



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, February 19, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for FRANZ THOMAN OHI 405H
47-069-00322-00-00

Casing plan, leasing, plat, WBD and void encountered

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

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over the typed name and title.

Operator's Well Number: FRANZ THOMAN OHI 405H
Farm Name: FRANZ THOMAN
U.S. WELL NUMBER: 47-069-00322-00-00
Horizontal 6A New Drill
Date Modification Issued: 2/19/2020

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 069-Ohio 4-Richland 641-Tiltonsville
Operator ID County District Quadrangle

2) Operator's Well Number: Franz Thoman OHI 405H Well Pad Name: Franz Thoman PAD

3) Farm Name/Surface Owner: Franz Thoman Public Road Access: Cherry Hill Road CR 3

4) Elevation, current ground: 1142' Elevation, proposed post-construction: 1140'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No *C. J. Lee 2.4.20*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Up-Dip Well to the North Target Top TVD-5850', Target Base TVD- 5905', Anticipated Thickness- 55', Associated Pressure- 3838

8) Proposed Total Vertical Depth: 5888'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 24,426'

11) Proposed Horizontal Leg Length: 17472.88'

12) Approximate Fresh Water Strata Depths: 326'

13) Method to Determine Fresh Water Depths: Determined to be minimum casing depth required by DEP, no nearby water wells, logs will be run on 1st well on pad.

14) Approximate Saltwater Depths: 470' salinity profile

15) Approximate Coal Seam Depths: 343'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 434' 343' kv

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

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

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FEB 11 2020

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	J-55	94#	126'	126'	CTS
Fresh Water	13 3/8"	New	J-55	54.4#	400'	400'	393 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1747'	1747'	680 sx/CTS
Production	5 1/2"	New	P-110 HP	20#	24,426'	24,426'	head 746sx Tail 4307sx inside intermediate
Tubing							
Liners							

(Handwritten signature) 2.4.20

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	Surface	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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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 a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. The well is produced through surface facilities consisting of high pressure production units, horizontal separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 100 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 22.65

22) Area to be disturbed for well pad only, less access road (acres): 12.98

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.

DEC 16 2019

Southwestern Energy Company

Proposed Drilling Program

Well: FRANZ THOMAN OHI 405
 Field: PANHANDLE FIELD \\
 County: OHIO
 SHL: 40.1367 Latitude -80.6599 Longitude
 BHL: 40.1882 Latitude -80.6717 Longitude
 KB Elev: 1,164 ft MSL KB: 26 ft AGL

Re-entry Rig: SDC 40
 Prospect: PANHANDLE
 State: WV
 GL Elev: 1,138 ft MSL



Coal Void at 343' TVD

PROD TOC Lead @ 1,767' MD
 PROD TOC Tail @ 5,100' MD

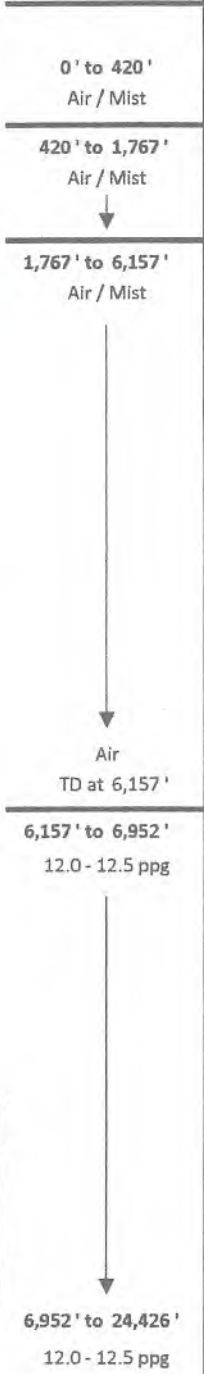
Handwritten: C-200 2.4.20

TUBULAR DETAIL

	Size (in)	Weight	Grade	From	To
Conductor:	20	94.0 #	J-55	0'	126'
Surf./Coal:	13.375	54.4 #	J-55	0'	400'
Intermediate:	9.625	36.0 #	J-55	0'	1,747'
Production:	5.5	20.0 #	P-110 HP	0'	24,426'

CEMENT DETAIL

	Sacks	Class	Density
Conductor	151	A	19.3
Surface	393	A	15.6
Intermediate	680	A	15.6
Production Lead	745	A	15.6
Production Tail	4307	A	15.6



KOP at 6,157' MD

Freshwater Depth - 326' TVD
 Coal Void Depth - 343' TVD
 Saltwater Depth - 470' TVD
 TVD - 5,888'
 TMD - 24,426'

5,888' Target Center

TD at 24,426' MD
 5,717' TVD

EOB at 5,888' TVD

SHL Onondaga 5,905' TVD

Onondaga 5,734' TVD

Created by: C R Hall on 01/29/2020

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WV Department of
 Environmental Protection

LATITUDE: 40°10'00" SURFACE HOLE (2000' SCALE)

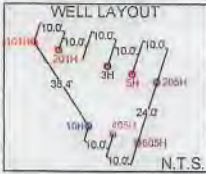
9742'

LATITUDE: 40°12'30" BOTTOM HOLE (2000' SCALE) | 1446'



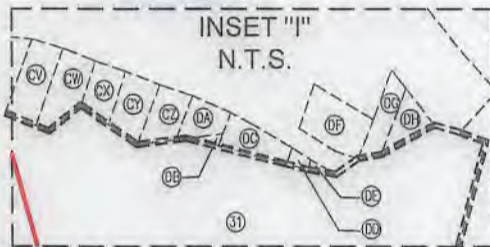
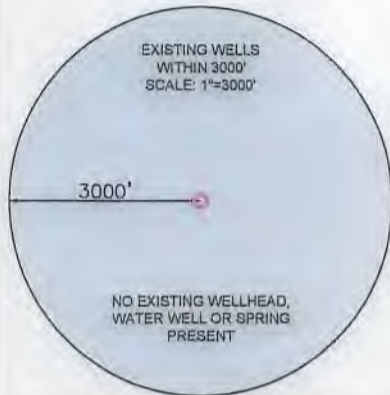
www.jhacompanies.com

68011 Vineyard Road
St. Clairsville, Ohio 43950
740-695-6100



NOTES ON SURVEY

- COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE OPS.
- 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.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.



SURFACE HOLE LOCATION (SHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4442979.73 EASTING: 528976.47
LANDING POINT LOCATION (LPL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4443592.62 EASTING: 529466.95
BOTTOM HOLE LOCATION (BHL):
UTM (NAD83, ZONE 17, METERS): NORTHING: 4448695.46 EASTING: 527949.41

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. 2041

[Signature] 2/13/20



3000 0 3000

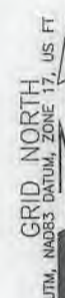
GRAPHIC SCALE IN FEET

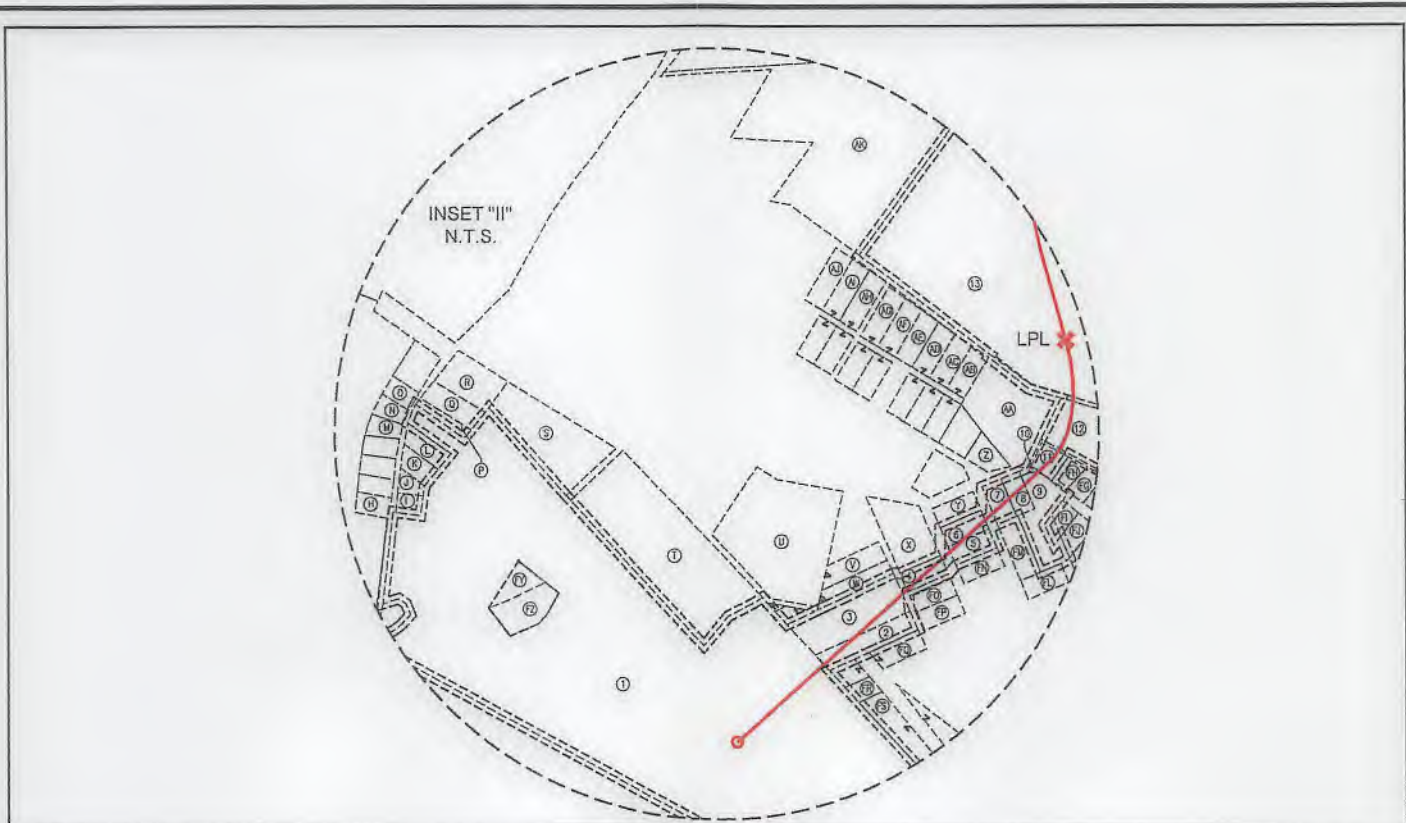
COMPANY: **SWN** Production Company, LLC **SWN** Production Company™

