



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

Earl Ray Tomblin , Governor
Randy C. Huffman , Cabinet Secretary
www.dep.wv.gov

Thursday, December 01, 2016
NOTICE OF DENIED PERMIT APPLICATION
Horizontal 6A / Horizontal 6A Well - 1

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit denial for MARK HICKMAN UP OHI 9H
47-069-00204-00-00

SWN PRODUCTION COMPANY, LLC

Please be advised that the Office of Oil and Gas has denied your Well Work Application for the above referenced well.

If there are any questions, please feel free to contact me at (304) 926- 0450.


James A. Martin
Chief

Operator's Well Number: MARK HICKMAN UP OHI 9H
Farm Name: HICKMAN
U.S. WELL NUMBER: 47-069-00204-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Denied: 12/1/2016

Promoting a healthy environment.

02/17/2017



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street, SE Charleston, WV 25304
(304)926-0499, Ext 1656

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.org

December 1, 2016

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

RE: Application for Deep Well Permit – API #47-069-00204

COMPANY: SWN Production Company, LLC

FARM: Mark Hickman UP OHI 9H

COUNTY: Ohio DISTRICT: Triadelphia QUAD: Valley Grove

The deep well review of the application for the above company is **DENIED – incomplete application**

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

1. Comments to Notice of Deviation filed?
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners;
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells, well name, and the name and address of the operator; none
4. Provided a plat showing that the proposed location is a distance of __ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Cindy Raines
Program Administrator

THRASHER

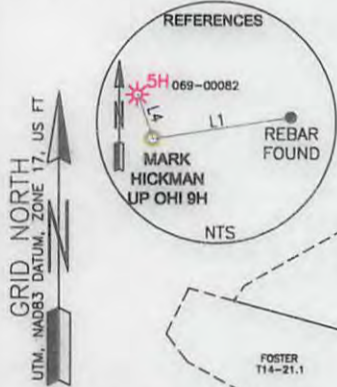
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- 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 LIMITS OF DISTURBANCE.

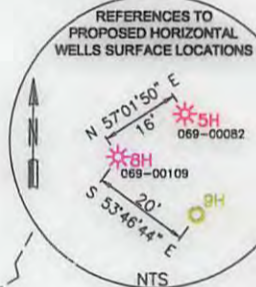
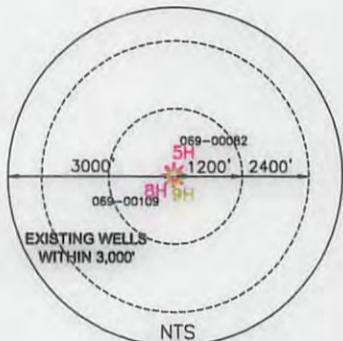
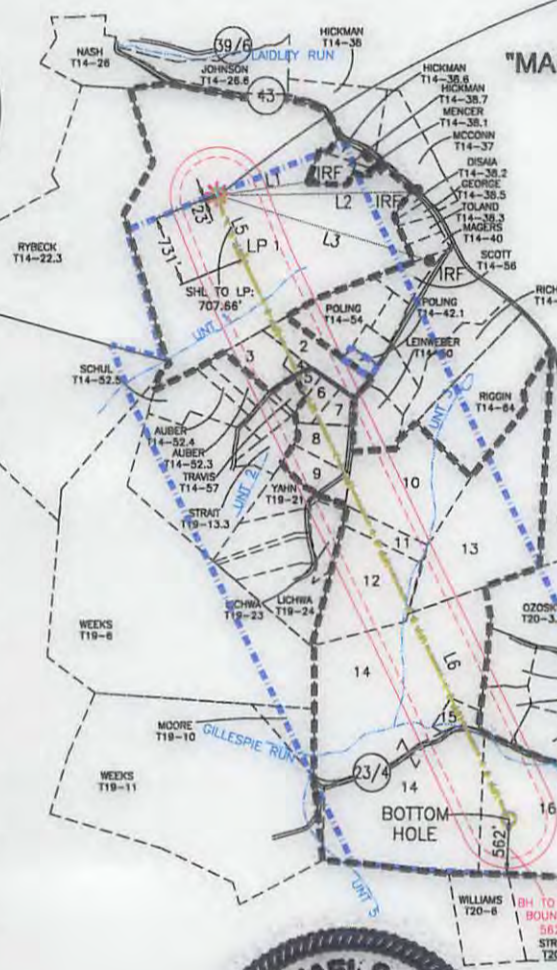
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	(S)/(R) CECIL L. LAWRENCE G., JOHN M., & CAROL S. HICKMAN	06-T14-38	143.77
2	(S)/(R) LONNIE & THEDA A. CHURCH	06-T14-41.1	6.876
3	(S)/(R) MICHAEL J. & ALICIA A. FYNMORE AKA ALICIA A. COAD	06-T14-53	4.72
4	(S) SHANE L. & DANIELLE F. PARKER / (R) DALE J. PARSONS	06-T14-53.1	1.00
5	(S) ROBERT L. SAFFLE & SARA K. WETZEL-SAFFLE / (R) RONALD J. & ROBERTA P. DILORENZO	06-T14-57.1	1.00
6	(S)/(R) DANIEL R. & REBECCA L. OLIVER	06-T14-41.3	2.368
7	(S)/(R) DAVID GLENN BEAVER & JUDY ANN BEAVER	06-T14-41.2	2.632
8	(S)/(R) PATRICK L. & CHRISTINA A. RIDDLE	06-T19-20	5.00
9	(S)/(R) DAVID L. & JENNIFER GITTINGS	05-T19-18	5.00
10	(S)/(R) MARK F. & KATHLEEN LICHWA	06-T14-65	21.087
11	(S)/(R) MARK F. & KATHLEEN LICHWA	06-T19-8.2	4.242
12	(S)/(R) MARK F. & KATHLEEN LICHWA	06-T19-8.1	19.643
13	(S)/(R) VAUGHN & KATHRYN STRICKLIN	06-T19-8	42.17
14	(S) CASEY, TAMMY, JACOB STEIN & AUDREY HELDRETH / (R) HERBERT & ALICE A. SHARP	06-T19-9	11.38
15	(S) LOREN & AUDREY HELDRETH / (R) HERBERT & ALICE A. SHARP	06-T19-9.1	2.155
16	(S) MARJORIE S. GRIFFIN / (R) DONALD E. & MARJORIE S. GRIFFIN	06-T20-3.2	34.045

