



west virginia department of environmental protection

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

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

Wednesday, January 29, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 77391-4954

Re: Permit Modification Approval for CHARLES JAMISON MSH 8H
47-051-02127-00-00

Change the vertical leg length to horizontal with a landing point. Updated leases.

SWN PRODUCTION COMPANY, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before 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: CHARLES JAMISON MSH 8H
Farm Name: CHARLES AND JEAN JAMISON
U.S. WELL NUMBER: 47-051-02127-00-00
Horizontal 6A New Drill
Date Modification Issued: 01/29/2020

Promoting a healthy environment.

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

1) Well Operator: SWN Production Co., LLC 494512924 Marshall LIBERTY CAMERON
Operator ID County District Quadrangle

2) Operator's Well Number: Charles Jamison MSH 8H Well Pad Name: Charles Jamison MSH

3) Farm Name/Surface Owner: Charles & Jean Jamison Public Road Access: Grapevine Ridge Drive

4) Elevation, current ground: 1358' Elevation, proposed post-construction: 1335'

5) Well Type (a) Gas x Oil Underground Storage

Other

(b) If Gas Shallow x Deep

Horizontal x

6) Existing Pad: Yes or No No

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8/21/19

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

Target Formation- Marcellus, Down-Dip Well to the South, Target Top TVD- 7265', Target Base TVD- 7309', Anticipated Thickness- 44', Associated Pressure- 4751

8) Proposed Total Vertical Depth: 7291'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 23,932'

11) Proposed Horizontal Leg Length: 15,932.87'

12) Approximate Fresh Water Strata Depths: 326'

13) Method to Determine Fresh Water Depths: Covered water wells within radius, unknown depth, surface elevation correlates to 325' TVD less than alternate min

14) Approximate Saltwater Depths: 1121' Salinity Profile

15) Approximate Coal Seam Depths: 1119'

16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of

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

(a) If Yes, provide Mine Info: Name: McElroy Mine/Marshall County Mine
Depth: 1060'
Seam: Pittsburgh
Owner: Murray Energy Corporation

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	100'	100' ✓	CTS
Fresh Water	13 3/8"	New	H-40	48#	440'	440' ✓	427 sx/CTS
Coal	See	Interm	Casing				
Intermediate	9 5/8"	New	J-55	36#	2617'	2617' ✓	1020 sx/CTS
Production	5 1/2"	New	HP-110	20#	23,932'	23,932' ✓	load 551sx tall 4207sx/100' inside info
Tubing							
Liners							

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8/21/19

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	See	Interm. Casing					
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/50% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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WW-6B
(10/14)

4705102127
API NO. 47- 051
OPERATOR WELL NO. Charles Jamison MSH 8H
Well Pad Name: Charles Jamison MSH

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8/21/19

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

Drill and stimulate any potential zones between and including the Benson to Marcellus. **If we should encounter a void place basket above and below void area- balance cement to bottom of void and grout from basket to surface or run external casing packer/cementing stage tool above void interval and perform 2 stage cementing operation dependent upon depth of void. Run casing not less than 20' below void nor more than 75' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

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

Well will be perforated within the target formation and stimulated with water, sand and chemical additives at a high rate. The well will be produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks. Max pressure and anticipated max rate ~9000 psig @ 100 barrels per minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.54

22) Area to be disturbed for well pad only, less access road (acres): 5.87

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

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

See Attachment ***

25) Proposed borehole conditioning procedures:

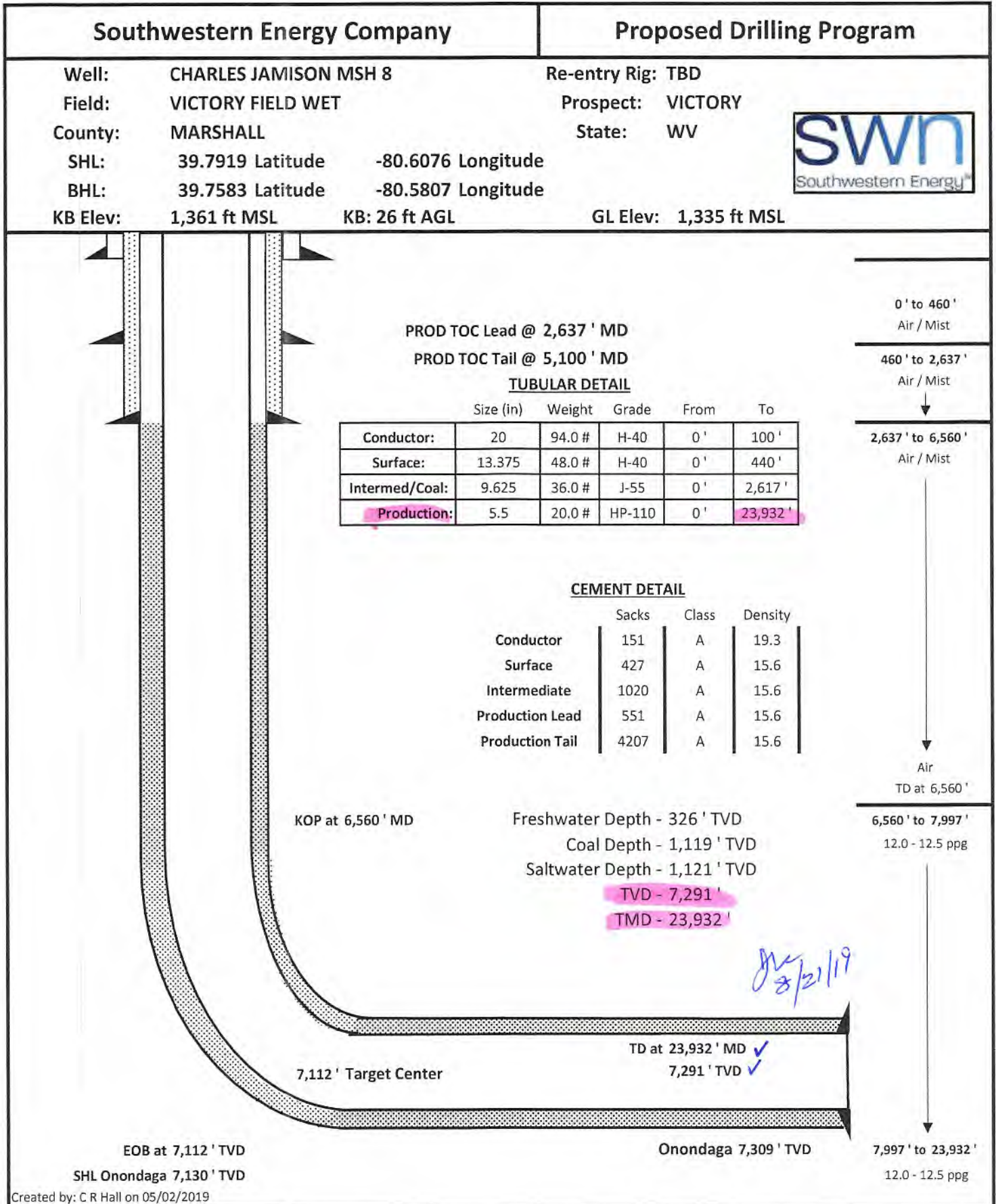
All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

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*Note: Attach additional sheets as needed.

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Page 3 of 3



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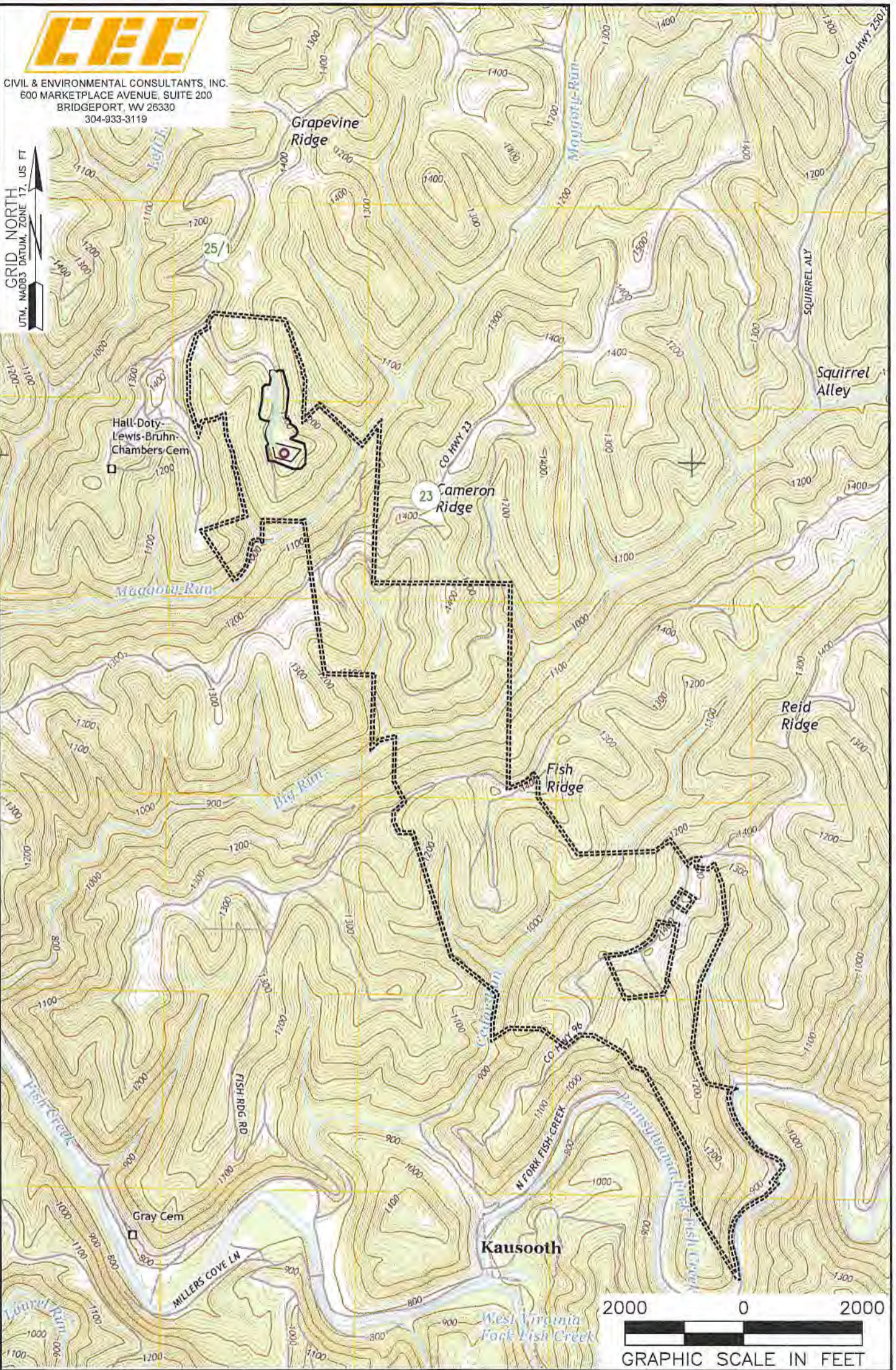
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CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119