<p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	FRANZ THOMAN OHI OPERATOR'S WELL #: 405H API WELL #: 47 STATE 069 COUNTY 00322 PERMIT
	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: UPPER OHIO SOUTH DISTRICT: RICHLAND COUNTY: OHIO SURFACE OWNER: FRANZ THOMAN OIL & GAS ROYALTY OWNER: FRANZ THOMAN DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>
CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY) TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,888' TVD 24,426' TMD	WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508	DESIGNATED AGENT: BRITTANY WOODY ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508
LEGEND: * PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD LPL * LANDING POINT LOCATION W EXISTING WATER WELL S EXISTING SPRING	--- NATURAL WATERWAY --- SURVEYED BOUNDARY --- LEASE BOUNDARY --- PROPOSED PATH --- PUBLIC ROAD	REVISIONS: DATE: 02-13-2020 API NO: 47-069-XXXX DRAWN BY: R. GRIMES SCALE: 1" = 3000' DRAWING NO: 2018-781 WELL LOCATION PLAT

LONGITUDE: 80°40'00" BOTTOM HOLE (2000' SCALE)

LONGITUDE: 80°37'30" SURFACE HOLE (2000' SCALE)





WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	FRANZ THOMAN (S)/(R)	04-R8-62.0
TRACT	SURFACE OWNER	TAX PARCEL
2	JOLLY W. WHEELER, JR AND KAREN M. WHEELER	04-R8Q-14.0
3	DALE E. & B.J. KURNER	04-R8Q-12.0
4	STEVEN M. GORBY	04-R8Q-31.0
5	KAREN M. WHEELER	04-R8Q-37.0
6	ELAINE DANEHART	04-R8Q-36.0
7	JENNIFER FRANCIS	04-R8Q-52.1
8	JOYCE E. DECREASE	04-R8Q-52.2
9	DANIEL & SUSAN M. MORGAN	04-R8Q-52.0
10	HELEN A. MILLER	04-R8L-45.1
11	HELEN A. MILLER	04-R8L-45.0
12	DOROTHY T. LEOS	04-R8L-40.0
13	TUNNEL RIDGE, LLC	04-R8-27.7
14	THOMAS D. KASUNIC	04-R8-28.2
15	DONALD R. & MINNIE JEAN TAYLOR (L/C); KIMBERLY J. KOCHY & TAMI L. TYSK (REMANDERMENT)	04-R8-28.0
16	THE KATHLEEN S. CRAFT FOUNDATION & THE JOSEPH W. CRAFT, III FOUNDATION	04-R8-06.0
17	THE KATHLEEN S. CRAFT FOUNDATION & THE JOSEPH W. CRAFT, III FOUNDATION	04-R5-43.0
18	JOHN W. METZ	04-R5-45.11
19	ROBERTA M. & GEORGE B. KORNER	04-R5-45.12
20	JULIE A. KOEHLER	04-R5-45.4
21	JULIE A. KOEHLER	04-R5-45.13
22	S.E.W. TRUST (SHANE E. WOLOSCHAN, TRUSTEE)	04-R5-09.0
23	ROBERT KUBOVICZ (C/O: UNITED ELECTRIC)	04-R5-08.0
24	CHARLES H. FRYE & ETAL (C/O: DORIS ALTMAYER)	04-R5-06.0
25	GUY D. & LORI R. DONZELLA	04-R2-19.0
26	THOMAS H. & MARGARET A. STENGER	04-R2-06.0
27	WILLIAM S. & LAURA J. DONOHEW	04-R2-6.8
28	PAMELA CHILES & RYAN CHILES	04-R2-16.0
29	PAMELA SUE & RYAN CHILES	04-R2-17.2
30	STATE OF WEST VIRGINIA, DIVISION OF NATURAL RESOURCES	SHORT CREEK
31	DANIEL & JUDITH A. ROEDER	03-B45D-21.0
32	HARRY GALLOWAY, DENZIL SKIDMORE, KATHRYN SKIDMORE, & JANICE LOUGH	03-B45D-29.0
33	BERNARD J. LOMBARD III	03-B45D-30.0
34	BRENDA J. BERRY (L/C BARBARA LONG)	03-B45D-37.0
35	LAMBROS TSUHLARES	03-B40S-16.0

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	SANDSCREST FOUNDATION, INC	04-R11-15.0
B	TUNNEL RIDGE, LLC	04-R8-62.5
C	TUNNEL RIDGE, LLC	04-R8-62.4
D	TUNNEL RIDGE, LLC	04-R8P-14.0
E	SHIRLEY M. WEAVER	04-R8P-02.0
F	TUNNEL RIDGE, LLC	04-R8P-16.0
G	TUNNEL RIDGE, LLC	04-R8P-16.0
H	JOHN M. MCGEE	04-R8P-17.0
I	DONALD P. GAYDA	04-R8P-18.0
J	CHARLES R. BOND	04-R8K-110.0
K	TYLER S. SCHWERTFEGER	04-R8K-111.0
L	TYLER S. SCHWERTFEGER	04-R8K-112.0
M	ELMER K. REED	04-R8K-106.0
N	ELMER K. REED	04-R8K-105.0
O	B.H. BOZENSKE & K.J. O'KELLEY	04-R8K-104.0
P	RAY B. & ANN M. WILSON	04-R8-62.7
Q	ERIC DURELL & CHERYL LYNN RICHARDSON	04-R8-62.6
R	DAVID R. & K. MULDREW	04-R8K-101.0
S	DELORA L. TAYLOR	04-R8K-100.0
T	SUSAN J. SOBOTA	04-R8-82.3
U	JOHN T. WRIGHT	04-R8P-11
V	JACQUELINE MICHELLE SUTTON	04-R8Q-10
W	DAGUE AMY D.	04-R8Q-11.0
X	BETTY ZANE COMMUNITY ASSOCIATION	04-R8Q-34.0
Y	CLEMET R. KURNER	04-R8Q-35.0
Z	CONRAD G. & SHERYL ANN BREGY	04-R8L-18.0
AA	AUDREY E. IAROSSI	04-R8L-44.0
AB	ALBERT D. & B.J. ROBRECHT	04-R8L-21.0
AC	ALBERT D. & B.J. ROBRECHT	04-R8L-22.0
AD	MICHAEL L. & P.M. ALLEN	04-R8L-23.0
AE	SILCO, LLC (C/O: ROBINSON RICHARD)	04-R8L-13.0
AF	BONACCI RENTALS, LLC	04-R8L-25.0
AG	CHAD D. & MELISSA E. LIZON	04-R8L-26.0
AH	WILLIAM S. CALVERT	04-R8L-27.0
AI	WILLIAM S. CALVERT	04-R8L-28.0
AJ	THOMAS A. & TRICIA L. GILSON	04-R8L-08.1
AK	ADAM B. & STACEY L. CAMPBELL	04-R8F-03.0
AL	CAROL S. STANTON	04-R8-28.9
AM	CAROL S. RHODES	04-R8-28.8
AN	GARY E. & V.L. BURKY	04-R8-28.7
AO	JAMES TODD WOLFE & MARY JEANNE WOLFE	04-R8-28.1
AP	JAMES TODD WOLFE & MARY JEANNE WOLFE	04-R8-28.3
AQ	KIMBERLY J. & J.P. KOCHY	04-R8-28.10
AR	JAMES G. & TAMI L. TYSK	04-R8-28.5
AS	BARRY L. & PENNY S. MCCONNELL	04-R8-28.12
AT	BARRY L. & PENNY S. MCCONNELL	04-R8-28.4

REVISIONS:

COMPANY:			
OPERATOR'S	FRANZ THOMAN OHI		DATE: 02-13-2020
WELL #:	405H		API NO: 47-069-XXXX
DISTRICT:	COUNTY:	STATE:	DRAWN BY: R. GRIMES
RICHLAND	OHIO	WV	SCALE: N/A
			DRAWING NO: 2018-781
			WELL LOCATION PLAT