LINE	DESCRIPTION	DISTANCE	DESCRIPTION	MONUMENT
L1	S 81°11'34" W	975.10'	SHL TO LANDMARK	REBAR FOUND
L2	N 88°57'52" E	2058.35'	SHL TO LANDMARK	REBAR FOUND
L3	N 73°03'09" E	2308.80'	SHL TO LANDMARK	REBAR FOUND
L4	N 19°11'34" W	24.29'	SHL TO 5H	EXISTING WELL HEAD
L5	S 21°37'54" E	707.66'	SHL TO LP	LANDING POINT
L6	S 25°41'48" E	7498.58'	LP TO BH	BOTTOM HOLE

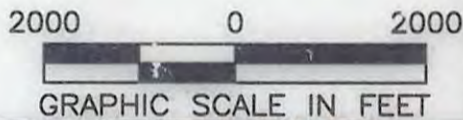


SWN PRODUCTION COMPANY, LLC
"MARK HICKMAN UP OHI 9H"
SURFACE HOLE
 ELEV: 1281.4'

SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.039658'	
LONGITUDE: -80.547505'	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 4,432,496.355	
EASTING: 1,767,065.210	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,432,256.954	
EASTING: 538,602.553	
"LANDING POINT" LOCATION (LP):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.037848'	
LONGITUDE: -80.546585'	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,540,838.54	
EASTING: 1,767,326.06	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,432,056.451	
EASTING: 538,682.060	
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.021892'	
LONGITUDE: -80.536727'	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,535,042.580	
EASTING: 1,770,115.410	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,430,289.839	
EASTING: 539,532.256	



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.



COMPANY: **SWN** Production Company, LLC

P.S. 2270 *MSW* 10/16/15

(+) 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
 PROVEN SURVEY SOURCE OF GRADE GPS
 ELEVATION: (NAVD 88, US FT)

MARK HICKMAN UP OHI
 OPERATOR'S WELL #: 9H
Returned
 API WELL #: 47 69 002.04
 STATE COUNTY PERMIT

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

WATERSHED: WHEELING CREEK ELEVATION: 1281.4'

DISTRICT: TRIADELPHIA COUNTY: OHIO QUADRANGLE: VALLEY GROVE

SURFACE OWNER: CECIL L., LAWRENCE G., JOHN M., & CAROL S. HICKMAN ACREAGE: 143.77

OIL & GAS ROYALTY OWNER: CECIL L. HICKMAN ACREAGE: 397.97

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: POINT PLEASANT ESTIMATED DEPTH: 11,881' TVD 19,588' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL
 ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300
 CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	REVISIONS:	DATE:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE		10-16-2015
⊗ EXISTING / PRODUCING WELLHEAD	----- LEASE BOUNDARY	
⊗ ABANDONED WELL	----- 500' DHP BUFFER	
⊗ PLUGGED & ABANDONED WELL	- - - - - DOWN HOLE PATH	
△ CUT CONDUCTOR	- - - - - ABANDONED PATH	
		DRAWN BY: E. LYTLE
		SCALE: 1" = 2000'
		DRAWING NO: 050-5494
		WELL LOCATION PLAT