GRID NORTH
 UTM, NAD83 DATUM, ZONE 17, US FT



NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
3. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

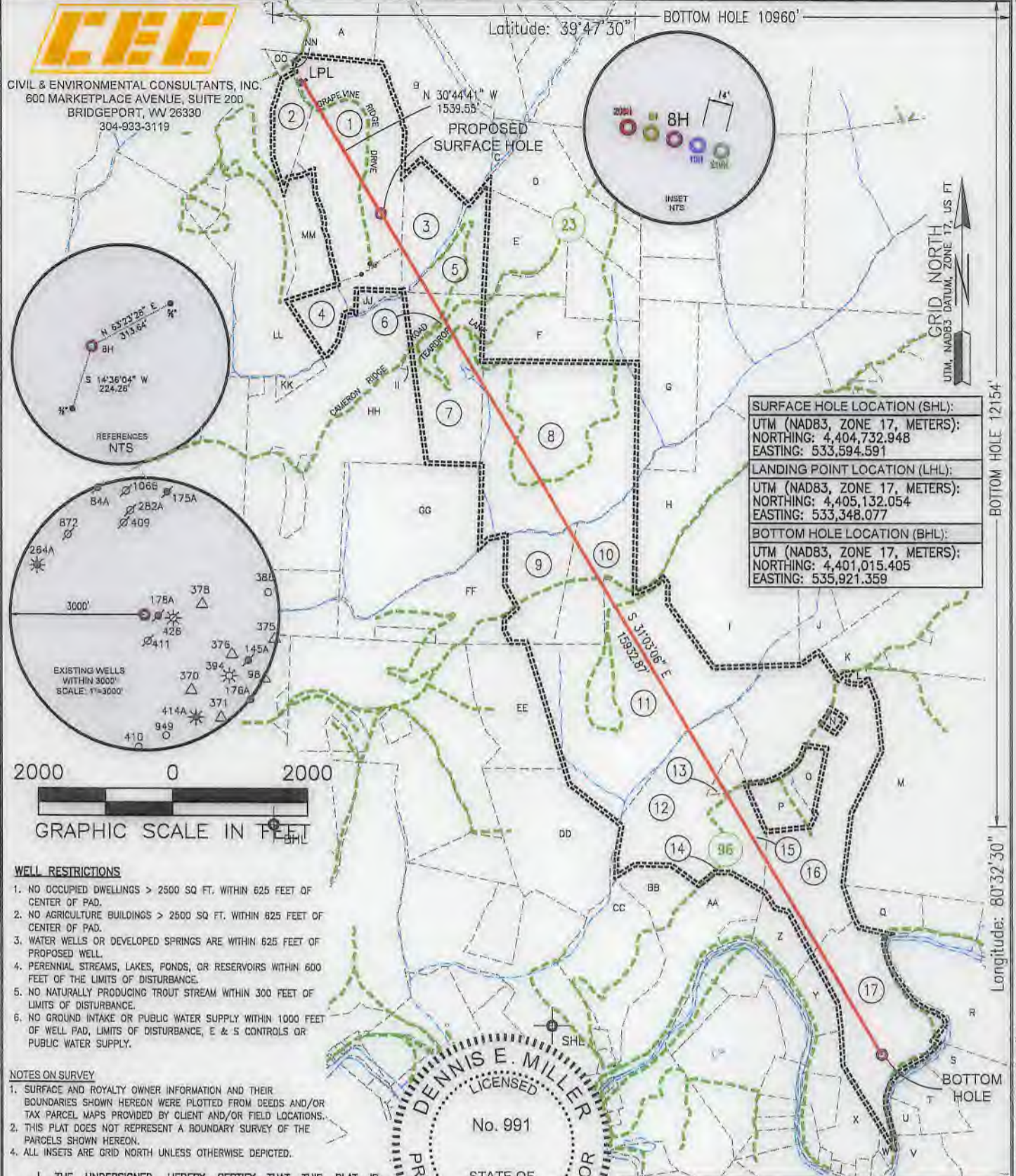
LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LPL: LANDING POINT LOCATION
- FLOOD PLAIN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

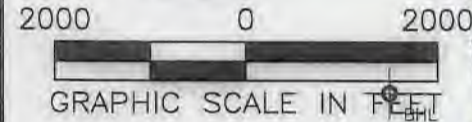
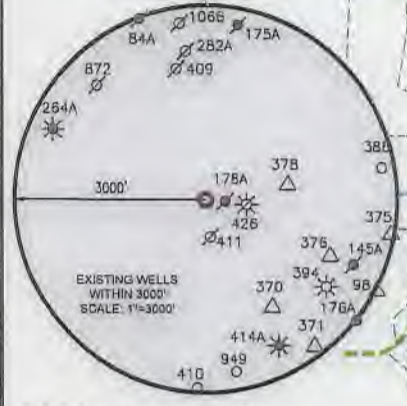
WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: CHARLES JAMISON MSH	WELL # 8H	SERIAL # XXXX
ADDRESS: 1300 FORT PIERPONT DRIVE, STE 201, MORGANTOWN, WV 26508	COUNTY - CODE MARSHALL - 051	DISTRICT; LIBERTY DISTRICT	
SURFACE OWNER: CHARLES AND JEAN JAMISON	USGS 7 1/2 QUADRANGLE MAP NAME CAMERON, WV		

Latitude: 39°50'00" SURFACE HOLE 6826'

Latitude: 39°47'30" BOTTOM HOLE 10960'



C&E
 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119



SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,404,732.948
EASTING: 533,594.591
LANDING POINT LOCATION (LHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,405,132.054
EASTING: 533,348.077
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS):
NORTHING: 4,401,015.405
EASTING: 535,921.359

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT

BOTTOM HOLE 12154'

SURFACE HOLE 15098'

Longitude: 80°32'30"

Longitude: 80°35'00"

WELL RESTRICTIONS

1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
3. WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 625 FEET OF PROPOSED WELL.
4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 600 FEET OF THE LIMITS OF DISTURBANCE.
5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. ALL INSETS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



P.S. 991

COMPANY:
SWN SWN
 Production Company, LLC Production Company™

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
 SURVEY GRADE GPS (NAVD 88, US FT)
 PROVEN SOURCE OF ELEVATION:

CHARLES JAMISON MSH
 OPERATOR'S WELL #: 8H
 API WELL #: 47 051 02127
 STATE COUNTY PERMIT

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW

WATERSHED: MAGGOTY RUN ELEVATION: 1335.0'

DISTRICT: LIBERTY DISTRICT COUNTY: MARSHALL QUADRANGLE: CAMERON

SURFACE OWNER: CHARLES AND JEAN JAMISON ACREAGE: 97.2±

OIL & GAS ROYALTY OWNER: CHARLES AND JEAN JAMISON ACREAGE: 97.2±

DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION

CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,291 TVD 23,932.04 TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
 ADDRESS: 1300 FORT PIERPONT DRIVE, STE 201
 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

DESIGNATED AGENT: BRITTANY WOODY
 ADDRESS: 1300 FORT PIERPONT DRIVE, STE 201
 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:

PROPOSED SURFACE HOLE / BOTTOM HOLE	SURVEYED BOUNDARY
EXISTING / PRODUCING WELLHEAD	DRILLING UNIT
LPL	LEASE BOUNDARY
EXISTING WATER WELL	PROPOSED PATH
EXISTING SPRING	

REVISIONS:	DATE: 08-06-2019
	DRAWN BY: K.E.S.
	SCALE: 1" = 2000'
	DRAWING NO: 170-426
	WELL LOCATION PLAT



CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
 600 MARKETPLACE AVENUE, SUITE 200
 BRIDGEPORT, WV 26330
 304-933-3119

WELL BORE TABLE FOR SURFACE OWNERS		
TRACT	SURFACE OWNER	TAX PARCEL
1	CHARLES AND JEAN JAMISON	07-007-0006
2	CONSOLIDATED COAL COMPANY	07-007-0006.3
3	GAIL ZWICK - LIFE	07-007-0012
4	TIMOTHY R. CAIN	07-007-0006.1
5	GAIL ZWICK - LIFE	07-007-0014
6	CO. RT. 23 ROW (CAMERON RIDGE ROAD)	
7	CONSOLIDATED COAL COMPANY	07-010-0019
8	GARY RAY DOBBS, ET UX	07-010-0021
9	HOWARD E WILLIAMS	07-010-0025.1
10	NAOMI WILLIAMS STARKEY	07-010-0025
11	RUSSELL ALLEN DOTSON JR, ET UX	07-016-0031
12	DONALD REX QUIGLEY, ET UX	07-016-0033
13	DAVID L. ELSON, ET UX	07-016-0032
14	CO. RT. 96 ROW	
15	DAVID L. ELSON, ET UX	07-016-0034
16	DONALD REX QUIGLEY, ET UX	07-016-0036
17	LILLIAN A. KERBY	07-020-0021