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
AU	BARRY L. & P.S. MCCONNELL	04-R8-29.1
AV	RICHARD, JR. & L.L. CARROLL	04-R8-06.1
AW	RICHARD, JR. & L.L. CARROLL	04-R8-33.0
AX	JOHN P. & P.J. BARBALEY	04-R8-33.2
AY	WILLIAM F. WENDEL	04-R8-33.1
AZ	ALLIANCE RESOURCE GROUP, LLC	04-R8-05.0
BA	ALLIANCE RESOURCE GROUP, LLC	04-R8-03.1
BB	ALLIANCE RESOURCE GROUP, LLC	04-R8-71.0
BC	TUNNEL RIDGE, LLC	04-R5-40.7
BD	ALLIANCE RESOURCE GROUP, LLC	04-R5-42.1
BE	HELEN TAYLOR	04-R5-12.1
BF	HELEN TAYLOR	04-R5-12.0
BG	HELEN TAYLOR	04-R5-14.0
BH	HUMPHREY D., JR. & T.M. FLICK	04-R5-15.0
BI	DALE A. & JENNIFER VILLANI	04-R5-16.0
BJ	DALE A. & JENNIFER A. VILLANI	04-R5-17.1
BK	ROBERT N. & C.L. CONNER	04-R5-17.0
BL	PATRICIA ROUSH	04-R5-18.0
BM	ERVAN D. & NANCY G. TRUBIANO	04-R5-19.0
BN	BRIAN W. & MELINDA K. SOWIZRAL	04-R5-20.1
BO	DENNIS J. & SHEINA HOSKINS	04-R5-20.4
BP	HAROLD & LINDA COAST	04-R5-02.9
BQ	JAMES M. & NANCY L. FRYE	04-R5-02.10
BR	JAMES M. & NANCY L. FRYE	04-R5-06.2
BS	TAMMY & SAM HLEBICZKI	04-R5-06.4
BT	THOMAS H. & MARGARET A. STENGER	04-R5-62.0
BU	THOMAS H. & MARGARET A. STENGER	04-R2-06.1
BV	BARBARA & ROBERT RUSH	04-R2-06.20
BW	SCOTT & CHRISTINA DENTZ	04-R2-06.21
BX	MATTHEW T. BURKE	04-R2-06.13
BY	MARY E. MIDCAP	04-R2-14.0
BZ	TODD PARKER	04-R2-14.2
CA	LEE M. & ASHLEY N. NEIDLER	04-R2-15.0
CB	UNITED STATES OF AMERICA	04-R2-15.1
CC	MANUEL MARKOS, PAUL MARKOS, DEBORAH MCDANIEL, ETAL	03-B45D-31.0
CD	LAMBERT & MARY E. TSUHLARES	03-B45D-36.0
CE	LAMBROS TSUHLARES	03-B45D-35.0
CF	STELLA M. SFAMENOS	03-B45D-34.0
CG	STELLA SFAMENOS, GOLDIE BASIL, ETAL	03-B45D-33.0
CH	CONNIE & FRANK BIEGA	03-B45D-32.0
CI	STATE OF WEST VIRGINIA, DEPARTMENT OF HIGHWAYS	STATE ROUTE 2
CJ	WINDSOR POWERHOUSE COAL COMPANY	03-0B41-21.0
CK	WINDSOR HEIGHTS IMPROVEMENT COMPANY	08-W41J-01.0
CL	WINDSOR HEIGHTS IMPROVEMENT COMPANY	08-W41N-85.0
CM	MANUEL MARKOS, PAUL MARKOS, DEBORAH MCDANIEL	03-B45D-62.0
CN	CHESTER S. & DIANA M. THOMPSON	03-B45D-59.0
CO	CHESTER S. & DIANA M. THOMPSON	03-B45D-58.0
CP	RUSSELL W. MELCHING, ETAL	03-B45D-57.0
CQ	KAREN K. TOBER	03-B45D-56.0
CR	KAREN K. TOBER	03-B45D-55.0
CS	KAREN K. TOBER	03-B45D-54.0
CT	JOHN A. BURKHART	03-B45D-53.0
CU	JOHN R. & MARY A. (SELLER) LONG (L/C BARBARA J. LONG)	03-B45D-38.0
CV	HAROLD L. MCCLURE	03-B45D-28.0
CW	THE BROOKE COUNTY COMMISSION	03-B45D-27.0
CX	ROBERT FORRESTER	03-B45D-26.0
CY	ROBERT FORRESTER	03-B45D-25.0
CZ	SHORT CREEK VOLUNTEER FIRE DEPARTMENT, INC	03-B45D-24.0
DA	SHORT CREEK VOLUNTEER FIRE DEPARTMENT, INC	03-B45D-23.0
DB	SHORT CREEK VOLUNTEER FIRE DEPARTMENT, INC	03-B45D-66.0
DC	SHORT CREEK VOLUNTEER FIRE DEPARTMENT, INC	03-B45D-64.0
DD	SAMMY FRAGALE	03-B45D-22.0
DE	SHORT CREEK VOLUNTEER FIRE DEPARTMENT	03-B45D-65.0
DF	BRENDA L. MONTGOMERY F/K/A BRENDA L. MILLER	03-B45D-46.0
DG	STEPHANIE CARBASHO	03-B45D-47.0
DH	STEPHANIE CARBASHO	03-B45D-48.0
DI	HENRY W. ZEIDLER	04-R2-17.0
DJ	SYLVIA A. HAWRANICK	04-R2-18.0
DK	RODNEY & NEDRA C. MCCONNELL	04-R2-9999-9999
DL	GUY D. & LORI R. DONZELLA	04-R5-07.0
DM	GUY D. & LORI R. DONZELLA	04-R5-06.1
DN	RUSSELL W. MELCHING	04-R5-08.1
DO	MELISSA M. HARWATT	04-R5-08.4
DP	JOHN E. & E.R. HARWATT	04-R5-08.2
DQ	RODNEY K. & NANCY MCCONNELL	04-R2-20.0
DR	OHIO COUNTY BOARD OF COMMISSIONERS, AIRPORT AUTHORITY	04-R5-10.0
DS	BURNT MILL ACRES, LLC (C/O: MARK FOSTER)	04-R5-13.0
DT	HOWARD & LESLEY PRINCE	04-R5-48.0
DU	KEVIN T. WOODFORD	04-R5-47.0
DV	JOHN W. METZ	04-R5-46.0
DW	OHIO COUNTY PUBLIC SERVICE DISTRICT	04-R5-45.17
DX	JOHN W. METZ	04-R5-45.2
DY	JOHN W. METZ	04-R5-45.3
DZ	JOHN STANLEY & JOHN SHANE WALTERS	04-R5-45.5
EA	MARION S. PAVLIC	04-R5-45.0

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
EB	EDWARD A. SMITH	04-R5-45.7
EC	TUNNEL RIDGE, LLC	04-R5-45.8
ED	ALLIANCE RESOURCE GROUP, LLC	04-R5-45.6
EE	ALLIANCE RESOURCE GROUP, LLC	04-R5-52.0
EF	ALLIANCE RESOURCE GROUP, LLC	04-R5-53.0
EG	ANDREW JOHN EVICK	04-R5-54.0
EH	SUSAN L. CAIN	04-R8-08.3
EI	TUNNEL RIDGE, LLC	04-R8-08.2
EJ	TUNNEL RIDGE, LLC	04-R8-08.9
EK	OHIO COUNTY COMMISSION	04-R8-08.16
EL	THOMAS & JUDITH K. TYLER	04-R8-08.8
EM	AMERICAN DISPOSAL SERVICES OF WEST VIRGINIA, INC	04-R8-15.0
EN	LOUIS R. HERCULES & ET AL	04-R8-07.0
EO	DEBRA S. SHEPHERD	04-R8-15.2
EP	STATE OF WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	04-R8-0
EQ	CHARLES M. & M.M. MILLER	04-R8-15.3
ER	SUZANNE V. STANLEY	04-R8-23.0
ES	TUNNEL RIDGE, LLC	04-R8-76.0
ET	TUNNEL RIDGE, LLC	04-R8-26.0
EU	TUNNEL RIDGE, LLC	04-R8-15.4
EV	TUNNEL RIDGE, LLC	04-R8-27.6
EW	TUNNEL RIDGE, LLC	04-R8-21.2
EX	STATE OF WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	04-R8-9999-9999
EY	SUSAN KOGUT & BRADLEY MCGRATH	04-R8-27.5
EZ	MARILYN R. BLAKE	04-R8-27.0
FA	JAMES KEVIN CRUPE, SR.	04-R8L-49.0
FB	WAYNE D. & MARY R. THOMAS	04-R8L-41.0
FC	JACOB A. VDOVJAK, III	04-R8Q-68.0
FD	MARY T. BERTELLI & ROGER D. BERTELLI	04-R8Q-65.0
FE	BRIAN N. BARBE	04-R8Q-66.0
FF	BRENDA M. SELLER	04-R8L-50.0
FG	BRENDA M. SELLER	04-R8L-47.0
FH	CARRIE L. FORRESTER	04-R8L-46.0
FI	ROBERT L. RICE, SR. (LIFE ESTATE) & ET AL	04-R8Q-53.1
FJ	ROBERT L. RICE, SR. (LIFE ESTATE) & ET AL	04-R8Q-54.0
FK	PATRICIA CATLETT	04-R8Q-55.0
FL	DESSIE M. HENDRICK, SANDRA HENDRICK & SONYA OLAKO	04-R8Q-47.0
FM	BRYAN H. & MARTHA A. KRUPINSKI	04-R8Q-50.1
FN	DONALD W. & AMY K. ELLIOTT	04-R8Q-38.0
FO	ROGER L. MOORE	04-R8Q-30.1
FP	JOLLY W. WHEELER, JR. & KAREN M. WHEELER	04-R8Q-29.0
FQ	FRANK J. & S.R. TAROVISKY	04-R8Q-28.0
FR	PAULA J. & EDWARD C. TOMASIK	04-R8Q-03.0
FS	RUSSELL E. TERAMANA & ROSEANN TERAMANA	04-R8Q-02.0
FT	RALPH J. & K.L. HUFFMAN	04-R8Q-60.0
FU	CHAD MARTIN	04-R2-06.16
FV	WILLIAM SCOTT & LAURA J. DONOHEW	04-R2-06.11
FW	TODD & PATRICIA STENGER	04-R2-06.23
FX	PATRICK E. LEPLLEY	04-R5-08.3
FY	KASIMIR MAJEWSKI & EDWARD A. MAJEWSKI	04-R8-62.2
FZ	KASIMIR MAJEWSKI & EDWARD A. MAJEWSKI	04-R8-62.8

REVISIONS:

COMPANY:

SWN

Production Company, LLC

SWN ^{R+V+}_A

Production Company™

OPERATOR'S

FRANZ THOMAN OHI

WELL #:

405H

DATE: 02-13-2020

API NO: 47-069-XXXX

DRAWN BY: R. GRIMES

DISTRICT:

RICHLAND

COUNTY:

OHIO

STATE:

WV

SCALE: N/A

DRAWING NO: 2018-781

WELL LOCATION PLAT

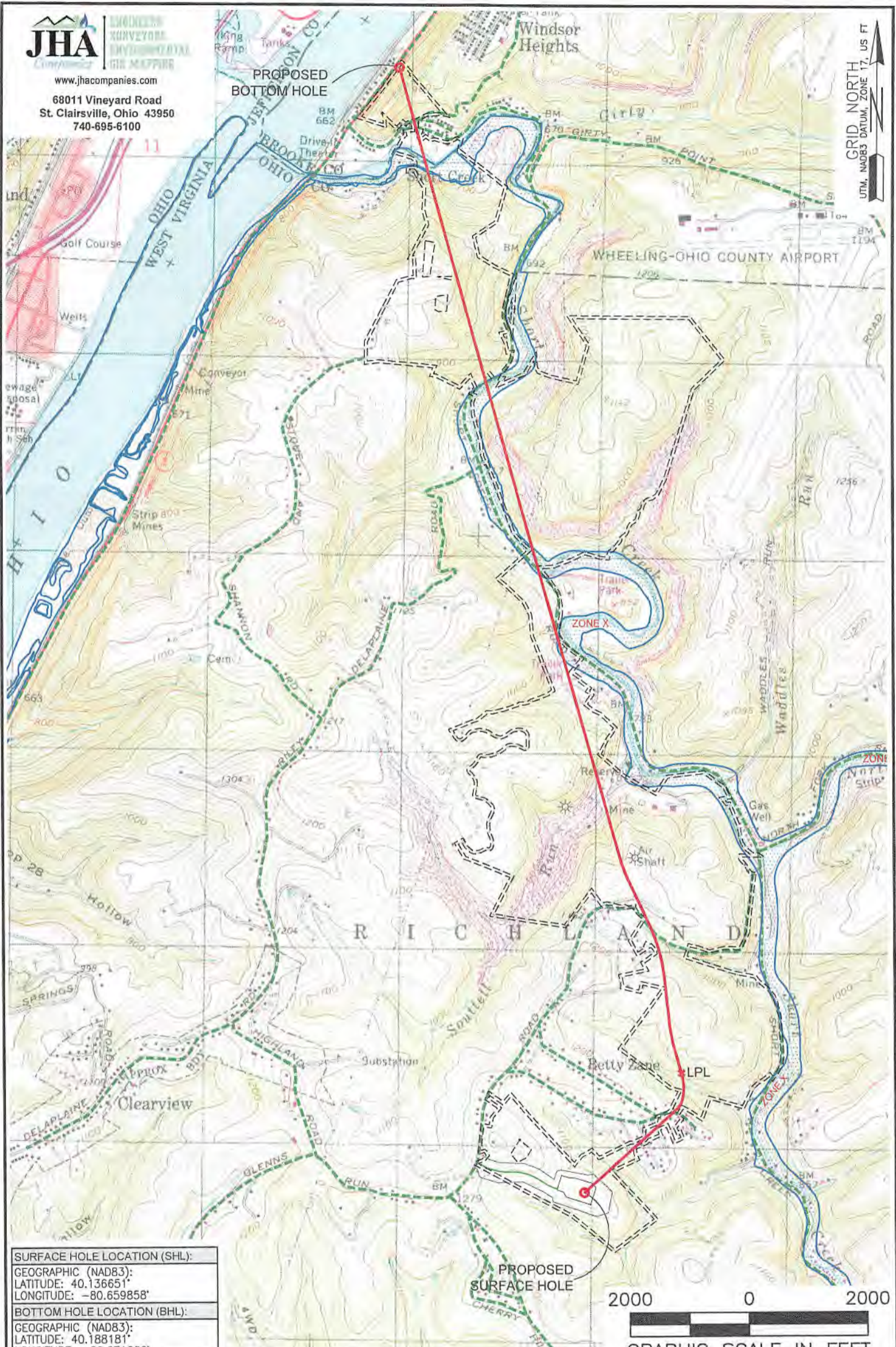
COMPLETION ID 2501173128
PAD ID 3001170565



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St. Clairsville, Ohio 43950
740-695-6100



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

SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83):
LATITUDE: 40.136651°
LONGITUDE: -80.659858°
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83):
LATITUDE: 40.188181°
LONGITUDE: -80.671666°

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 PLAN
- NATURAL WATERWAY
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC	WELL (FARM) NAME: FRANZ THOMAN OHI	WELL # 405H	SERIAL # XXXX
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201, MORGANTOWN, WV 26508	COUNTY: OHIO	CODE: 069	DISTRICT: RICHLAND
SURFACE OWNER: FRANZ THOMAN	USGS 7 1/2 QUADRANGLE MAP NAME: TILTONVILLE, OH-WV		

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

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

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

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

SEE EXHIBIT "A"

*Co-tenancy utilization - At least 7 mineral owners in tract and at least 75% of those owners are leased

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

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

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

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

Well Operator: SWN Production Company, LLC

By:

Its:


John Startz, Technical Expert Landman

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Franz Thoman OHI 405H
Ohio and Brooke Counties, West Virginia

#	TMP	LESSOR	LESSEE	ROYALTY	BK/PG	Interest Not Leased by Southwestern Production Company, LLC
1	4-R8-62	Franz Thoman, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	827/5 885/644	0.0000%
2	4-R8Q-14	Jolly W. Wheeler, Jr. and Karen M. Wheeler, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	862/102 884/529	0.0000%
3	4-R8Q-12	Dale Ebbert Kurner and Beverly Jean Kurner, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	859/139 884/505	0.0000%
4	4-R8Q-31	Steven M. Gorbby, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	861/525 884/517	0.0000%
5	4-R8Q-37	Carla Friend, single	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	859/589 884/505	0.0000%
6	4-R8Q-36	Jerry W. Danehart and Elaine A. Danehart, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	862/112 884/529	0.0000%
7	4-R8Q-52.1	James Francis a/k/a James E. Francis and Jennifer S. Francis, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	805/698 883/379	0.0000%
8	4-R8Q-52.2	Joyce E. Roth f/k/a Joyce E. Decrease, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	859/114 884/505	0.0000%
9	4-R8Q-52	Daniel Morgan and Susan Morgan, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	843/393 885/37	0.0000%
10	4-R8L-45.1	Helen A. Miller, a married man woman dealing in her sole and separate property	Chesapeake Appalachia, LLC SWN Production Company, LLC	14.00%	840/257 885/1	0.0000%
11	4-R8L-45	Helen A. Miller, a married man woman dealing in her sole and separate property	Chesapeake Appalachia, LLC SWN Production Company, LLC	14.00%	840/257 885/1	0.0000%
12	4-R8L-40	Dorothy T. Leos a/k/a Dorothy Leos, a widow	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	14.00%	847/459 885/77	0.0000%

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Franz Thoman OH# 405H
Ohio and Brooke Counties, West Virginia

13	4-R8-27.7	Tunnel Ridge, LLC	SWN Production Company, L.L.C.	17.00%	916/91	0.00000%
		Janet Agnew Debar, a widow	SWN Production Company, L.L.C.	14.00%	926/724	
14	4-R8-28.2	Thomas D. Kasunic, a single man	SWN Production Company, LLC	15.00%	919/712	0.00000%
15	4-R8-28	Donald R. Taylor and Minnie Jean Taylor, husband and wife (Life Estate Interest); and Kimberly J. Kochoy, a married woman dealing in her sole and separate property (Remainderman Interest); and Tami L. Tysk, a married woman dealing in her sole and separate property (Remainder Interest)	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	832/566 884/741	0.00000%
16	4-R8-6	Alliance Resource GP, LLC	SWN Production Company, L.L.C.	17.00%	916/98	0.00000%
17	4-R5-43	Alliance Resource GP, LLC	SWN Production Company, L.L.C.	17.00%	916/98	0.00000%
18	4-R5-45.11	John W. Metz, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	814/390 884/693	0.00000%
19	4-R5-45.12	George B. Korner and Roberta M. Korner, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	813/542 884/445	0.00000%
20	4-R5-45.4	Adrianna I. Davis, f/k/a Adrianna L. Hlebiczki, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	813/554 884/457	0.00000%
21	4-R5-45.13	Adrianna I. Davis, f/k/a Adrianna L. Hlebiczki, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	813/548 884/457	0.00000%
22	4-R5-9	S.E.W. Trust, Shane E. Woloshan, Trustee	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	812/384 884/193	0.00000%
23	4-R5-8	Gregg W. Wolfe, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	810/697 884/109	0.00000%

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Franz Thoman, OHI 405H
Ohio and Brooke Counties, West Virginia

24	4-R5-6	Charles Homer Frye, a married man dealing in his sole and separate property Robin Gay Frye A/K/A Robin Thomas, a married woman dealing in her sole and separate property Doris Jean Frye A/K/A Doris Altmeyer, a married woman dealing in her sole and separate property	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	825/519 884/705 825/452 884/705 825/443 884/705	0.00000%
25	4-R2-19	Guy D. Donzella and Lori R. Donzella, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	840/279 885/1	0.00000%
26	4-R2-6	Thomas H. Stenger and Margaret Ann Stenger, his wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18.00%	813/521 884/481	0.00000%
27	4-R2-6.8	William Scott Donohew and Laura Jean Donohew, husband and wife	Fossil Creek Ohio, LLC Gulfport Energy Corporation American Petroleum Partners Operating, LLC SWN Production Company, LLC	18.00%	877/759 881/302 909/775 946/405	0.00000%
28	4-R2-16	Pamela Chiles, a single woman	Fossil Creek Ohio, LLC Gulfport Energy Corporation American Petroleum Partners Operating, LLC SWN Production Company, LLC	18.00%	879/26 893/406 909/775 946/405	0.00000%
29	4-R2-17.2	Pamela Chiles & Ryan Chiles, Mother and Son	SWN Production Company, LLC	18.00%	957/421	0.00000%
30	Short Creek	West Virginia Division of Natural Resources	SWN Production Company, LLC	20.00%	Lease Attached	0.00000%
31	3-B45D-21	Daniel Roeder and Judith Roeder, husband and wife	SWN Production Company, LLC	18.00%	52/89	0.00000%
32	3-B45D-29	Kathryn Skidmore, single	SWN Production Company, LLC	18.00%	52/468	0.00000%

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Ohio and Brooke Counties, West Virginia

33	3-B45D-30	Jill Devaul, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/738	0.0000%
34	3-B45D-37	Royalty Owners	n/a	n/a	n/a	23.1931%
		Denzil Skidmore, married, dealing in his separate property	SWN Production Company, LLC	18.00%	52/474	
		Harry Galloway, married, dealing in his separate property	SWN Production Company, LLC	18.00%	52/480	
		Janice Lough, single	SWN Production Company, LLC	18.00%	52/492	
		Brenda J. Berry, f/k/a Brenda J. Williams, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/611	
		Richard S. Johnston, Jr., married, dealing in his separate property	SWN Production Company, LLC	18.00%	53/661	
		Michael J. Johnston, single	SWN Production Company, LLC	18.00%	53/667	
		Mark D. Coad, single	SWN Production Company, LLC	18.00%	53/649	
		Derrill Coad	SWN Production Company, LLC	18.00%	53/655	
		Rachel Shaw, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/370	
		Ryan Rogers Chartier, single	SWN Production Company, LLC	18.00%	54/364	
		Donna Willoughby, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/253	
		Debra O'Neal, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/259	

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Beverly Yvonne Bane Baker, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/695
Joyce Ann Capers, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/563
Darla Bycott, a widow	SWN Production Company, LLC	18.00%	54/569
Glenn A. Magee, single	SWN Production Company, LLC	18.00%	55/48
Harrell Darrell McCrury, married, dealing in his separate property, represented herein by Mary Helen McCrury as Power	SWN Production Company, LLC	18.00%	55/24
Phillip Wayne McCrury, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/30
Sally Draper, single	SWN Production Company, LLC	18.00%	54/599
Leslie A. Bush Special Needs Trust, represented herein by Michael A. Bush, as Trustee	SWN Production Company, LLC	18.00%	54/653
Julie Demsko, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/635
Rick R. Wyer, single	SWN Production Company, LLC	18.00%	54/575
William McCrury, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/768
Roshanna Collins, single	SWN Production Company, LLC	18.00%	54/659
Jill Devaul, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/738
Nita Sneed, single	SWN Production Company, LLC	18.00%	54/557

