gravel	Gravel
Width	14'	12'	10'
Surface	Gravel	Gravel	Gravel
Material	Gravel	Gravel	Gravel

Notes:
1. All well boundaries, and their locations, shall be based on field measurements and shall be subject to change.
2. All well boundaries, and their locations, shall be based on field measurements and shall be subject to change.
3. All well boundaries, and their locations, shall be based on field measurements and shall be subject to change.
4. All well boundaries, and their locations, shall be based on field measurements and shall be subject to change.

Disturbed Area	
Well 1 (1,000 CY)	1.00
Well 2 (1,000 CY)	1.00
Well 3 (1,000 CY)	1.00
Well 4 (1,000 CY)	1.00
Well 5 (1,000 CY)	1.00
Well 6 (1,000 CY)	1.00
Well 7 (1,000 CY)	1.00
Well 8 (1,000 CY)	1.00
Well 9 (1,000 CY)	1.00
Well 10 (1,000 CY)	1.00
Well 11 (1,000 CY)	1.00
Well 12 (1,000 CY)	1.00
Well 13 (1,000 CY)	1.00
Well 14 (1,000 CY)	1.00
Well 15 (1,000 CY)	1.00
Well 16 (1,000 CY)	1.00
Well 17 (1,000 CY)	1.00
Well 18 (1,000 CY)	1.00
Well 19 (1,000 CY)	1.00
Well 20 (1,000 CY)	1.00
Well 21 (1,000 CY)	1.00
Well 22 (1,000 CY)	1.00
Well 23 (1,000 CY)	1.00
Well 24 (1,000 CY)	1.00
Well 25 (1,000 CY)	1.00
Well 26 (1,000 CY)	1.00
Well 27 (1,000 CY)	1.00
Well 28 (1,000 CY)	1.00
Well 29 (1,000 CY)	1.00
Well 30 (1,000 CY)	1.00
Well 31 (1,000 CY)	1.00
Well 32 (1,000 CY)	1.00
Well 33 (1,000 CY)	1.00
Well 34 (1,000 CY)	1.00
Well 35 (1,000 CY)	1.00
Well 36 (1,000 CY)	1.00
Well 37 (1,000 CY)	1.00
Well 38 (1,000 CY)	1.00
Well 39 (1,000 CY)	1.00
Well 40 (1,000 CY)	1.00
Well 41 (1,000 CY)	1.00
Well 42 (1,000 CY)	1.00
Well 43 (1,000 CY)	1.00
Well 44 (1,000 CY)	1.00
Well 45 (1,000 CY)	1.00
Well 46 (1,000 CY)	1.00
Well 47 (1,000 CY)	1.00
Well 48 (1,000 CY)	1.00
Well 49 (1,000 CY)	1.00
Well 50 (1,000 CY)	1.00

Legend	
Proposed Access 2 (14' x 12')	Proposed Access 2 (14' x 12')
Proposed Access 1 (14' x 12')	Proposed Access 1 (14' x 12')
Proposed Access 3 (14' x 12')	Proposed Access 3 (14' x 12')
Proposed Access 4 (14' x 12')	Proposed Access 4 (14' x 12')
Proposed Access 5 (14' x 12')	Proposed Access 5 (14' x 12')
Proposed Access 6 (14' x 12')	Proposed Access 6 (14' x 12')
Proposed Access 7 (14' x 12')	Proposed Access 7 (14' x 12')
Proposed Access 8 (14' x 12')	Proposed Access 8 (14' x 12')
Proposed Access 9 (14' x 12')	Proposed Access 9 (14' x 12')
Proposed Access 10 (14' x 12')	Proposed Access 10 (14' x 12')
Proposed Access 11 (14' x 12')	Proposed Access 11 (14' x 12')
Proposed Access 12 (14' x 12')	Proposed Access 12 (14' x 12')
Proposed Access 13 (14' x 12')	Proposed Access 13 (14' x 12')
Proposed Access 14 (14' x 12')	Proposed Access 14 (14' x 12')
Proposed Access 15 (14' x 12')	Proposed Access 15 (14' x 12')
Proposed Access 16 (14' x 12')	Proposed Access 16 (14' x 12')
Proposed Access 17 (14' x 12')	Proposed Access 17 (14' x 12')
Proposed Access 18 (14' x 12')	Proposed Access 18 (14' x 12')
Proposed Access 19 (14' x 12')	Proposed Access 19 (14' x 12')
Proposed Access 20 (14' x 12')	Proposed Access 20 (14' x 12')
Proposed Access 21 (14' x 12')	Proposed Access 21 (14' x 12')
Proposed Access 22 (14' x 12')	Proposed Access 22 (14' x 12')
Proposed Access 23 (14' x 12')	Proposed Access 23 (14' x 12')
Proposed Access 24 (14' x 12')	Proposed Access 24 (14' x 12')
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Proposed Access 27 (14' x 12')	Proposed Access 27 (14' x 12')
Proposed Access 28 (14' x 12')	Proposed Access 28 (14' x 12')
Proposed Access 29 (14' x 12')	Proposed Access 29 (14' x 12')
Proposed Access 30 (14' x 12')	Proposed Access 30 (14' x 12')
Proposed Access 31 (14' x 12')	Proposed Access 31 (14' x 12')
Proposed Access 32 (14' x 12')	Proposed Access 32 (14' x 12')
Proposed Access 33 (14' x 12')	Proposed Access 33 (14' x 12')
Proposed Access 34 (14' x 12')	Proposed Access 34 (14' x 12')
Proposed Access 35 (14' x 12')	Proposed Access 35 (14' x 12')
Proposed Access 36 (14' x 12')	Proposed Access 36 (14' x 12')
Proposed Access 37 (14' x 12')	Proposed Access 37 (14' x 12')
Proposed Access 38 (14' x 12')	Proposed Access 38 (14' x 12')
Proposed Access 39 (14' x 12')	Proposed Access 39 (14' x 12')
Proposed Access 40 (14' x 12')	Proposed Access 40 (14' x 12')
Proposed Access 41 (14' x 12')	Proposed Access 41 (14' x 12')
Proposed Access 42 (14' x 12')	Proposed Access 42 (14' x 12')
Proposed Access 43 (14' x 12')	Proposed Access 43 (14' x 12')
Proposed Access 44 (14' x 12')	Proposed Access 44 (14' x 12')
Proposed Access 45 (14' x 12')	Proposed Access 45 (14' x 12')
Proposed Access 46 (14' x 12')	Proposed Access 46 (14' x 12')
Proposed Access 47 (14' x 12')	Proposed Access 47 (14' x 12')
Proposed Access 48 (14' x 12')	Proposed Access 48 (14' x 12')
Proposed Access 49 (14' x 12')	Proposed Access 49 (14' x 12')
Proposed Access 50 (14' x 12')	Proposed Access 50 (14' x 12')