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	KENNETH WAYNE STEELE TRUST	07-007-0008.1
B	KENNETH WAYNE STEELE TRUST	07-007-0011
C	GAIL ZWICK - LIFE	07-006-0008
D	CONSOL MINING COMPANY LLC	07-006-0010
E	GAIL ZWICK - LIFE	07-006-0012.1
F	JACK R. BUZZARD, ET UX	07-010-0020
G	JACK R. BUZZARD, ET UX	07-011-0001
H	CONSOL COMPANY LLC	07-011-0003
I	SCOTT D. SHALAWAY, ET UX	07-011-0004
J	DONALD REX QUIGLEY, ET UX	07-011-0005
K	DONALD QUIGLEY, ET UX	07-011-0017
L	ANDREW MCCURDY, ET UX	07-016-0036.2
M	HINKLE FAMILY TRUST	07-015-0001
N	DONALD REX AND ELLEN QUIGLEY	07-016-0036.1
O	STEPHANIE L. WHITE	07-016-0036.3
P	TERRY A. AND DONNA L. BONAR	07-016-0035
Q	JAMES W. DEVER	07-020-0022
R	CLAUDE R. STEPHENS EST, ET AL	07-020-0023
S	AMMON A. BURLEY	07-020-0024
T	CONRAD M. BERISFORD, ET UX	07-020-0020
U	CONRAD M. BERISFORD, ET UX	07-020-0019
V	AMMON A. BURLEY	07-020-0018
W	WYATT A. MCCLURE	07-020-0017
X	ROBERT B. MCCLURE	07-020-0013
Y	JOHN E. RIGGS JR, ET UX	07-016-0044
Z	LOUIS S. MCCLELLAND EST	07-016-0037
AA	JOHN MATTHEW BUTLER	07-016-0039
BB	JEREMIAH N. AND ANDREA J. MAGERS	07-016-0033.1
CC	JOHN M. BUTLER	07-016-0026.1
DD	RUSSELL ALLEN DOTSON JR, ET UX	07-016-0028
EE	RALPH E. WILLIAMS	07-016-0030
FF	DELORSE A. HORNER - LIFE	07-016-0023
GG	GARY RAY DOBBS, ET AL	07-010-0022
HH	GARY RAY DOBBS, ET AL	07-010-0018
II	JEFFREY A. MURRAY	07-010-0018.2
JJ	CHARLES AND JEAN JAMISON	07-007-0013
KK	GARY RAY DOBBS, ET AL	07-010-0017
LL	CONSOL MINING COMPANY LLC	07-007-0005.3
MM	TIMOTHY R. CAIN	07-007-0006.2
NN	CONSOLIDATED COAL COMPANY	07-007-0007
OO	CONSOLIDATED COAL COMPANY	07-007-0007.1

API WELL #: **47** **051** **02121 MDD #1**
 STATE COUNTY PERMIT

REVISIONS:	COMPANY:		
	OPERATOR'S		
	WELL #:		DATE: 08-06-2019
	DISTRICT:		DRAWN BY: K.E.S.
	COUNTY:	STATE:	SCALE: N/A
	LIBERTY DISTRICT	WV	DRAWING NO: 170-426
			WELL LOCATION PLAT 2

WW-6A1
(5/13)

Operator's Well No. _____

**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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**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.

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**WV Department of
Environmental Protection**

Well Operator: SWN Production Company, LLC.
By: *[Signature]*
Its: staff landman

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
Jamison 8H
Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
1	07-07-06	Cora Gosney and H.M. Gosney, her husband; O.L. Bruhn and Nola Bruhn, his wife; Dora W. Wagner, widow The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.50%	342/268 422/204 642/281 650/63 33/110	0.000000%
2	07-07-06.03	Cora Gosney and H.M. Gosney, her husband; O.L. Bruhn and Nola Bruhn, his wife; Dora W. Wagner, widow The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.50%	342/268 422/204 642/281 650/63 33/110	0.000000%
3	07-07-12	Eleanor Reynolds Hinerman and Emmett Hinerman, her husband; Lutie Hicks, single; W.J. Booher and Virginia H. Booher, his wife; Mary Booher Hamilton and A.E. Hamilton, her husband; Jeannette Booher Parker and Curtis E. Parker, her husband; Sam Booher, Jr. and Helen Booher, his wife The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.50%	342/426 422/204 642/281 650/63 33/110	0.000000%
4	07-07-06.01	Cora Gosney and H.M. Gosney, her husband; O.L. Bruhn and Nola Bruhn, his wife; Dora W. Wagner, widow The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.50%	342/268 422/204 642/281 650/63 33/110	0.000000%
5	07-07-14	Brenda Fischer and Joseph G. Fischer, wife and husband Sandra L. Bucher, a married woman dealing in her sole and separate property	SWN Production Company, LLC SWN Production Company, LLC	17.00% 17.00%	916/185 916/187	0.000000%

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Office of Oil and Gas
DEC 20 2019
WV Department of Environmental Protection

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
Jamison 8H
Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RECEIVED Office of Oil and Gas DEC 20 2019 WV Department of Environmental Protection</p>		Joseph C. Hefferon and Margaret M. Hefferon, husband and wife	SWN Production Company, LLC	17.00%	916/183	
		Resource Minerals Headwater I, LP	TH Exploration, LLC	18.00%	940/448	
		TH Exploration, LLC	SWN Production Company, LLC and Equinor USA Onshore Properties Inc.		44/124	
		LL&B Investment Holdings, LLC TH Exploration, LLC	TH Exploration, LLC SWN Production Company, LLC and Equinor USA Onshore Properties Inc.	N/A	1020/366 See attached.	
6		Mary M. Marshall (widow); S.E. Marshall (single); Isaac J. Hubbs and Alvilda Hubbs, his wife	The Carnegie Natural Gas Company	12.50%	150/459 326/127	0.000000%
		Carnegie Natural Gas Company	The Manufacturers Light and Heat Company		3/93	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
7	07-10-19	Mary M. Marshall (widow); S.E. Marshall (single); Isaac J. Hubbs and Alvilda Hubbs, his wife	The Carnegie Natural Gas Company	12.50%	150/459 326/127	0.000000%
		Carnegie Natural Gas Company	The Manufacturers Light and Heat Company		3/93	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
8	07-10-21	T.C. Pipes and L.H. Pipes, his wife; W.B. Hicks and E.V. Hicks, his wife; and John Thiel (single)	S.B. Kelly	12.50%	146/491	0.000000%
		S.B. Kelly	W.H. Young		146/497	
		W.H. Young	J.E. Davis		146/494	
		J.E. Davis	J.W. Miller		146/495	
		J.E. Davis and Hettie M. Davis, husband and wife	Jefferson Oil Company		147/254	
		J.W. Miller and Jeanette K. Miller, husband and wife	Jefferson Oil Company		147/255	
		Jefferson Oil Company	Carnegie Natural Gas Company		177/74	
		Carnegie Natural Gas Company	The Manufacturers Light and Heat Company		3/93	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Jamison 8H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
9	07-10-25.01	F.R. Reynolds and Lora Reynolds, his wife; C.E. Lancaster and Laura B. Lancaster, his wife; Will J. Booher and Doane Booher, his wife	J.W. Miller	12.50%	149/33	0.000000%
		J.W. Miller and Jeannette K. Miller, husband and wife	Carnegie Natural Gas Company		177/75	
		Carnegie Natural Gas Company	The Manufacturers Light and Heat Company		3/93	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
10	07-10-25	F.R. Reynolds and Lora Reynolds, his wife; C.E. Lancaster and Laura B. Lancaster, his wife; Will J. Booher and Doane Booher, his wife	J.W. Miller	12.50%	149/33	0.000000%
		J.W. Miller and Jeannette K. Miller, husband and wife	Carnegie Natural Gas Company		177/75	
		Carnegie Natural Gas Company	The Manufacturers Light and Heat Company		3/93	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		33/110	
11	07-16-31	Mary Charnock, Committee for C.M. Charnock, an insane person	The Wheeling Natural Gas Company	12.50%	132/514	0.000000%
		The Wheeling Natural Gas Company	The Manufacturers Light and Heat Company		148/389	
		The Manufacturers Light and Heat Company	Union Gasoline and Oil Corporation		197/120	
		Union Gasoline and Oil Corporation	The Preston Oil Company		2/136	
		The Preston Oil Company	The Manufacturers Light and Heat Company		2/225	
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	
		Columbia Natural Resources, LLC	Chesapeake Appalachia, L.L.C.		650/63	
		Chesapeake Appalachia, L.L.C.	SWN Production Company, LLC		36/422	
12	07-16-33	Hope Reid, single	The Manufacturers Light and Heat Company	12.50%	417/284F 421/39	0.000000%
		The Manufacturers Light and Heat Company	Columbia Gas Transmission Corporation		422/204	
		Columbia Gas Transmission Corporation	Columbia Natural Resources, LLC		642/281	

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EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, L.L.C., Operator
 Jamison 8H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
		Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC		650/63 36/422	
13	07-16-32	Hope Reid, single The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	12.50%	417/284F 421/39 422/204 642/281 650/63 36/422	0.000000%
14		Hope Reid, single The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	12.50%	417/284F 421/39 422/204 642/281 650/63 36/422	0.000000%
15	07-16-34	Hope Reid, single The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	The Manufacturers Light and Heat Company Columbia Gas Transmission Corporation Columbia Natural Resources, LLC Chesapeake Appalachia, L.L.C.	12.50%	417/284F 421/39 422/204 642/281 650/63 36/422	0.000000%
16	07-16-36	Royalty Owners Master Mineral Holdings I, L.P. Master Mineral Holdings I, L.P. Jack R. Hammers, a/k/a Jack Hammers, a married man dealing in his sole and separate property P. Fred Hammers, a/k/a Fred Hammers, a married man dealing in his sole and separate property Dorothy June Izso, a widow Lucille Carolyn Safreed, a/k/a Lucille Caroline Safreed, a widow Howard Leslie Reid, a married man dealing in his sole and separate property	N/A SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC SWN Production Company, LLC	 16.00% 16.00% 16.00% 16.00% 16.00% 16.00% 16.00%	 945/417 962/450 953/427 955/543 935/308 944/238 944/242	4.166667%

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 Jamison 8H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
		Donald Rex Quigley, a/k/a Donald R. Quigley and Ellen M. Quigley, husband and wife	SWN Production Company, LLC	18.00%	955/269	
		Bounty Minerals, LLC TH Exploration, LLC	TH Exploration, LLC SWN Production Company, LLC and Equinor USA Onshore Properties Inc.	20.00%	928/400 44/132	
		Buddy Randall Reid, divorced and not remarried	SWN Production Company, LLC	17.00%	1068/67	
17	07-20-21	Royalty Owners	N/A			19.074074%
		Stephen W. Burge, Trustee of the Onward E. Burge Trust dated June 21, 2010	SWN Production Company, LLC	18.00%	962/434	
		Stephen W. Burge, Trustee of the Sarah L. Burge Trust dated June 21, 2010	SWN Production Company, LLC	18.00%	962/438	
		Frances Irene Allen, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	934/169	
		Cathy Lynn Hammond, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	934/171	
		Deborah Mae Orlofske, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	934/173	
		Lori Beth Wallace, a/k/a Lori Beth Berisford Hancock, a single woman	SWN Production Company, LLC	18.00%	934/207	
		Connie Jo Nelson, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	934/209	
		Christopher A. Mondreas, a single man	SWN Production Company, LLC	18.00%	952/106	
		Mildred E. Berisford, a widow	SWN Production Company, LLC	18.00%	935/246	
		Edmond Douglas Berisford, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	944/236	
		Dena M. Hall, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	950/41	
		Karen Ann Adams, a widow and not remarried	SWN Production Company, LLC	18.00%	1068/444	
		Chestnut Holdings, Inc., a Florida corporation	SWN Production Company, LLC	20.00%	1067/78	

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 Jamison 8H
 Marshall County, West Virginia

Tract #	Tax Parcel	Lessor	Lessee	Royalty	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
		Kevin Chumney, a/k/a Kevin K. Chumney and Janet L. Chumney, husband and wife, individually and as joint tenants with right of survivorship	SWN Production Company, LLC	18.00%	1067/529	
		David J. Gay, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	1068/516	
		Nancy K. Miller, a widow and not remarried	SWN Production Company, LLC	18.00%	1068/521	
		Carol Elaine Thom, a single woman	SWN Production Company, LLC	18.00%	See attached.	