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Elizabeth A. Petros, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	54/792
James Earl McCrury, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/732
Jeffrey W. Bush, single	SWN Production Company, LLC	18.00%	54/671
Kelley McCrury Bell, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/593
Joanne L. Spinner Revocable Trust-dtd August 27, 2008, represented by Trustee Joanne L. Spinner	SWN Production Company, LLC	18.00%	54/647
Donald J. Cassidy, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	54/665
Edie Scheffel, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/629
James H. Hollomon, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/786
Clayton Robert Busbey, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/605
Evan Dowler Busbey, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/641
Marilyn Ann Driver, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/702
Barbara E. Davis, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/709
Barbara Fewell, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/587
Roxsanna Spires, f/k/a Roxsanna Seemann, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/683

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Rhodona Turnquist, single	SWN Production Company, LLC	18.00%	54/689
Roland Wyer, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/581
Jennifer Kight, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/677
Clayton Marchant Bane, married, dealing in his separate property	SWN Production Company, LLC	18.00%	54/744
Evie Kemp, married, dealing in her separate property	SWN Production Company, LLC	18.00%	55/18
The Ruth Thompson Revocable Living Trust, Dated October 30, 2009, represented by Trustee Ruth E. Wagoner Thompson	SWN Production Company, LLC	18.00%	54/774
Marilyn L. Daniel, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	54/756
Sally Baker, married, dealing in her separate property	SWN Production Company, LLC	18.00%	54/623
William H. Van Saun, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	54/762
Barbara Jean Harmer, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	54/780
Ronald W. Shreve, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	54/750
Ralph Robert Bane, Jr., married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/36
Donna Sneed, married, dealing in her separate property	SWN Production Company, LLC	18.00%	55/54
Linda Graszewicz, married, dealing in her separate property	SWN Production Company, LLC	18.00%	55/42

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Robert B. Peck, married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	55/271
Spencer Kamps, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/218
Terry Lynn O'Neal, single	SWN Production Company, LLC	18.00%	55/60
Joel D. Leonard, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/343
Paul D. Leonard, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/313
Patrice M. Cassidy, single	SWN Production Company, LLC	18.00%	55/325
Sharon Lovell, a married woman dealing in her sole and separate property	SWN Production Company, LLC	18.00%	55/277
Eric Kamps, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/143
Kathleen Valletta, single, appearing herein both individually, and as Power of Attorney for Joan Broberg	SWN Production Company, LLC	18.00%	55/331
James W. Bush, married, dealing in his separate property	SWN Production Company, LLC	18.00%	55/137
Krystal Johnson, single	SWN Production Company, LLC	18.00%	55/83
Robby Johnson, single	SWN Production Company, LLC	18.00%	55/283
Llewellyn A. Morris Revocable Living Trust, represented herein by Marol L. Ammond as Trustee	SWN Production Company, LLC	18.00%	55/289
Andreas Michael Wilson, a/k/a A. Michael Wilson, a married man dealing in his sole and separate property	SWN Production Company, LLC	18.00%	55/319

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, W-6A1, by SWN Production Company, LLC, Operator
 Franz Thoman OHI 405H
 Ohio and Brooke Counties, West Virginia

35	3-B405-16	Lambros Tsuhlares, divorced	SWN Production Company, LLC	18.00%	51/637	0.00000%
		SWN Production Company, LLC (Company Owned Minerals)		12.50%	397/110 (Mineral Deed)	
		SWN Production Company, LLC (Company Owned Minerals)		12.50%	396/626 (Mineral Deed)	
		SWN Production Company, LLC (Company Owned Minerals)		12.50%	396/623 (Mineral Deed)	
		SWN Production Company, LLC (Company Owned Minerals)		12.50%	396/629 (Mineral Deed)	
		SWN Production Company, LLC (Company Owned Minerals)		12.50%	397/107 (Mineral Deed)	

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Tract Area/Acreage: Ohio River and Cross, Short and Buffalo Creeks - 463.4 acres (MM 74-77)
Well/Tract Name: Robert Bone BRK 205H, et al
District/County: Cross Creek and Buffalo Districts, Brooke County, and Richland District, Ohio County
Lease Number: OG-19-J/05-1960

THE STATE OF WEST VIRGINIA OIL AND GAS LEASE
NO SURFACE USE
(4 YEAR PAID UP LEASE)

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This Oil and Gas Lease Agreement dated and effective the 4th day of November, 2019, by and between the **STATE OF WEST VIRGINIA, DEPARTMENT OF COMMERCE, DIVISION OF NATURAL RESOURCES**, 324 Fourth Avenue, South Charleston, West Virginia, 25303, Lessor, and **SWN PRODUCTION COMPANY, LLC**, a Texas limited liability company, 10000 Energy Drive, Spring, Texas 77389, Lessee.

UNDER AND PURSUANT TO THE PROVISIONS OF THE CONSTITUTION AND LAWS OF THE STATE OF WEST VIRGINIA RELATING TO LEASING PUBLIC LANDS BELONGING TO THE STATE OF WEST VIRGINIA, WITNESSETH:

1. **Grant of Lease.** That for and in consideration of **One Million One Hundred Fifty-Eight Thousand Five Hundred Dollars (\$1,158,500.00)** [being the bonus of Two Thousand Five Hundred Dollars (\$2,500.00) per acre (463.4 acres)] paid by Lessee to Lessor, the receipt of which is hereby acknowledged, the royalties to be paid, and the covenants, obligation, stipulations and conditions to be observed and performed as herein set forth, Lessor does hereby demise, lease and let unto the Lessee the following described tracts or parcels of land for the sole purpose and with the exclusive right of exploring, drilling, completing, operating for, and producing oil, gas and other liquid or gaseous hydrocarbons, including, but not limited to, any and all natural gas liquids such as butane, ethane, isobutane, natural gasolines, pentanes, propane, and similar liquids or byproducts produced in association with the oil or gas (the "Granted Minerals") in or underlying the Leased Premises, situate in Richland District, Ohio County, and Cross Creek District and Buffalo District, Brooke County, West Virginia, and being more particularly described as follows:

Tract 1: The minerals underlying that portion of the Ohio River from the ordinary low water mark on each side of the said river, starting at Latitude 40.2710991, Longitude -80.6179962 and ending at Latitude 40.2406006, Longitude -80.6517029, and being a point within Mile Marker 74 to a point within Mile Marker 77, as more fully shown on Exhibit "A" attached hereto, and containing **433 acres, more or less.**

Tract 2: The minerals underlying that portion of Cross Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.3073006, Longitude -80.6000977 and ending at Latitude 40.3055992, Longitude -80.5948029, as more fully shown on Exhibit "A" attached hereto, and containing **6.4 acres**, more or less.

Tract 3: The minerals underlying that portion of Buffalo Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.2644997, Longitude -80.6154022 and ending at Latitude 40.2571983, Longitude -80.5997009, as more fully shown on Exhibit "A" attached hereto, and containing **19 acres**, more or less.

Tract 4: The minerals underlying that portion of Short Creek from the ordinary low water mark on each side of the said creek, starting at Latitude 40.1833, Longitude -80.6772995 and ending at Latitude 40.1834984, Longitude -80.6692963, as more fully shown on Exhibit "A" attached hereto, and containing **5 acres**, more or less.

The total Leased Premises (Tracts 1, 2, 3 and 4) being **463.4 acres**, more or less.

Lessor Represents and warrants to Lessee that the West Virginia Division of Natural Resources is the proper agency or instrumentality of the State of West Virginia to enter into this Lease for the purpose of leasing the Granted Minerals and the Leased Premises to Lessee on the terms set forth herein, and that the Director of the West Virginia Division of Natural Resources is vested with the full legal authority and is duly authorized to execute this Lease on behalf of the Lessor and the State of West Virginia.

2. Limitations on the Grant of Lease.

(a) **Surface Activities Prohibited.** This Lease does not include, and specifically prohibits and excludes, the right to enter upon the surface of the lands set out herein, if any, to conduct exploration for drilling, and production and marketing activities of any kind associated with the Granted Minerals, and any other activities by Lessee, its representatives, employees, contractors, agents, and affiliates, including, but not limited to, the construction of pits, impoundments, and/or pipelines or gathering lines on the Leased Premises.

(b) **No Storage.** Lessee may not use the Leased Premises, or any part thereof, for gas, oil, hydrocarbons, or brine storage purposes.

(c) **Use of Surface or Subsurface Water.** Lessee shall not use the surface waters or the groundwaters located within the Leased Premises and shall not diminish or impair the riparian rights, consumptive or non-consumptive water rights or groundwater of the State of West Virginia within or adjoining the Leased Premises, or any private riparian landowner adjoining the Leased Premises within said State.

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(d) **Navigational Servitude.** Lessee shall not perform any work, construction, production or other related activities on the bed, banks or shores of the Ohio River and/or any other waterway of the state below the high-water mark thereof. Lessee shall not in any way hinder or impair the navigational servitude of the United States of America or the public rights of navigation or floatage on the Ohio River and/or any other navigable or floatable waterway of the state.

(e) **Reserved Rights of Lessor.** Lessor reserves all rights not granted in this Lease, and specifically excepts all minerals, other than the Granted Minerals, including, but not limited to, geothermal energy, salt, brine, coal and coalbed methane.

3. **Term.** (a) This Lease shall remain in force for a term of **Four (4) years** from the date hereof ("Primary Term"), and as long thereafter as Granted Minerals are produced from the Leased Premises or on acreage pooled therewith, or drilling operations are continued as hereinafter provided.

(b) If, at the expiration of the Primary Term of this Lease, Granted Minerals are not being produced on the Leased Premises or on acreage pooled therewith, but Lessee is then engaged in drilling or re-working operations thereon, then this Lease shall continue in force for so long as operations are being continuously prosecuted on the Leased Premises or on acreage pooled therewith ("Operations"). Operations shall be considered to be continuously prosecuted if not more than One Hundred Twenty (120) consecutive days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of a subsequent well.