Legend	
Proposed Access 2 (14' x 12')	Proposed Access 2 (14' x 12')
Proposed Access 1 (14' x 12')	Proposed Access 1 (14' x 12')
Proposed Access 3 (14' x 12')	Proposed Access 3 (14' x 12')
Proposed Access 4 (14' x 12')	Proposed Access 4 (14' x 12')
Proposed Access 5 (14' x 12')	Proposed Access 5 (14' x 12')
Proposed Access 6 (14' x 12')	Proposed Access 6 (14' x 12')
Proposed Access 7 (14' x 12')	Proposed Access 7 (14' x 12')
Proposed Access 8 (14' x 12')	Proposed Access 8 (14' x 12')
Proposed Access 9 (14' x 12')	Proposed Access 9 (14' x 12')
Proposed Access 10 (14' x 12')	Proposed Access 10 (14' x 12')
Proposed Access 11 (14' x 12')	Proposed Access 11 (14' x 12')
Proposed Access 12 (14' x 12')	Proposed Access 12 (14' x 12')
Proposed Access 13 (14' x 12')	Proposed Access 13 (14' x 12')
Proposed Access 14 (14' x 12')	Proposed Access 14 (14' x 12')
Proposed Access 15 (14' x 12')	Proposed Access 15 (14' x 12')
Proposed Access 16 (14' x 12')	Proposed Access 16 (14' x 12')
Proposed Access 17 (14' x 12')	Proposed Access 17 (14' x 12')
Proposed Access 18 (14' x 12')	Proposed Access 18 (14' x 12')
Proposed Access 19 (14' x 12')	Proposed Access 19 (14' x 12')
Proposed Access 20 (14' x 12')	Proposed Access 20 (14' x 12')
Proposed Access 21 (14' x 12')	Proposed Access 21 (14' x 12')
Proposed Access 22 (14' x 12')	Proposed Access 22 (14' x 12')
Proposed Access 23 (14' x 12')	Proposed Access 23 (14' x 12')
Proposed Access 24 (14' x 12')	Proposed Access 24 (14' x 12')
Proposed Access 25 (14' x 12')	Proposed Access 25 (14' x 12')
Proposed Access 26 (14' x 12')	Proposed Access 26 (14' x 12')
Proposed Access 27 (14' x 12')	Proposed Access 27 (14' x 12')
Proposed Access 28 (14' x 12')	Proposed Access 28 (14' x 12')
Proposed Access 29 (14' x 12')	Proposed Access 29 (14' x 12')
Proposed Access 30 (14' x 12')	Proposed Access 30 (14' x 12')
Proposed Access 31 (14' x 12')	Proposed Access 31 (14' x 12')
Proposed Access 32 (14' x 12')	Proposed Access 32 (14' x 12')
Proposed Access 33 (14' x 12')	Proposed Access 33 (14' x 12')
Proposed Access 34 (14' x 12')	Proposed Access 34 (14' x 12')
Proposed Access 35 (14' x 12')	Proposed Access 35 (14' x 12')
Proposed Access 36 (14' x 12')	Proposed Access 36 (14' x 12')
Proposed Access 37 (14' x 12')	Proposed Access 37 (14' x 12')
Proposed Access 38 (14' x 12')	Proposed Access 38 (14' x 12')
Proposed Access 39 (14' x 12')	Proposed Access 39 (14' x 12')
Proposed Access 40 (14' x 12')	Proposed Access 40 (14' x 12')
Proposed Access 41 (14' x 12')	Proposed Access 41 (14' x 12')
Proposed Access 42 (14' x 12')	Proposed Access 42 (14' x 12')
Proposed Access 43 (14' x 12')	Proposed Access 43 (14' x 12')
Proposed Access 44 (14' x 12')	Proposed Access 44 (14' x 12')
Proposed Access 45 (14' x 12')	Proposed Access 45 (14' x 12')
Proposed Access 46 (14' x 12')	Proposed Access 46 (14' x 12')
Proposed Access 47 (14' x 12')	Proposed Access 47 (14' x 12')
Proposed Access 48 (14' x 12')	Proposed Access 48 (14' x 12')
Proposed Access 49 (14' x 12')	Proposed Access 49 (14' x 12')
Proposed Access 50 (14' x 12')	Proposed Access 50 (14' x 12')

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

KeyS

Site Plan:
Hudson Well Site
Meadow District
Marshall County, WV

Date: 11/14/2019
State: A: State
Designed By: J.S.
Site No:
Sheet: 15 of 17