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PAID-UP
OIL & GAS LEASE

Lease No. _____

6/17 - WV

This Lease, made this 9th day of December, 2019, by and between Carol Elaine Thom, a single woman, of 105 Poplar Point Estates Road, Poca, West Virginia 25159, hereinafter collectively called "Lessor," and SWN Production Company, LLC, a Texas limited liability company, 10000 Energy Drive, Spring, Texas 77389, hereinafter called "Lessee."

WITNESSETH, that for and in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and of the mutual covenants and agreements hereinafter set forth, the Lessor and Lessee agree as follows:

LEASING CLAUSE. Lessor hereby leases exclusively to Lessee all the oil and gas (including, but not limited to coal seam gas, coalbed methane gas, coalbed gas, gob gas, occluded methane/natural gas and all associated natural gas and other hydrocarbons and non-hydrocarbons contained in, associated with, emitting from, or produced/originating within any formation, gob area, mined-out area, coal seam, and all communicating zones), and their liquid gaseous constituents, whether hydrocarbon or non-hydrocarbon, underlying the land herein leased, together with such exclusive rights as may be necessary or convenient for Lessee, at its election, to explore for, develop, produce, measure, and market production from the Leasehold, or from other lands, using methods and techniques which are not restricted to current technology, including, without limitation, the right to conduct geophysical and other exploratory tests; to drill, maintain, operate, cease to operate, plug, abandon, and remove wells; to use or install roads over and across the Leasehold for use in development of the Leasehold or other lands, electric power and telephone facilities, water impoundments, and to construct pipelines with appurtenant facilities, including data acquisition, compression and collection facilities for use in the production and transportation of products from the Leasehold or from other lands across the Leasehold, to use oil, gas, and non-domestic water sources, free of cost, to store gas of any kind underground, regardless of the source thereof, including the injecting of gas therein and removing the same therefrom; to protect stored gas; to operate, maintain, repair, and remove material and equipment; to use and occupy the subsurface of the Leasehold for the drilling of a wellbore(s) for use in development of the Leasehold or other lands.

DESCRIPTION. The Leasehold is located in the District of Liberty, in the County of Marshall, in the State of West Virginia, and described as follows:

Property Tax Parcel Identification Number: 07-0020-0021-0000
and is bounded formerly or currently as follows:

- On the North by lands of Donald Rex Quigley and Ellen M. Quigley; James W. Dever
- On the East by lands of Claude R. Stephens Estate, et al; Ammon A. Burley; Conrad M. Berisford, et ux
- On the South by lands of Ammon Burley; Wyatt A. McClure
- On the West by lands of Robert B. McClure; John E. Riggs, Jr., et ux; Louis S. McClelland Estate

including lands acquired from Charles R. Thom, by virtue of the Last Will and Testament of Charles R. Thom, dated September 27, 1999, and recorded in Kanawha County, West Virginia in Will Book 831, at Page 555; and being more particularly described as a portion of 'Parcel Six' in a General Warranty Deed from O.E. Burge and Sarah Lou Burge, his wife, to Onward E. Burge, Sarah L. Burge and Stephen W. Burge, Trustees of the Onward E. Burge Trust dated June 21, 2010, dated October 21, 2010, and recorded in Deed Book 710, at Page 487, and described for the purposes of this agreement as containing a total of 71.15 Leasehold acres, whether actually more or less, and including contiguous lands owned by Lessor. This Lease also covers and includes, in addition to that above described, all land, if any, contiguous or adjacent to or adjoining the land above described and (a) owned or claimed by Lessor, by limitation, prescription, possession, reversion or unrecorded instrument or (b) as to which Lessor has a preference right of acquisition. Lessor agrees to execute any supplemental instrument requested by Lessee for a more complete or accurate description of said land.

LEASE TERM. This Lease shall remain in force for a primary term of five (5) years from 12:00 A.M. DECEMBER 9th, 2019 (effective date) to 11:59 P.M. DECEMBER 8th, 2024 (last day of primary term) and shall continue beyond the primary term as to the entirety of the Leasehold if any of the following is satisfied: (i) operations are conducted on the Leasehold or lands pooled/unitized therewith in search of oil, gas, or their constituents, or (ii) a well deemed by Lessee to be capable of production is located on the Leasehold or lands pooled/unitized therewith, or (iii) oil or gas, or their constituents, are produced from the Leasehold or lands pooled/unitized therewith, or (iv) if the Leasehold or lands pooled/unitized therewith is used for the underground storage of gas, or for the protection of stored gas, or (v) if prescribed payments are made, or (vi) if Lessee's operations are delayed, postponed or interrupted as a result of any coal, stone or other mining or mining related operation under any existing and effective lease, permit or authorization covering such operations on the leased premises or on other lands affecting the leased premises, such delay will automatically extend the primary or secondary term of this oil and gas lease without additional compensation or performance by Lessee for a period of time equal to any such delay, postponement or interruption.

If there is any dispute concerning the extension of this Lease beyond the primary term by reason of any of the alternative mechanisms specified herein, the payment to the Lessor of the prescribed payments provided below shall be conclusive evidence that the Lease has been extended beyond the primary term.

EXTENSION OF PRIMARY TERM. Lessee has the option to extend the primary term of this Lease as to all or any part of the acreage then covered hereby, for one additional term of five (5) years from the expiration of the primary term of this Lease; said extension to be under the same terms and conditions as contained in this Lease. Lessee may exercise this option to extend this Lease if on or before the expiration date of the primary term of this Lease, Lessee pays or tenders to the Lessor or to the Lessor's credit an amount equal to the sum of the initial consideration given for the execution hereof, which shall be paid in proportion to the number of net acres actually extended. Exercise of this option is at Lessee's sole discretion and may be invoked by Lessee where no other alternative of the Lease Term clause extends this Lease beyond the primary term. If this option is exercised by Lessee the lease as extended will thereafter be treated as if the original primary term was ten (10) years.

NO AUTOMATIC TERMINATION OR FORFEITURE.

(A) CONSTRUCTION OF LEASE: The language of this Lease (including, but not limited to, the Lease Term and Extension of Term clauses) shall never be read as language of special limitation. This Lease shall be construed against termination, forfeiture, cancellation or expiration and in favor of giving effect to the continuation of this Lease where the circumstances exist to maintain this Lease in effect under any of the alternative mechanisms set forth above. In connection therewith, (i) a well shall be deemed to be capable of production if it has the capacity to produce a profit over operating costs, without regard to any capital costs to drill or equip the well, or to deliver the oil or gas to market, and (ii) the Lessee shall be deemed to be conducting operations in search of oil or gas, or their constituents, if the Lessee is engaged in geophysical and other exploratory work including, but not limited to, activities to drill an initial well, to drill a new well, or to rework, stimulate, deepen, sidetrack, frac, plug back in the same or different formation or repair a well or equipment on the Leasehold or any lands pooled/unitized therewith (such activities shall include, but not be limited to, performing any preliminary or preparatory work necessary for drilling, conducting internal technical analysis to initiate and/or further develop a well, obtaining permits and approvals associated therewith and may include reasonable gaps in activities provided that there is a continuum of activities showing a good faith effort to develop

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a well or that the cessation or interruption of activities was beyond the control of Lessee, including interruptions caused by the acts of third parties over whom Lessee has no control or regulatory delays associated with any approval process required for conducting such activities).

(B) **LIMITATION OF FORFEITURE:** This Lease shall never be subject to a civil action or proceeding to enforce a claim of termination, cancellation, expiration or forfeiture due to any action or inaction by the Lessee, including, but not limited to making any prescribed payments authorized under the terms of this Lease, unless the Lessee has received written notice of Lessor's demand and thereafter fails or refuses to satisfy or provide justification responding to Lessor's demand within 60 days from the receipt of such notice. If Lessee timely responds to Lessor's demand, but in good faith disagrees with Lessor's position and sets forth the reasons therefore, such a response shall be deemed to satisfy this provision, this Lease shall continue in full force and effect and no further damages (or other claims for relief) will accrue in Lessor's favor during the pendency of the dispute, other than claims for payments that may be due under the terms of this Lease.

PAYMENTS TO LESSOR. In addition to the bonus paid by Lessee for the execution hereof, Lessee covenants to pay Lessor, proportionate to Lessor's percentage of ownership, as follows:

(A) **DELAY RENTAL:** To pay Lessor as Delay Rental, after the first year, at the rate of five dollars (\$5.00) per net acre per year payable in advance. The parties hereto agree that this is a Paid-Up Lease with no further Delay Rental and/or Delay in Marketing payments due to Lessor during the primary term or, if so exercised, the extended primary term hereof.

(B) **ROYALTY:** To pay Lessor as Royalty, less all taxes, assessments, and adjustments on production from the Leasehold, as follows:

1. **OIL:** To deliver to the credit of Lessor a Royalty equal to one-eighth (1/8) of the net revenue realized by Lessee for all oil and any constituents thereof produced and marketed from the Leasehold, less the cost to transport, handle, separate, meter, treat, process and market the oil.