(c) If, after discovery of Granted Minerals on the Leased Premises or on acreage pooled therewith, the production thereof should cease for any reason after the Primary Term, this Lease shall not terminate if Lessee commences additional drilling or re-working operations within One Hundred Twenty (120) days from the date of cessation of production or from the date of completion of a dry hole.

(d) If Granted Minerals shall be discovered and produced as a result of such operations set out above on or after the expiration of the Primary Term of this Lease, then this Lease shall continue in force and effect for so long as Granted Minerals are produced from the Leased Premises or on acreage pooled therewith.

4. **Facilities Development.**

(a) All development and production activities and facilities shall be constructed on adjoining and/or other lands, and not on the Leased Premises or islands within the Ohio River and other state waterways, except to the extent that horizontal well laterals are located underneath the bed, banks and shores of the same. Such development and production activities and facilities shall be above and outside the high-water mark of the Ohio River and other state waterways.

(b) Notwithstanding any other provision set forth in this Lease Agreement, including without limitation the provisions of paragraph 2 and 4(a) above, this Lease Agreement does not prohibit Lessee, its representatives, employees, contractors, agents and affiliates from constructing and operating an intake to withdraw water pursuant to authorization from a riparian landowner and in compliance with any applicable regulatory requirements.

5. **Unitization.** Lessee may pool, consolidate, or unitize portions of the Leased Premises, as to hydrocarbon bearing geologic formations, in order to constitute a unit for the purpose of exploring for and producing Granted Minerals. The unit shall:

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(a) Be comprised of lands contiguous to the Leased Premises and/or lands in the immediate vicinity of the Leased Premises; and

(b) Not exceed Six Hundred Forty (640) acres: Provided, that the unit may, with the written consent of Lessor, be larger, but no greater than One Thousand Two Hundred and Eighty (1,280) acres, which consent of Lessor shall not be unreasonably withheld, if the unit, in comparison to a unit of Six Hundred Forty (640) acres, shall provide for the greater development of the Granted Minerals in compliance with the diligent development and protection from drainage requirements of this Lease.

Once a unit is formed, the unit may not be reformed, re-pooled, altered, amended or changed in any manner without the prior written consent of Lessor, which consent shall not be unreasonably withheld.

6. Pugh Clause-Horizontal and Vertical. As to acreage of the Leased Premises which is not in production in paying quantities and is not included within a properly constituted and publicly recorded production unit at the expiration of the Primary Term, as extended hereunder, this Lease shall automatically terminate, and be of no further force or effect.

Further, and to the extent Lessee has established production in paying quantities beyond the expiration of the Primary Term on the Leased Premises or lands pooled or unitized therewith, the Lease shall terminate, on a production unit-by-production unit basis, as to all depths, formations, horizons and zones lying at least One Hundred (100') feet below the deepest producing formation or horizon on the Leased Premises or any lands pooled therewith, as determined by reference to the deepest producing formation or horizon in each respective production unit.

Thereafter, this Lease shall continue in full force and effect for all depths, formations, horizons and zones lying above the depth of One Hundred (100') feet below the deepest producing formation or horizon of a particular production unit as to all acreage located within that particular production unit.

Upon the drilling and completion of a well within a production unit containing at least a portion of the Leased Premises, Lessee shall file a declaration of pooling and unitization within a reasonable time in the records of the Office of the Clerk of the County Commission of the county in which the applicable Granted Minerals are situated.

7. Royalty.

(a) **Delivery and Payment.** Lessee shall pay and deliver or cause to be delivered to the Lessor, or its successors, nominees, agents, or assigns, at no cost to Lessor, a royalty equal to **Twenty Percent (20%) or One-Fifth of Eight Eighths (1/5th of 8/8ths)** of the Gross Proceeds realized by Lessee, or any Affiliate of Lessee, from the sale of the Granted Minerals, produced and sold from the Leased Premises.

i. **Gross Proceeds.** "Gross Proceeds" means the total monies and other consideration accruing to Lessee for the disposition of the Granted Minerals and/or any other marketable by-products, including condensate, produced from the Leased Premises. Gross Proceeds shall be calculated based on the total gross volume of Granted Minerals produced and sold, exclusive of production and post-production costs and severance taxes or other taxes of any nature.

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ii. **Affiliate of Lessee.** "Affiliate of Lessee" means any person, corporation, firm, or other entity in which Lessee, or any parent company, subsidiary or affiliate of Lessee, owns an interest of Five Percent (5%) or more, whether by stock ownership, or otherwise, or over which Lessee, or any parent company of affiliate of Lessee, exercises any degree of control, directly or indirectly, by ownership, interlocking directorate, or in any other manner, and any corporation, firm or other entity which owns any interest in Lessee, whether by stock ownership or otherwise, or which exercises any degree of control directly or indirectly, over Lessee, by stock ownership, interlocking directorate, or any other manner.

(b) **Due Dates of Royalty.** Lessee shall pay Lessor all royalties that become due under this Lease within One Hundred Twenty (120) days after the first day of the month following the month during which a well commences production into a pipeline for sale of such production. Thereafter, all royalties shall be paid to Lessor on or before the last day of the third month following the month of production or within Ninety (90) days after the first day of the month following, whichever is longer.

(c) **Automatic Termination for Non-Payment of Royalty.** If the royalty payments are not paid within the time prescribed in paragraph 7(b) of this Lease, then Lessor will provide Lessee written notice of nonpayment of royalty in accordance with this Lease. If Lessee fails to pay Lessor the royalty due and owing to Lessor within Thirty (30) days from Lessee's receipt of such notice, then this Lease will automatically terminate. Inaccurate royalty payments shall not be governed by the provisions of paragraph 7 of this Lease, but shall be resolved in good faith between Lessor and Lessee in a timely manner.

(d) **Production & Post-Production Costs.** Neither Lessee, nor any Affiliate of Lessee, may reduce Lessor's royalty for any post-production expense, including, but not limited to, pipelines, surface facilities, telemetry, gathering, dehydration, transportation, fractionation, compression, manufacturing, processing, treating, or marketing of the Granted Minerals, or any severance or other taxes of any nature paid on the production thereof. Royalties under this Lease shall be based on the total proceeds of sale of the Granted Minerals, exclusive of any and all production and/or post-production costs.

8. **Method of Payment.** All rents, royalties, bonuses, or other payments accruing and/or owing from Lessee to Lessor under this Lease shall be made or tendered as follows:

- (a) By certified or cashier check delivered in accordance with this Lease; or
- (b) By direct deposit or wire transfer to the credit of Lessor, as provided in writing by Lessor to Lessee by a separate instrument delivered contemporaneously with this Lease.

9. **Information, Metering, Lessor's Rights to Audit.** Upon request, Lessee shall furnish to Lessor copies of title opinions covering the Leased Premises; copies of filings made by Lessee with the Department of Environmental Protection related to the Leased Premises; copies of daily drilling reports, gauge tickets, sales receipts, division orders, or amounts of gross production; copies of gas contracts or any other agreements pursuant to which Lessee will sell, use, transfer, process, or dispose of the Granted Minerals produced from the Leased Premises; and/or any other information related to the production and sales of the Granted Minerals.

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Lessee shall meter gas deriving from the Leased Premises at the wellhead in accordance with West Virginia law. Lessor shall, on an annual basis, upon reasonable prior written notice to Lessee, have the right to audit the books, accounts, contracts, records and data of Lessee pertaining to the development and sale of the Granted Minerals.

10. **Annual Report, Quarterly Royalty Statement.** Lessee shall give Lessor an annual report on production volumes and sales prices on the anniversary date of this Lease, unless otherwise requested by Lessor.

Lessee shall give Lessor a quarterly report, either on the check stub of a royalty payment or on an attachment to or enclosure with a royalty payment, that includes:

- (a) The lease, property, or well names and the well identification numbers on which royalties are being paid;
- (b) The month and year during which the sales occurred for which payment is being made;
- (c) The total production from the well or wells expressed as the number of barrels of oil or the total amount of gas in million cubic feet (MCF) and the volume of any other Granted Minerals, condensate, or other constituents therein which were sold;
- (d) The price per barrel of oil and per MCF of gas sold; and
- (e) The name, address, and telephone number of a contact person where the Lessor may obtain information about royalty payments made by the Lessee hereunder.

11. **Shut-In Royalty.** If a well has been completed that is capable of production in paying quantities and has been temporarily shut-in for lack of a market, then Lessee shall pay Lessor annually, on or before Ninety (90) days of such shut-in event, the sum of One Hundred (\$100.00) Dollars per acre for the first year, and Two Hundred Fifty (\$250.00) Dollars per acre for the year thereafter on the ensuing anniversary.

In no event may Lessee maintain this Lease by payment of shut-in royalties beyond a continuous two-year period. This Lease shall terminate automatically on the first day following the second anniversary date of the initial shut-in royalty payment.

Additionally, in no event may Lessee maintain this Lease by payment of shut-in royalties beyond a cumulative three-year period during which all production of Granted Minerals was shut-in. This Lease shall terminate automatically on the first day following the date that all production of Granted Minerals has been shut-in for a cumulative period of Three (3) years.

12. **Notice of Intent to Drill and Complete.** Lessee shall supply Lessor prior written notice of Lessee's intention to drill at least Fourteen (14) calendar days prior to the spudding of a well associated with producing the Granted Minerals. Lessee shall also supply Lessor with a copy of Lessee's completion report of such well or wells within Thirty (30) days of completion.

13. **Diligence, Duty to Drill Offset Wells.** Lessee shall conduct its drilling operations hereunder utilizing best industry practices in existence at the time of such drilling, and shall otherwise conduct its operations in a good and workmanlike manner as a reasonably prudent operator would under the same or similar circumstances until all drilling and producing operations are completed, or until such time as the final well is plugged and abandoned.

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Additionally, if Granted Minerals are discovered on or in the Leased Premises, the Lessee shall further develop and produce the Leased Premises as a reasonable and prudent operator would and exercise all due diligence in drilling additional well(s) as may be necessary to fully develop the Leased Premises. Lessee shall protect the Granted Minerals in and under the Leased Premises from drainage by wells on adjoining or nearby tracts or lease, including those held by Lessee or any Affiliate of Lessee.

Neither the rentals, royalties, nor any other consideration set forth under this Lease shall relieve Lessee of its obligation to reasonably develop and produce the Leased Premises and to reasonably protect the Granted Minerals in and under the Leased Premises from drainage or other damage.