2. **GAS:** To pay Lessor on actual volumes of gas and any constituents thereof sold from said land, one-eighth of the net amount realized by Lessee, computed at the wellhead. As used in this lease, the term "net amount realized by Lessee, computed at the wellhead" shall mean the gross proceeds received by Lessee from the sale of oil and gas minus post-production costs incurred by Lessee between the wellhead and the point of sale. As used in this Lease, the term "post-production costs" shall mean all costs and expenses of (a) treating and processing oil and/or gas, and (b) separating liquid hydrocarbons from gas, other than condensate separated at the well, and (c) transporting oil and/or gas, including but not limited to transportation between the wellhead and any production or treating facilities, and transportation to the point of sale, and (d) compressing gas for transportation and delivery purposes, and (e) metering oil and/or gas to determine the amount sold and/or the amount used by Lessee, and (f) sales charges, commissions and fees paid to third parties (whether or not affiliated) in connection with the sale of the gas, and (g) any and all other costs and expenses of any kind or nature incurred in regard to the gas, or the handling thereof, between the wellhead and the point of sale. Lessee may use its own pipelines and equipment to provide such treating, processing, separating, transportation, compression and metering services, or it may engage others to provide such services; and if Lessee uses its own pipelines and/or equipment, post-production costs shall include without limitation reasonable depreciation and amortization expenses relating to such facilities, together with Lessee's cost of capital and a reasonable return on its investment in such facilities. Prior to payment of royalty, Lessor may be required to execute a Division Order certifying Lessor's interest in production. Lessee may pay all taxes and fees levied upon the oil and gas as produced, including, without limitation, severance taxes and privilege and surveillance fees, and deduct a proportionate share of the amount so paid from any monies payable to Lessor hereunder. Lessee may withhold Royalty payment until such time as the total withheld exceeds one hundred dollars (\$100.00).

(C) **DELAY IN MARKETING:** In the event that Lessee drills a well on the Leasehold or lands pooled/unitized therewith that is awaiting completion (including, without limitation, hydraulic fracture stimulation), or that Lessee deems to be capable of production, but does not market producible gas, oil, or their constituents, therefrom, and there is no other basis for extending this Lease, Lessee shall pay after the primary term and until such time as marketing is established (or Lessee surrenders the Lease) a Delay in Marketing payment equal in amount and frequency to the annual Delay Rental payment, and this Lease shall remain in full force and effect to the same extent as payment of Royalty.

(D) **SHUT-IN:** In the event that production of oil, gas, or their constituents, is interrupted and not marketed for a period of twelve (12) months, and there is no producing well on the Leasehold or lands pooled/unitized therewith, Lessee shall, after the primary term, as Royalty for constructive production, pay a Shut-in Royalty equal in amount and frequency to the annual Delay Rental payment until such time as production is re-established (or Lessee surrenders the Lease) and this Lease shall remain in full force and effect. During Shut-in, Lessee shall have the right to rework, stimulate, or deepen any well on the Leasehold or to drill a new well on the Leasehold in an effort to re-establish production, whether from an original producing formation or from a different formation. In the event that the production from the only producing well on the Leasehold is interrupted for a period of less than twelve (12) months, this Lease shall remain in full force and effect without payment of Royalty or Shut-in Royalty.

(E) **DAMAGES:** Lessee will remove unnecessary equipment and materials and reclaim all disturbed lands at the completion of all activities on the Leasehold, and Lessee agrees to repair any damaged improvements to the land and pay for the loss of growing crops or marketable timber.

(F) **MANNER OF PAYMENT:** Lessee shall make or tender all payments due hereunder by check, payable to Lessor, at Lessor's last known address, and Lessee may withhold any payment pending notification by Lessor of a change in address. Payment may be tendered by mail or any comparable method (e.g., Federal Express), and payment is deemed complete upon mailing or dispatch. Where the due date for any payment specified herein falls on a holiday, Saturday or Sunday, payment tendered (mailed or dispatched) on the next business day is timely.

(G) **CHANGE IN LAND OWNERSHIP:** Lessee shall not be bound by any change in the ownership of the Leasehold until furnished by Lessor with such documentation as Lessee may reasonably require. Pending the receipt of documentation, Lessee may elect either to continue to make or withhold payments as if such a change had not occurred.

(H) **TITLE:** If Lessee receives evidence that Lessor does not have title to all or any part of the rights herein leased, Lessee may immediately withhold payments that would be otherwise due and payable hereunder to Lessor until the adverse claim is fully resolved. Lessor represents and warrants that there is no existing oil and gas lease which is presently in effect covering the Leasehold.

(I) **LIENS:** Lessee may, at its option, pay and discharge any past due taxes, mortgages, judgments, or other liens and encumbrances on or against any land or interest included in the Leasehold; and Lessee shall be entitled to recover from the debtor, with legal interest and costs, by deduction from any future payments to Lessor or by any other lawful means. In the event the leased lands are encumbered by a prior mortgage, then, notwithstanding anything contained herein to the contrary, Lessee shall have the right to suspend the payment of any royalties due hereunder, without liability for interest, until such time as Lessor obtains at its own expense a subordination of the mortgage in a form acceptable to Lessee.

(J) CHARACTERIZATION OF PAYMENTS: Payments set forth herein are covenants, not special limitations, regardless of the manner in which these payments may be invoked. Any failure on the part of the Lessee to timely or otherwise properly tender payment can never result in an automatic termination, expiration, cancellation, or forfeiture of this Lease. Lessor recognizes and acknowledges that oil and gas lease payments, in the form of rental, bonus and royalty, can vary depending on multiple factors and that this Lease is the product of good faith negotiations. Lessor hereby agrees that the payment terms, as set forth herein, and any bonus payments paid to Lessor constitute full consideration for the Leasehold. Lessor further agrees that such payment terms and bonus payments are final and that Lessor will not seek to amend or modify the lease payments, or seek additional consideration based upon any differing terms which Lessee has or will negotiate with any other lessor/oil and gas owner.

(K) PAYMENT REDUCTIONS. If Lessor owns a lesser interest in the oil or gas than the entire undivided fee simple estate, then the rentals (except for Delay Rental payments as set forth above), royalties and shut-in royalties hereunder shall be paid to Lessor only in the proportion which Lessor's interest bears to the whole and undivided fee.

UNITIZATION AND POOLING. Lessor grants Lessee the right to pool, unitize, or combine all or parts of the Leasehold with other lands, whether contiguous or not contiguous, leased or unleased, whether owned by Lessee or by others, at a time before or after drilling to create drilling or production units either by contract right or pursuant to governmental authorization. Pooling or unitizing in one or more instances shall not exhaust Lessee's pooling and unitizing rights hereunder, and Lessee is granted the right to change the size, shape, and conditions of operation or payment of any unit created. Lessor agrees to accept and receive out of the production or the revenue realized from the production of such unit, such proportional share of the Royalty from each unit well as the number of Leasehold acres included in the unit bears to the total number of acres in the unit. Otherwise, as to any part of the unit, drilling, operations in preparation for drilling, production, or shut-in production from the unit, or payment of Royalty, Shut-in Royalty, Delay in Marketing payment or Delay Rental attributable to any part of the unit (including non-Leasehold land) shall have the same effect upon the terms of this Lease as if a well were located on, or the subject activity attributable to, the Leasehold. In the event of conflict or inconsistency between the Leasehold acres ascribed to the Lease, and the local property tax assessment calculation of the lands covered by the Lease, or the deeded acreage amount, Lessee may, at its option, rely on the latter as being determinative for the purposes of this paragraph.

FACILITIES. Lessee shall not drill a well on the Leasehold within 200 feet of any structure located on the Leasehold without Lessor's written consent. Lessor shall not erect any building or structure, or plant any trees within 200 feet of a well or within 25 feet of a pipeline without Lessee's written consent. Lessor shall not improve, modify, degrade, or restrict roads and facilities built by Lessee without Lessee's written consent.

CONVERSION TO STORAGE. Lessee is hereby granted the right to convert the Leasehold or lands pooled/unitized therewith to gas storage. At the time of conversion, Lessee shall pay Lessor's proportionate part for the estimated recoverable gas remaining in any well drilled pursuant to this Lease using methods of calculating gas reserves as are generally accepted by the natural gas industry and, in the event that all wells on the Leasehold and/or lands pooled/unitized therewith have permanently ceased production, Lessor shall be paid a Conversion to Storage payment in an amount equal to Delay Rental for as long thereafter as the Leasehold or lands pooled/unitized therewith is/are used for gas storage or for protection of gas storage; such Conversion to Storage payment shall first become due upon the next ensuing Delay Rental anniversary date. The use of any part of the Leasehold or lands pooled or unitized therewith for the underground storage of gas, or for the protection of stored gas will extend this Lease beyond the primary term as to all rights granted by this Lease, including but not limited to production rights, regardless of whether the production and storage rights are owned together or separately.

DISPOSAL AND INJECTION WELLS. Lessor hereby grants to Lessee the right to drill wells and/or re-enter existing wells, including necessary location, roadway and pipeline easements and rights of way, on any part of the Leasehold or lands pooled or unitized therewith for the disposal and/or injection into any subsurface strata, other than a potable water strata, of air, gas, brine, completion and production fluids, waste water and any hydrocarbon related substances from any source, including, but not limited to wells on the Leasehold or lands pooled or unitized therewith or from properties and lands outside the Leasehold or lands pooled or unitized therewith, and to conduct all operations as may be required, for so long as necessary and required by Lessee for purposes as herein provided. If, at the expiration of the primary term, Lessee is disposing and/or injecting into any subsurface strata underlying the Leasehold or lands pooled or unitized therewith or conducting operations for such disposal and/or injection and this lease is not being maintained by any other provision contained herein and no other payments are being made to Lessor as prescribed hereunder, Lessee shall pay to Lessor the sum of one thousand dollars (\$1,000.00) per year, proportionately reduced to Lessor's ownership in the Leasehold and surface as it bears to the full and undivided estate, beginning on the next anniversary date of this Lease and said payment and term of this Lease, insofar as to terms and provisions contained herein applicable to disposal and injection wells, shall continue annually thereafter for so long as necessary and required by Lessee for purposes as herein provided and until all disposal and/or injection wells located on the Leasehold or on lands pooled or unitized therewith are plugged and abandoned. Lessor agrees that if required by Lessee, regulatory agency or governmental authority having jurisdiction, Lessor shall enter a separate Disposal and Injection Agreement with Lessee for the purposes as herein provided.

TITLE AND INTERESTS. Lessor hereby warrants generally and agrees to defend title to the Leasehold and covenants that Lessee shall have quiet enjoyment hereunder and shall have benefit of the doctrine of after acquired title. Should any person having title to the Leasehold fail to execute this Lease, the Lease shall nevertheless be binding upon all persons who do execute it as Lessor.