14. **Waste Prohibited, Damage.** Lessee shall not commit, or cause to be committed, waste, damage, or pollution to the Leased Premises. Lessee shall take all reasonable steps to prevent its Operations from causing or contributing to soil erosion, or to the injury of terraces, grades, embankments, other soil or structures on the Leased Premises. Lessee shall not pollute the surface or subterranean waters of the Leased Premises, or any reservoirs, springs, streams, irrigation ditches, stock ponds or other wells on the Leased Premises. Lessee shall not decrease the fertility of the soil, damage any crops, grasses, timber or pastures on the Leased Premises, and shall not harm or injure any animals, fish or livestock on or in the Leased Premises. Lessee shall not damage any buildings, roads, structures or other improvements on the Leased Premises. Lessee shall preserve the Leased Premises, and upon the termination of this Lease, promptly surrender and return the Leased Premises to the Lessor in the same condition, or substantially similar condition, as the Leased Premises were in prior to Lessee taking possession of the Leased Premises. Lessee shall compensate Lessor, its successors or assigns, for damages caused by Lessee to any being or thing which is the subject of this provision.

15. **Well Plugging.** Before abandoning a well associated with this Lease, Lessee shall securely plug and abandon such well in accordance with the rules and regulations of the West Virginia Department of Environmental Protection, and the laws of the State of West Virginia and any other governmental agency having jurisdiction.

16. **Record Management.** The Lessee shall keep an accurate record of all drilling operations that include the Leased Premises, including, but not limited to the following: a log of each well drilled as duly sworn to by the contractor or driller; original gas sales contracts with amendments; gas balancing agreements and schedules; information concerning litigation, settlement agreements or other agreements relating to sales and pricing of the Granted Minerals.

17. **Ratification.** No instrument executed by Lessor shall be effective to constitute a ratification, renewal, extension or amendment of this Lease unless such instrument is clearly titled to indicate its purpose and intent.

18. **Compliance with Applicable Law.** This Lease shall be subject to the Constitution and laws of the State of West Virginia, and the rules and regulations of the West Virginia Division of Natural Resources and the West Virginia Department of Environmental Protection now or hereafter in force, all of which are made a part and condition of this Lease: Provided, that no law, rule or regulation enacted, passed or made after the execution of this Lease that affects the lease

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term, the royalty rate or payment, or the assignment of Lease, shall operate to alter the terms and conditions of this Lease. Lessee agrees to comply in all respects with the laws, rules and regulations of the State of West Virginia and the United States of America.

19. **Insurance.** A company licensed by the West Virginia Insurance Commission to do business in the state of West Virginia shall underwrite all policies required by this Lease.

Lessee and/or any person or entity acting on Lessee's behalf under this Lease, shall maintain at all times during which this Lease remains in force and effect, workers compensation and employer's liability insurance, commercial general liability and umbrella liability insurance, business, auto and umbrella liability insurance, and environmental liability insurance in the amount of at least Twenty-Five Million Dollars (\$25,000,000.00), combined single limit. The insurance policies, except workers compensation and employer's liability insurance, shall name Lessor as an additional insured with regard to the Leased Premises, and shall reflect that the insurer has waived any right of subrogation against the Lessor.

The policies, declaration pages and certificates of insurance shall be delivered to Lessor within Thirty (30) days of the execution of this Lease, and upon each renewal of said insurance policies.

20. **Bonding.** Within Thirty (30) days of the execution of this Lease, Lessee shall post a surety bond in favor of the Lessor in an amount of Two Hundred Thousand Dollars (\$200,000.00) to secure the payment of all sums due and performance of all obligations arising under this Lease.

21. **Assignment.** The rights and estate of Lessee, or any permitted assignee or transferee of Lessee hereunder, may not be assigned or otherwise transferred, in whole or in part, without the prior written consent of Lessor, which consent shall not be unreasonably withheld.

In the event Lessee proposes to assign or transfer this Lease, the Lessee shall give Lessor written notice of its intent to assign or transfer its interest in the Lease, and shall specify the type of assignment or transfer contemplated, the identity and contact information of the proposed assignee or transferee, and the timeframe of the proposed assignment or transfer ("Transfer Notice").

Upon delivery of a Transfer Notice to the Lessor, Lessor shall have Fifteen (15) days to either: (a) consent to the proposed assignment or transfer by delivering its written consent to Lessee; or (b) in its reasonable discretion, withhold its consent to the proposed assignment or transfer by delivering written notice to Lessee that it is withholding its consent and specifying the reasons therefor.

If Lessor fails to respond to a Transfer Notice within the Fifteen (15) day period, then Lessor shall be deemed to have approved the assignment or transfer outlined in the Transfer Notice, and to have consented to such assignment or transfer in the same manner as if it would have delivered its written consent to Lessee.

22. **Default.** Any of the following shall be deemed a default of this Lease:

(a) Failure of Lessee to timely make royalty payments or any other required payments to Lessor under this Lease.

(b) If a creditor of Lessee, its agents and/or assigns, takes action to execute, garnish or attach Lessee's assets that include the Leased Premises: Provided, that this provision does not impair Lessee's ability to mortgage its interests in the Granted Minerals or the Leased Premises.

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(c) Failure of the Lessee to obtain any requisite "prior written consent" as set forth in this Lease.

(d) Failure of Lessee to maintain insurance and be bonded as set forth in this Lease.

(e) Shut-in of well exceeding the period set forth in this Lease.

23. **Notice of Default or Breach.** If Lessor considers that Lessee has failed to comply with its obligations under this Lease, whether expressed or implied, Lessor shall notify Lessee in writing stating the reasons Lessee has breached this Lease. Lessee shall have Thirty (30) days, after receipt of the notice, to cure the assertions by Lessor. If it is not practical to cure within the Thirty (30) days, then Lessee shall have Thirty (30) more days to commence curing, and shall diligently and continuously pursue to complete such cure.

If Lessee fails or refuses to cure the assertions by Lessor, or fails to respond in a meaningful fashion to Lessor's notice within the timeframes set forth above, or within a longer period of time if Lessee is in good faith continuously effectuating a cure, then this Lease shall automatically cease and terminate.

Upon such termination pursuant to this paragraph, Lessee agrees to:

(a) Immediately and unconditionally surrender possession of the Leased Premises, or that portion of the Leased Premises included in the notice; and

(b) Plug and abandon any producing or non-producing well(s).

24. **Remedies for Default or Breach.** Upon Lessee's failure to remedy any alleged breach of this Lease within the applicable cure period, Lessor shall be entitled to recover from Lessee any and all royalties, charges or claims of every kind and nature due, owing and/or arising out of this Lease, and to take immediate possession of the Leased Premises. If Lessor institutes proceedings to clear title or take possession of the Leased Premises, then Lessor shall be entitled to recover from Lessee its reasonable attorney fees, investigation costs, expert fees and any other reasonable costs or expenses related to such proceedings.

25. **Surrender of Lease.** If Lessee is not in default of any obligation due under this Lease, then Lessee may surrender the Leased Premises or any part thereof upon payment of all liabilities then accrued and due. Lessee must provide written notice delivered to Lessor Thirty (30) days prior to the effective date of the surrender. Lessee shall deliver to Lessor a recorded release of the surrendered area describing all depths, formations and horizons in and under the Leased Premises so released.

Lessee may not release any portion of the Leased Premises that is included in a pool or unit on which operations are being conducted.

26. **No Warranty of Title.**

(a) Lessor makes no representation of title or ownership, either expressed or implied, and further makes no warranty as to the actual or potential presence of Granted Minerals. Lessee represents it has performed all necessary due diligence regarding the title or ownership of the Granted Minerals and agrees to be bound by the quantum of acreage as set forth in the Legal Description set out herein.

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(b) Lessee shall notify Lessor of any adverse claim to the Leased Premises affecting title to all or a portion of the rights to develop the Granted Minerals, and Lessor may, with the approval of the Attorney General, enter into an escrow arrangement for the future rents and royalties accruing to such disputed portion of the Leased Premises under terms and conditions that the Attorney General feels proper to safeguard the rights and interest of the State of West Virginia.

(c) If an adverse claimant files suit against the State of West Virginia or against Lessee claiming title to all or a portion of the Granted Minerals, or if Lessee, after receiving notice of an adverse claim, institutes litigation in a court of competent jurisdiction to adjudicate the validity of the claim, the rents and royalties accruing to the litigated portion shall be placed in an escrow account until such time as the ownership of the disputed interest is determined by a court of competent jurisdiction.

(d) If a court of competent jurisdiction determines that Lessor does not have title to all or part of the Granted Minerals in the Leased Premises, the rentals, royalties and bonus thereafter accruing from any part as to which this Lease covers less than the full interest in such Granted Minerals, shall thereafter be paid only in the proportion which the interest therein, if any, covered by this Lease bears to the whole and undivided fee simple estate therein. Any sums of money paid pursuant to this Lease are not reimbursable to Lessee.

27. Indemnity. Unless caused by the negligence of Lessor, or any agent, servant, or employee of Lessor, Lessee shall defend, indemnify, protect and hold harmless Lessor and Lessor's heirs, successors, representatives, agents and/or assigns from and against any and all claims, demands, causes of action, liability, loss, damage or expense of any and every kind and nature, including without limitation costs, expenses, and attorneys' fees, for injury and death, or damage to persons or property, environmental damage to the surface, waterways, or subsurface estates of any person, firm, corporation or other entity arising out of, incidental to, or resulting from: (a) the operations or activities of Lessee or Lessee's servants, agents, employees, guests, licensees, invitees or independent contractors on or in the Leased Premises; (b) the exercise of any right granted under this Lease, and/or; (c) any obligations imposed under this Lease.

Any successor in interest of any rights of Lessee in this Lease shall likewise be obligated to defend and indemnify Lessor and Lessor's heirs, successors, representatives, agents and assigns in the same manner as the original Lessee.

28. Limitations on Drilling. From and after the effective date of this Lease, Lessee shall not commence construction of any new well pad that is intended to produce the Granted Minerals from the Leased Premises if such well pad would be located within Five Hundred Fifty feet (550') of any outside boundary of the tracts comprising the Leased Premises measured linearly from any point along said tract boundary to the midpoint of the secondary containment berm of a particular well pad.