LEASE DEVELOPMENT. There is no implied covenant to drill, prevent drainage, further develop or market production within the primary term or any extension of term of this Lease. There shall be no Leasehold forfeiture, termination, expiration or cancellation for failure to comply with said implied covenants. Provisions herein, including, but not limited to the prescribed payments, constitute full compensation for the privileges herein granted.

COVENANTS. This Lease and its expressed or implied covenants shall not be subject to termination, forfeiture of rights, or damages due to failure to comply with obligations if compliance is effectively prevented by federal, state, or local law, regulation, or decree, or the acts of God and/or third parties over whom Lessee has no control.

RIGHT OF FIRST REFUSAL. If at any time within the primary term of this lease or any continuation or extension thereof, Lessor receives any bona fide offer, acceptable to Lessor, to grant an additional lease which will take effect upon expiration of this Lease ("Top Lease") covering all or part of the Leasehold, Lessee shall have the continuing option by meeting any such offer to acquire a Top Lease on equivalent terms and conditions. Any offer must be in writing and must set forth the proposed Lessee's name, bonus consideration and royalty consideration to be paid for such Top Lease, and include a copy of the lease form to be utilized reflecting all pertinent and relevant terms and conditions of the Top Lease. Lessee shall have fifteen (15) days after receipt from Lessor of a complete copy of any such offer to advise Lessor in writing of its election to enter into an oil and gas lease with Lessor on equivalent terms and conditions. If Lessee fails to notify Lessor within the aforesaid fifteen (15) day period of its election to meet any such bona fide offer, Lessor shall have the right to accept said offer. Any Top Lease granted by Lessor in violation of this provision shall be null and void.

ARBITRATION. In the event of a disagreement between Lessor and Lessee concerning this Lease or the associated Order of Payment, performance thereunder, or damages caused by Lessee's operations, the resolution of all such disputes shall be determined by arbitration in accordance with the rules of the American Arbitration Association. Arbitration shall be the exclusive remedy and cover all disputes, including but not limited to, the formation, execution, validity and performance of the Lease and Order of Payment. All fees and costs associated with the arbitration shall be borne equally by Lessor and Lessee.

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ENTIRE CONTRACT. The entire agreement between Lessor and Lessee is embodied herein and in the associated Order of Payment (if any). No oral warranties, representations, or promises have been made or relied upon by either party as an inducement to or modification of this Lease.

TITLE CURATIVE. Lessor agrees to execute consents, affidavits, ratifications, amendments, permits and other instruments as Lessee may request to carry out the purpose of this lease, including without limitation, applications necessary to obtain driveway entrance permits, and approvals of drilling or production units which Lessee may seek to form pursuant to governmental authorization.

SURRENDER. Lessee, at any time, and from time to time, may surrender and cancel this Lease as to all or any part of the Leasehold by recording a Surrender of Lease and thereupon this Lease, and the rights and obligations of the parties hereunder, shall terminate as to the part so surrendered; provided, however, that upon each surrender as to any part of the Leasehold, Lessee shall have reasonable and convenient easements for then existing wells, pipelines, pole lines, roadways and other facilities on the lands surrendered.

SUCCESSORS. All rights, duties, and liabilities herein benefit and bind Lessor and Lessee and their heirs, successors, and assigns.

FORCE MAJEURE. All terms, provisions and express or implied covenants of this Lease shall be subject to all applicable laws, rules, regulations and orders. If Lessee is unable, in its sole discretion, to effectively accomplish the purposes and objectives of this Lease or to exercise its rights hereunder because of such laws, rules, regulations or orders, or if drilling, reworking, production or other operations hereunder, or Lessee's fulfillment of its obligations hereunder are prevented or delayed by such laws, rules, regulations or orders, or by inability to obtain necessary permits, equipment, services, material, water, electricity, fuel, access or easements, or by fire, flood, adverse weather conditions, war, sabotage, rebellion, insurrection, riot, strike or labor disputes, or by inability to obtain a satisfactory market for production or failure of purchasers or carriers to take or transport such production, or by any other cause not reasonably within Lessee's control, then this Lease shall not terminate, in whole or in part, because of such inability, prevention or delay, and, at Lessee's option, the period of such inability, prevention or delay shall be added to the term hereof. Lessee shall not be liable in damages for breach of any express or implied covenants of this Lease for failure to comply therewith, if compliance is prevented by, or failure is the result of any applicable laws, rules, regulations or orders or operation of force majeure. If this Lease is the subject matter of any lawsuit, arbitration proceeding, or other action, then this Lease shall not expire during the pendency of such lawsuit, arbitration proceeding, or other action, or any appeal thereof, and the period of the lawsuit, arbitration proceeding, or other action, and any appeal thereof, shall be added to the term of this Lease.

SEVERABILITY. This Lease is intended to comply with all applicable laws, rules, regulations, ordinances and governmental orders. If any provision of this Lease is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall survive and continue in full force and effect to the maximum extent allowed by law. If a court of competent jurisdiction holds any provision of this Lease invalid, void, or unenforceable under applicable law, the court shall give the provision the greatest effect possible under the law and modify the provision so as to conform to applicable law if that can be done in a manner which does not frustrate the purpose of this Lease.

COUNTERPARTS. This Lease may be executed in one or more counterparts, each of which will be deemed to be an original copy of this Lease and all of which, when taken together, will be deemed to constitute one and the same agreement.

ADDENDUM. Lessor and Lessee hereby acknowledge and agree that the addendum executed by Lessor in connection with this Lease is incorporated herein by reference. Lessor acknowledges and agrees that Lessee, in its sole discretion, may elect to record this Lease or a memorandum thereof, with or without including the information set forth in the addendum.

IN WITNESS WHEREOF, Lessor hereunto sets hand and seal.

LESSOR:


_____(Seal)
Carol Elaine Thom

Witness _____

Witness _____

Witness _____

Witness _____

_____(Seal)

_____(Seal)

_____(Seal)

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ACKNOWLEDGMENT

STATE OF West Virginia)
) SS:
COUNTY OF Kanawha)

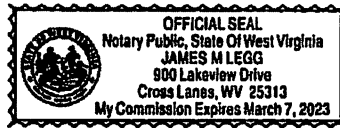
On this the 10 day of December, 2019, before me, the undersigned officer, personally appeared Carol Elaine Thom, a single woman, known to me (or satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged that she executed the same for the purposes therein contained.

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

My Commission Expires: March 7, 2023

Signature/Notary Public: [Handwritten Signature]

Name/Notary Public (print): James M. Legg



Document prepared by: SWN Production Company, LLC, 10000 Energy Drive, Spring, Texas 77389
Recorder: Return to SWN Production Company, LLC, Land Dept. - West Virginia Division, 10000 Energy Drive, Spring, Texas 77389

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CORPORATE ACKNOWLEDGMENT

STATE OF)
) SS:
COUNTY OF)

On this the day of 20 , before me, the undersigned authority, personally appeared , who acknowledged himself to be the of , and that (s)he as such , being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself/herself as , a corporation.

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

My Commission Expires: _____

Signature/Notary Public: _____

Name/Notary Public (print): _____

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ADDENDUM

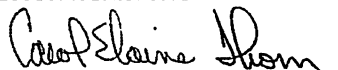
Attached to and made a part of that certain Oil and Gas Lease dated the 9th day of December, 2019, by and between Carol Elaine Thom, a single woman, of 105 Poplar Point Estates Road, Poca, West Virginia 25159 ("Lessor") and SWN Production Company, LLC ("Lessee").

DO NOT RECORD THIS ADDENDUM WITH LEASE

Should there be any inconsistency between the terms and conditions set forth in the main body of this Lease and the terms and conditions specified in this Addendum, the provisions of the Addendum shall prevail and supersede the inconsistent provisions in the main body of this Lease.

1. Royalty. All references made in Paragraph (B) of the section entitled "PAYMENT TO LESSOR" as to one-eighth (1/8) royalty shall be amended to Eighteen Percent (18%).

LESSOR SIGNATURE



Carol Elaine Thom

END OF ADDENDUM

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ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from **TH Exploration, LLC**, a Texas limited liability company ("*Assignor*"), to **SWN PRODUCTION COMPANY, LLC**, a Texas limited liability company ("*SWN*"), and **EQUINOR USA ONSHORE PROPERTIES INC**, a Delaware corporation ("*EQNR*" and, together with SWN, the "*Assignees*"), and is executed on December 16, 2019 (the "*Effective Date*"). Assignor and Assignees 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 Assignees 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 (a) SWN an undivided 75% of Assignor's right title and interest in and to and (b) EQNR an undivided 25% of Assignor's right, title and interest in and to, in the case of both (a) and (b), (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 Assignees, 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 Assignees, 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 Assignees, 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 their respective 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 TUG HILL OR ITS AFFILIATES, OR ITS OR THEIR RESPECTIVE EMPLOYEES, AGENTS, CONSULTANTS, REPRESENTATIVES OR ADVISORS IN CONNECTION WITH THE TRANSACTIONS CONTEMPLATED BY THIS ASSIGNMENT OR ANY DISCUSSION OR PRESENTATION RELATING THERETO, AND FURTHER DISCLAIMS ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED, OR STATUTORY, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR CONFORMITY TO MODELS OR SAMPLES OF MATERIALS OR ANY EQUIPMENT, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE PARTIES THAT, EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, THE LEASEHOLD RIGHTS ARE BEING TRANSFERRED BY IT "AS IS, WHERE IS," WITH ALL FAULTS AND DEFECTS.

ARTICLE 3
MISCELLANEOUS

Section 3.1 **Separate Assignments.** Where separate assignments of Conveyed Assets have been, or will be, executed for filing with and approval by applicable Governmental Authorities, any such separate assignments (a) shall evidence the Assignment and assignment of the applicable Conveyed Assets herein made, and shall not constitute any additional Assignment or assignment of the Conveyed Assets, (b) are not intended to modify, and shall not modify, any of the terms, covenants and conditions, or limitations on warranties, set forth in this Assignment and are not intended to create, and shall not create, any representations, warranties or additional covenants of or by Assignor to Assignees, and (c) shall be deemed to contain all of the terms and provisions of this Assignment, as fully and to all intents and purposes as though the same were set forth at length in such separate assignments.