Lessor and Lessee agree that the limitation on well pad construction and/or location set forth in this paragraph is intended to reduce any long-term, substantial interference with the public's use of the Leased Premises as it exists on the date of the Lease. Further, if Lessor determines, in its reasonable discretion after conducting a proper investigation, that the drilling activities of Lessee related to the production of the Granted Minerals from the Leased Premises as have created a long-term, substantial interference with the public's use of the Leased Premises as aforesaid, then Lessor shall have the right to seek from Lessee additional measures or controls to mitigate such long-term substantial impairment caused by Lessee's drilling activities.

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29. **Force Majeure.** If Lessee is prevented from complying with its obligations under this Lease, either expressed or implied, except payment of money, due to scarcity of or inability to obtain or use equipment or material, or by operations of Force Majeure, or any federal or state law, or any order, rule or regulation, then, while so prevented, Lessee's obligation to comply with this Lease shall be temporarily suspended, and Lessee shall not be liable in damages. This Lease shall be extended only so long as Lessee is prevented by any such cause from conducting operations on or in the Leased Premises: Provided, that in no event shall Lessee's performance be suspended as a result of Force Majeure, federal or state law, or any rule or regulation for a period in excess of two (2) consecutive years.

As used herein, "Force Majeure" means an act of god such as flood, fire, adverse weather conditions, war, sabotage, rebellion, insurrection, riot, strike or labor disputes, or such other causes not within Lessee's control. "Force Majeure" shall specifically exclude scarcity, cost or inability to obtain or use equipment, contracts, personnel, water or other materials.

30. **Further Assurances.** Each of the parties hereto shall, and shall cause its respective affiliates to, from time to time at the request of the other party, without any additional consideration, furnish the other party such further information or assurances, execute and deliver such additional documents, instruments and conveyances, and take such other actions and do such other things, as may be reasonably necessary in the opinion of counsel to the requesting party to carry out the provisions of this Lease.

In the event that Lessor is not the proper agency or instrumentality of the State of West Virginia to enter into this Lease, then Lessor shall cause all of the proper agencies or instrumentalities of the State of West Virginia, without any additional consideration, to join in this Lease, as Lessor, upon the same terms provided herein.

31. **Governing Law.** This Lease shall be governed by the laws of the State of West Virginia and any dispute arising out of this Lease shall be resolved in a West Virginia court of law having jurisdiction thereof.

32. **Notices and Payments.** All notices and payments which are permitted or required under this Lease shall be in writing and shall be deemed valid and received if delivered personally, or by registered or certified mail, return receipt requested, or by special carrier with signature required, to the Lessor and/or Lessee at the following addresses, unless otherwise agreed by the parties in a signed writing:

(a) **To Lessor:**
West Virginia Division of Natural Resources
Attn: Office of Land and Streams
324 Fourth Avenue, Room 200
South Charleston, West Virginia 25303

(b) **To Lessee:**
SWN Production Company, LLC
10000 Energy Drive
Spring, Texas 77389

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33. **Successors in Interest.** The Terms, conditions, covenants, obligations, considerations, or requirements of this Lease shall extend to and be binding upon the parties hereto, their heirs, successors, executors, administrators, and assigns, all of whom shall be jointly and severally liable.

34. **Severability.** Should any one or more of the provisions in this Lease become or be determined to be void or invalid, in whole or in part, the remainder of this Lease shall remain in full force and effect.

35. **Counterparts.** This Lease may be executed in any number of counterparts, and by different parties in separate counterparts, all of which shall be identical. Each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute one instrument.

WITNESS the following signatures and seals:

STATE OF WEST VIRGINIA
DEPARTMENT OF COMMERCE
DIVISION OF NATURAL RESOURCES

By: [Signature]
Director

STATE OF WEST VIRGINIA
COUNTY OF Lucker KANAWHA, To-wit:

I, Donna J Davis, a Notary Public in and for said County and State, do hereby certify that Stephen S. McDaniel, Director, who signed the writing hereto annexed, for the State of West Virginia, Department of Commerce, Division of Natural Resources, bearing date the 22nd day of November, 2019, has this day acknowledged the same before me in my said county to be the act and deed of said Division.

Given under my hand this 22nd day of November, 2019.
My commission expires Dec 09, 2023.

[Seal]

[Signature]
Notary Public



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SWN PRODUCTION COMPANY, LLC

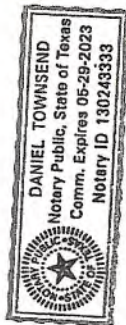
By: [Signature]
Brett Massad
Land Director
GM
p.m.b

STATE OF Texas
COUNTY OF Harris, To-Wit:

I, Daniel Townsend, a Notary Public in and for said County and State,
do hereby certify that Brett Massad, its Land Director,
who signed the writing hereto annexed, for SWN PRODUCTION COMPANY, LLC, bearing date
the 4th day of November, 2019, has this day acknowledged the same before
me in my said county to be the act and deed of said Company.

Given under my hand this 4th day of November, 2019.
My commission expires May 29, 2023.

[Seal]



Notary Public

Approved as to form this 21st day of
November, 2019.
By: [Signature]
Patrick Morrissey, Attorney General

Prepared by: Office of Land & Streams
Division of Natural Resources
324 Fourth Avenue, Room 200
South Charleston, WV 25303

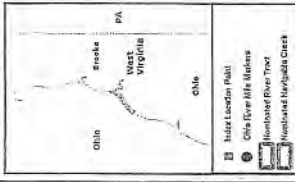
Using a form prepared by:
Larry W. George, Esq.
Special Assistant Attorney General
West Virginia Department of Commerce

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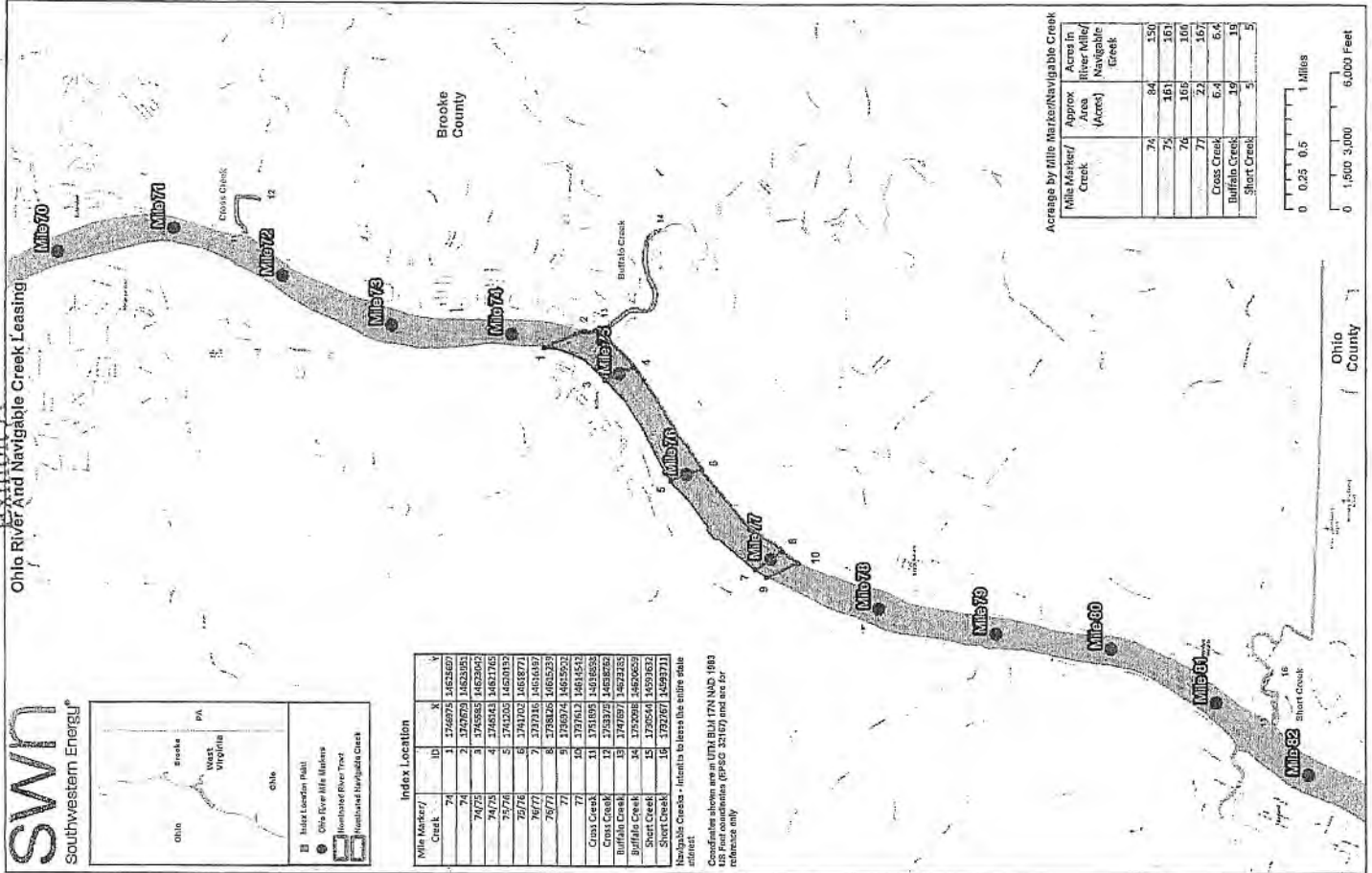
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Exhibit A
Ohio River and Navigable Creek Leasing



Mile Marker/ Creek	ID	X	Y
74	1	1746975	1462367
74	2	1747075	1462367
74	3	1747175	1462367
74	4	1746843	1461706
74	5	1745005	1460705
74	6	1744702	1461877
74	7	1743146	1461619
74	8	1738426	1461537
74	9	1736074	1461500
74	10	1737613	1461454
Cross Creek	11	1731093	1461605
Cross Creek	12	1733272	1461826
Buffalo Creek	13	1747697	1462218
Buffalo Creek	14	1752998	1462609
Short Creek	15	1759544	1469363
Short Creek	16	1792267	1499371

Index Location
 Navigable Creeks - Intertidals to less the entire state
 subject.
 Coordinates shown are in UTM BLM TPNMAD 1983
 datum. Coordinates (EPAC 32167) and act for
 reference only.



Acres by Mile Marker/Navigable Creek

Mile Marker/ Creek	Approx Area (Acres)	Acres in River Mile/ Navigable Creek
74	84	150
75	163	161
76	106	106
77	22	167
78	6.4	6.4
Buffalo Creek	19	19
Short Creek	5	5

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