Section 3.2 **Governing Law.** EXCEPT TO THE EXTENT THAT THE LAWS OF THE STATE OF WEST VIRGINIA ARE MANDATORILY APPLICABLE TO THIS ASSIGNMENT IN CONNECTION WITH THE CONVEYANCES OF PROPERTY INTERESTS INVOLVING REAL PROPERTY LOCATED IN THE STATE OF WEST VIRGINIA, THIS ASSIGNMENT AND ANY CLAIM, CONTROVERSY OR DISPUTE ARISING UNDER OR RELATED TO THIS ASSIGNMENT OR THE RIGHTS, DUTIES AND RELATIONSHIP OF THE PARTIES, SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, EXCLUDING ANY CONFLICTS OF LAW, RULE OR PRINCIPLE THAT MIGHT REFER CONSTRUCTION OF PROVISIONS TO THE LAWS OF ANOTHER JURISDICTION. EXCEPT AS OTHERWISE PROVIDED IN THE ACREAGE TRADE AGREEMENT, ANY DISPUTE, CONTROVERSY OR CLAIM ARISING OUT OF, RELATING TO OR IN CONNECTION WITH THIS ASSIGNMENT OR THE VALIDITY HEREOF, SHALL BE FINALLY SETTLED IN ACCORDANCE WITH SECTION XIII.E OF THE ACREAGE TRADE AGREEMENT.

Section 3.3 **Successors and Assigns.** This Assignment shall bind and inure to the benefit of the Parties and their respective successors and assigns; *provided, however,* that nothing in this Assignment shall assign or grant, or in any way operate to assign or grant, any right, title or interest in, to or under the Acreage Trade Agreement to any successor or assign of Assignees with respect to the Conveyed Assets or any part thereof, it being expressly understood that rights, titles and interests under the Acreage Trade Agreement may only be obtained or assigned in accordance with the terms thereof.

Section 3.4 **Titles and Captions.** All Article or Section titles or captions in this Assignment are for convenience only, shall not be deemed part of this Assignment and in no way define, limit, extend or describe the scope or intent of any provisions hereof. Except to the extent otherwise stated in this Assignment, references to "Articles" and "Sections" are to Articles and Sections of this Assignment, and references to "Exhibits" are to the Exhibits attached to this Assignment, which are made a part hereof and incorporated herein for all purposes.

Section 3.5 **Counterparts.** This Assignment may be executed in any number of counterparts, and each such counterpart hereof shall be deemed to be an original instrument, but all of such counterparts shall constitute for all purposes one agreement. Multiple counterparts of

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this Assignment may be recorded with federal agencies and in the counties and parishes of the states where the Conveyed Assets are located, but the inclusion of a description of any Asset in more than one counterpart of this Assignment shall not be construed as having effected any cumulative, multiple or overlapping interest in the applicable Asset. Any signature hereto delivered by a party by facsimile or other electronic transmission shall be deemed an original signature hereto.

Section 3.6 **Prior Representations, Warranties and Covenants.** To the extent, and only to the extent, (a) permitted by Law, (b) of any indemnity of Assignees provided to Assignor under the Acreage Trade Agreement and (c) such subrogation is not prohibited or otherwise restricted by the respective underlying instrument or agreement, Assignees shall be subrogated to Assignor's rights in and to all representations, warranties and covenants given with respect to the Conveyed Assets. To the extent provided in the preceding sentence, Assignor hereby grants and transfers to Assignees, its successors and assigns, to the extent so transferrable and permitted by Law, the benefit of and the right to enforce all representations, warranties and covenants, if any, which Assignor is entitled to enforce with respect to the Conveyed Assets.

Section 3.7 **Definitions.** When used in this Assignment, the following terms shall have the meanings specified:

"Defensible Title" means, other than Permitted Encumbrances, with respect to such title of Assignor that:

(i) entitles Assignees (in the aggregate) to the Net Acreage that is set forth on Exhibit B to the Acreage Trade Agreement for such Lease;

(ii) entitles Assignees (in the aggregate) to receive and retain from each Lease described in Exhibit B to the Acreage Trade Agreement not less than the percentage set forth on Exhibit B to the Acreage Trade Agreement as the Net Revenue Interest in such Lease; and

(iii) is free and clear of all liens (including mortgages or deeds of trust), suits, judgments, encumbrances, charges, adverse claims, burdens and defects that may adversely affect the ownership, development, operation or value of such Lease.

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EXECUTED as of the date of the Parties' acknowledgments below, but effective at the Effective Date.

ASSIGNOR

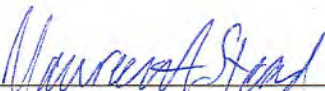
TH EXPLORATION, LLC

By: 
Name: Douglas L. DeMartino
Title: Attorney-In-Fact

ACKNOWLEDGMENTS

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF WASHINGTON

On this, the 16 day of December, 2019, before me a Notary Public, the undersigned officer, Douglas L. DeMartino, personally appeared and acknowledged himself to be the Attorney-In-Fact of TH Exploration, LLC, and that he as such Attorney-In-Fact and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Attorney-In-Fact.


Notary Public


SEAL
My commission expires: 1/28/23

Commonwealth of Pennsylvania - Notary Seal
MAUREEN A STEAD - Notary Public
Washington County
My Commission Expires Jan 28, 2023
Commission Number 1259926

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ASSIGNEE:

SWN PRODUCTION COMPANY, LLC, a Texas
limited liability company

By: 
Name: Derek Cutright BTR BSM
Title: Senior Vice President and Division Head,
Southwest Appalachia Division

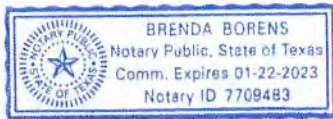
ACKNOWLEDGEMENTS

STATE OF TEXAS
COUNTY OF HARRIS

On this, the 12th day of December, 2019, before me a Notary Public, the undersigned officer, Derek Cutright personally appeared and acknowledged himself to be the Senior Vice President and Division Head, Southwest Appalachia Division of SWN Production Company, LLC and that he as such Senior Vice President and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Senior Vice President and Division Head, Southwest Appalachia Division.


Notary Public

SEAL
My commission expires: 1-22-2023



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ASSIGNEE:

EQUINOR USA ONSHORE PROPERTIES INC,
a Delaware corporation

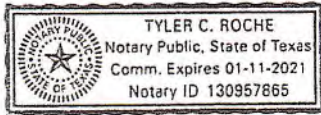
By: Phillip Vance
Name: Phillip Vance
Title: Leader-Land

TR
or

ACKNOWLEDGMENTS

STATE OF Texas
COUNTY OF Texas

On this, the 12th day of December, 2019, before me a Notary Public, the undersigned officer, Phillip Vance, personally appeared and acknowledged himself to be the Leader-Land of Equinor USA Onshore Properties Inc, a Delaware corporation, and that he as such Leader-Land and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Leader-Land.



T. C. Roche
Notary Public

SEAL
My commission expires: 1/11/2021

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**Exhibit A
Marshall County, WV**

Attached to and made a part of that certain Assignment and Conveyance dated December 9, 2019 between SWN Production Company, LLC and TH Exploration, LLC.

TH Lease #	Lessor	Lessee	Effective Date	County	District	BK - PG	Gross Acres	Conveyed Parcels
10*24096	LL&B Investment Holdings, LLC	TH Exploration, LLC	9/19/2018	MARSHALL	Liberty	1020/366	21.47	7-7-14
10*21328	ELAINE DENNISON	TH Exploration, LLC	8/23/2017	MARSHALL	Meade	953/295	46.1375	9-22-2.1
10*18543	PAUL M WILLIAMS	TH Exploration, LLC	6/30/2017	MARSHALL	Meade	934/1	46.1375	9-22-2.1
10*18374	DAWN M SPRAGUE	TH Exploration, LLC	6/9/2017	MARSHALL	Meade	931/381	46.1375	9-22-2.1
10*17717	DENNIS R ALFANO AND KATHLEEN C ALFANO	TH Exploration, LLC	3/25/2017	MARSHALL	Meade	942/435	46.1375	9-22-2.1
10*17592	DOUGLAS N ALFANO	TH Exploration, LLC	3/7/2017	MARSHALL	Meade	943/526	46.1375	9-22-2.1
10*17333	ANN M KOCH	TH Exploration, LLC	1/3/2017	MARSHALL	Meade	932/428	46.1375	9-22-2.1
10*27947	STONE HILL MINERALS HOLDINGS LLC	TH Exploration, LLC	2/2/2019	MARSHALL	Meade	1063/568	46.1375	9-22-2.1

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from TH Exploration, LLC, a Texas limited liability company ("*Assignor*"), to SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("*SWN*"), and EQUINOR USA ONSHORE PROPERTIES INC, a Delaware corporation ("*EQNR*" and, together with SWN, the "*Assignees*"), and is executed on December 16, 2019 (the "*Effective Date*"). Assignor and Assignees 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 Assignees 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 (a) SWN an undivided 75% of Assignor's right title and interest in and to and (b) EQNR an undivided 25% of Assignor's right, title and interest in and to, in the case of both (a) and (b), (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 Assignees, 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 Assignees, 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 Assignees, 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 their respective 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)

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INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT, AND (IX) ANY OTHER MATERIALS OR INFORMATION THAT MAY HAVE BEEN MADE AVAILABLE OR COMMUNICATED TO TUG HILL OR ITS AFFILIATES, OR ITS OR THEIR RESPECTIVE EMPLOYEES, AGENTS, CONSULTANTS, REPRESENTATIVES OR ADVISORS IN CONNECTION WITH THE TRANSACTIONS CONTEMPLATED BY THIS ASSIGNMENT OR ANY DISCUSSION OR PRESENTATION RELATING THERETO, AND FURTHER DISCLAIMS ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED, OR STATUTORY, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR CONFORMITY TO MODELS OR SAMPLES OF MATERIALS OR ANY EQUIPMENT, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE PARTIES THAT, EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, THE LEASEHOLD RIGHTS ARE BEING TRANSFERRED BY IT "AS IS, WHERE IS," WITH ALL FAULTS AND DEFECTS.

ARTICLE 3
MISCELLANEOUS

Section 3.1 **Separate Assignments.** Where separate assignments of Conveyed Assets have been, or will be, executed for filing with and approval by applicable Governmental Authorities, any such separate assignments (a) shall evidence the Assignment and assignment of the applicable Conveyed Assets herein made, and shall not constitute any additional Assignment or assignment of the Conveyed Assets, (b) are not intended to modify, and shall not modify, any of the terms, covenants and conditions, or limitations on warranties, set forth in this Assignment and are not intended to create, and shall not create, any representations, warranties or additional covenants of or by Assignor to Assignees, and (c) shall be deemed to contain all of the terms and provisions of this Assignment, as fully and to all intents and purposes as though the same were set forth at length in such separate assignments.

Section 3.2 **Governing Law.** EXCEPT TO THE EXTENT THAT THE LAWS OF THE STATE OF WEST VIRGINIA ARE MANDATORILY APPLICABLE TO THIS ASSIGNMENT IN CONNECTION WITH THE CONVEYANCES OF PROPERTY INTERESTS INVOLVING REAL PROPERTY LOCATED IN THE STATE OF WEST VIRGINIA, THIS ASSIGNMENT AND ANY CLAIM, CONTROVERSY OR DISPUTE ARISING UNDER OR RELATED TO THIS ASSIGNMENT OR THE RIGHTS, DUTIES AND RELATIONSHIP OF THE PARTIES, SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, EXCLUDING ANY CONFLICTS OF LAW, RULE OR PRINCIPLE THAT MIGHT REFER CONSTRUCTION OF PROVISIONS TO THE LAWS OF ANOTHER JURISDICTION. EXCEPT AS OTHERWISE PROVIDED IN THE ACREAGE TRADE AGREEMENT, ANY DISPUTE, CONTROVERSY OR CLAIM ARISING OUT OF, RELATING TO OR IN CONNECTION WITH THIS ASSIGNMENT OR THE VALIDITY HEREOF, SHALL BE FINALLY SETTLED IN ACCORDANCE WITH SECTION XIII.E OF THE ACREAGE TRADE AGREEMENT.

Section 3.3 **Successors and Assigns.** This Assignment shall bind and inure to the benefit of the Parties and their respective successors and assigns; *provided, however,* that nothing in this Assignment shall assign or grant, or in any way operate to assign or grant, any right, title or interest in, to or under the Acreage Trade Agreement to any successor or assign of Assignees with respect to the Conveyed Assets or any part thereof, it being expressly understood that rights, titles and interests under the Acreage Trade Agreement may only be obtained or assigned in accordance with the terms thereof.

Section 3.4 **Titles and Captions.** All Article or Section titles or captions in this Assignment are for convenience only, shall not be deemed part of this Assignment and in no way define, limit, extend or describe the scope or intent of any provisions hereof. Except to the extent otherwise stated in this Assignment, references to "Articles" and "Sections" are to Articles and Sections of this Assignment, and references to "Exhibits" are to the Exhibits attached to this Assignment, which are made a part hereof and incorporated herein for all purposes.

Section 3.5 **Counterparts.** This Assignment may be executed in any number of counterparts, and each such counterpart hereof shall be deemed to be an original instrument, but all of such counterparts shall constitute for all purposes one agreement. Multiple counterparts of

this Assignment may be recorded with federal agencies and in the counties and parishes of the states where the Conveyed Assets are located, but the inclusion of a description of any Asset in more than one counterpart of this Assignment shall not be construed as having effected any cumulative, multiple or overlapping interest in the applicable Asset. Any signature hereto delivered by a party by facsimile or other electronic transmission shall be deemed an original signature hereto.

Section 3.6 **Prior Representations, Warranties and Covenants.** To the extent, and only to the extent, (a) permitted by Law, (b) of any indemnity of Assignees provided to Assignor under the Acreage Trade Agreement and (c) such subrogation is not prohibited or otherwise restricted by the respective underlying instrument or agreement, Assignees shall be subrogated to Assignor's rights in and to all representations, warranties and covenants given with respect to the Conveyed Assets. To the extent provided in the preceding sentence, Assignor hereby grants and transfers to Assignees, its successors and assigns, to the extent so transferrable and permitted by Law, the benefit of and the right to enforce all representations, warranties and covenants, if any, which Assignor is entitled to enforce with respect to the Conveyed Assets.

Section 3.7 **Definitions.** When used in this Assignment, the following terms shall have the meanings specified:

"Defensible Title" means, other than Permitted Encumbrances, with respect to such title of Assignor that:

(i) entitles Assignees (in the aggregate) to the Net Acreage that is set forth on Exhibit B to the Acreage Trade Agreement for such Lease;

(ii) entitles Assignees (in the aggregate) to receive and retain from each Lease described in Exhibit B to the Acreage Trade Agreement not less than the percentage set forth on Exhibit B to the Acreage Trade Agreement as the Net Revenue Interest in such Lease; and

(iii) is free and clear of all liens (including mortgages or deeds of trust), suits, judgments, encumbrances, charges, adverse claims, burdens and defects that may adversely affect the ownership, development, operation or value of such Lease.

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EXECUTED as of the date of the Parties' acknowledgments below, but effective at the Effective Date.

ASSIGNOR


TH EXPLORATION, LLC

By: 
Name: Douglas L. DeMartino
Title: Attorney-In-Fact

ACKNOWLEDGMENTS

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF WASHINGTON

On this, the 16 day of December, 2019, before me a Notary Public, the undersigned officer, Douglas L. DeMartino, personally appeared and acknowledged himself to be the Attorney-In-Fact of TH Exploration, LLC, and that he as such Attorney-In-Fact and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Attorney-In-Fact.


Notary Public

SEAL
My commission expires: 1/28/23

Commonwealth of Pennsylvania - Notary Seal
MAUREEN A STEAD - Notary Public
Washington County
My Commission Expires Jan 28, 2023
Commission Number 1259926

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ASSIGNEE:

SWN PRODUCTION COMPANY, LLC, a Texas
limited liability company

By: [Signature]
Name: Derek Cutright BTR BEM
Title: Senior Vice President and Division Head,
Southwest Appalachia Division

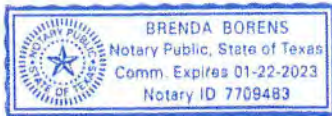
ACKNOWLEDGEMENTS

STATE OF TEXAS
COUNTY OF HARRIS

On this, the 12th day of December, 2019, before me a Notary Public, the undersigned officer, Derek Cutright personally appeared and acknowledged himself to be the Senior Vice President and Division Head, Southwest Appalachia Division of SWN Production Company, LLC and that he as such Senior Vice President and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Senior Vice President and Division Head, Southwest Appalachia Division.

[Signature]
Notary Public

SEAL
My commission expires: 1-22-2023



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ASSIGNEE:

EQUINOR USA ONSHORE PROPERTIES INC,
a Delaware corporation

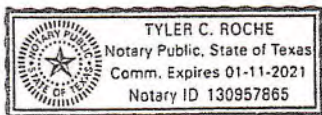
By: Phillip Vance
Name: Phillip Vance
Title: Leader-Lead

TR
QA

ACKNOWLEDGMENTS

STATE OF Texas
COUNTY OF Tarrant

On this, the 12th day of December, 2019, before me a Notary Public, the undersigned officer, Phillip Vance personally appeared and acknowledged himself to be the Leader-Lead of Equinor USA Onshore Properties Inc a Delaware corporation, and that he as such Leader-Lead and being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Leader-Lead.



[Signature]
Notary Public

SEAL
My commission expires: 1/11/2021

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**Exhibit A
Marshall County, WV**

Attached to and made a part of that certain Assignment and Conveyance dated December 9, 2019 between SWN Production Company, LLC and TH Exploration, LLC.

TH Lease #	Lessor	Lessee	Effective Date	County	District	BK - PG	Gross Acres	Conveyed Parcels
10*24096	LL&B Investment Holdings, LLC	TH Exploration, LLC	9/19/2018	MARSHALL	Liberty	1020/366	21.47	7-7-14
10*21328	ELAINE DENNISON	TH Exploration, LLC	8/23/2017	MARSHALL	Meade	953/295	46.1375	9-22-2.1
10*18543	PAUL M WILLIAMS	TH Exploration, LLC	6/30/2017	MARSHALL	Meade	934/1	46.1375	9-22-2.1
10*18374	DAWN M SPRAGUE	TH Exploration, LLC	6/9/2017	MARSHALL	Meade	931/381	46.1375	9-22-2.1
10*17717	DENNIS R ALFANO AND KATHLEEN C ALFANO	TH Exploration, LLC	3/25/2017	MARSHALL	Meade	942/435	46.1375	9-22-2.1
10*17592	DOUGLAS N ALFANO	TH Exploration, LLC	3/7/2017	MARSHALL	Meade	943/526	46.1375	9-22-2.1
10*17333	ANN M KOCH	TH Exploration, LLC	1/3/2017	MARSHALL	Meade	932/428	46.1375	9-22-2.1
10*27947	STONE HILL MINERALS HOLDINGS LLC	TH Exploration, LLC	2/2/2019	MARSHALL	Meade	1063/568	46.1375	9-22-2.1

December 16, 2019

Ms. Laura Adkins
WV DEP Office of Oil & Gas
601 57th St., SE
Charleston, WV 25304

RE: SWN's proposed well: Charles Jamison MSH 8H in Marshall County, West Virginia, Drilling under Grapevine Ridge Drive, Cameron Ridge Road, Teardrop Lane, Fish Ridge Road, and Reid Ridge Road.

Dear Ms. Adkins:

SWN Production Company, LLC ("SWN") is applying for a drilling permit for the above referenced well. The State of West Virginia has raised some concern as to SWN's right to drill under Grapevine Ridge Drive, Cameron Ridge Road, Teardrop Lane, Fish Ridge Road, and Reid Ridge Road. Please be advised that SWN has leased all mineral owners under said route as it relates to the above-referenced well and unit.

Thank you.

Sincerely,



Boston Smith
Staff Landman
SWN Production Company, LLC

December 19, 2019

Ms. Laura Adkins
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Proposed Modification: Charles Jamison MSH 8H

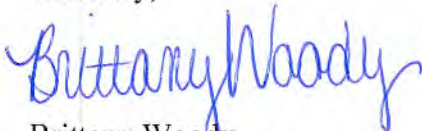
Dear Ms. Adkins

Enclosed please find the updated 6B, casing, WBD, mylar, 6A1, and road letter for the above captioned well. We are modifying this vertical permit to a horizontal. This well is situated on the Jamison's property, in Cameron District, Marshall County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1613

Thank you.

Sincerely,



Brittany Woody
Senior Regulatory Analyst
Southwestern Energy Production Company, LLC

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Office of Oil and Gas

DEC 20 2019

WV Department of
Environmental Protection