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

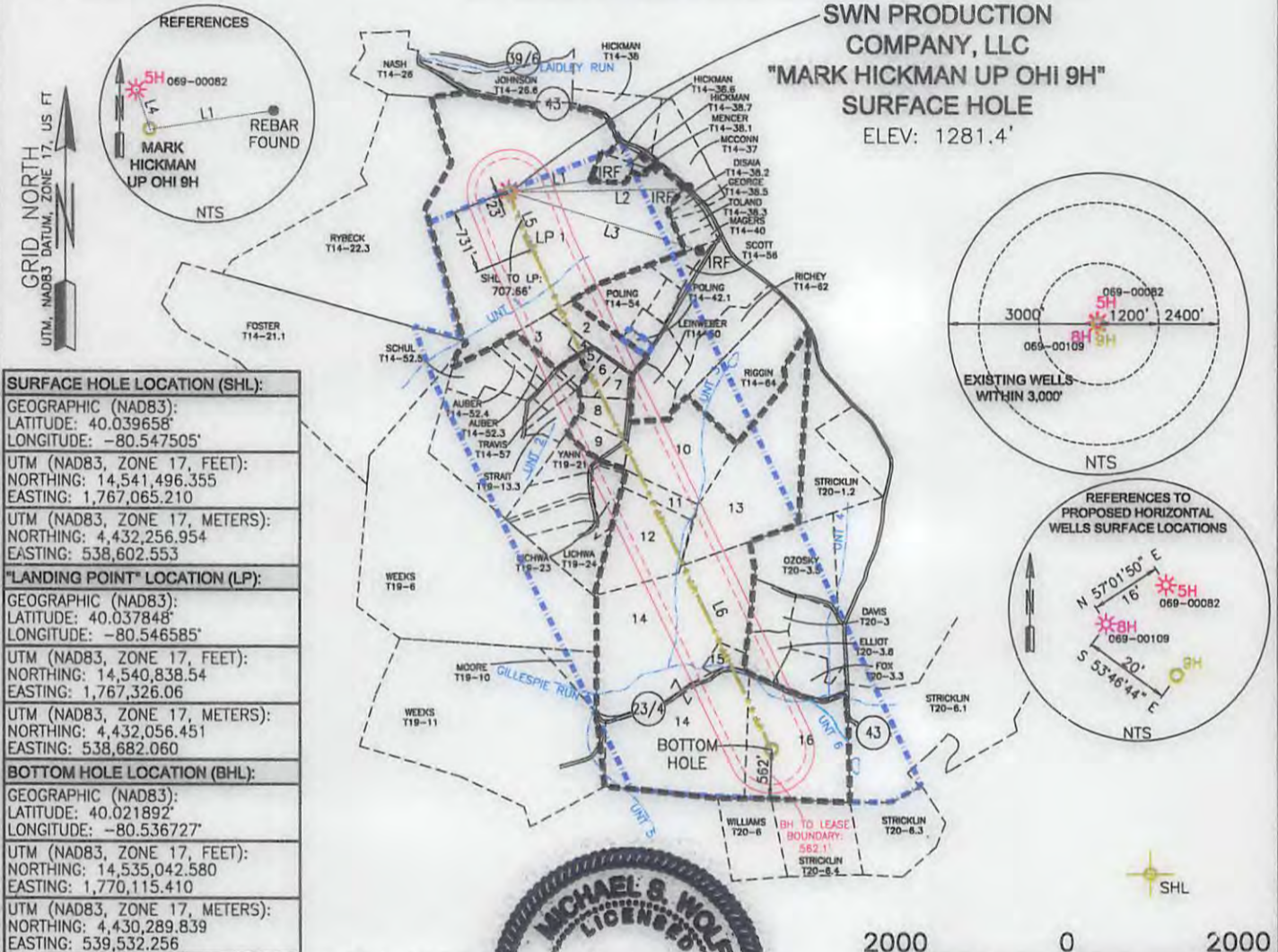
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SWN PRODUCTION COMPANY, LLC
"MARK HICKMAN UP OHI 9H"
SURFACE HOLE
ELEV: 1281.4'



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P.S. 2270

MSW 10/16/15

<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	<p>MINIMUM DEGREE OF ACCURACY: 1/200</p> <p>PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)</p>	<p>MARK HICKMAN UP OHI</p> <p>OPERATOR'S WELL #: 9H</p> <p>API WELL #: 47 69 00204</p> <p>STATE COUNTY PERMIT</p>
	<p>WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input type="checkbox"/></p> <p>WATERSHED: WHEELING CREEK</p> <p>DISTRICT: TRIADELPHIA COUNTY: OHIO</p> <p>SURFACE OWNER: CECIL L., LAWRENCE G., JOHN M., & CAROL S. HICKMAN</p> <p>OIL & GAS ROYALTY OWNER: CECIL L. HICKMAN</p> <p>DRILL <input checked="" type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/></p> <p>CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE (SPECIFY)</p> <p>TARGET FORMATION: POINT PLEASANT</p>	<p>ELEVATION: 1281.4'</p> <p>QUADRANGLE: VALLEY GROVE</p> <p>ACREAGE: 143.77</p> <p>ACREAGE: 397.97</p> <p>ESTIMATED DEPTH: 11,881' TVD 19,588' TMD</p>

<p>WELL OPERATOR: SWN PRODUCTION COMPANY, LLC</p> <p>ADDRESS: P.O. BOX 1300</p> <p>CITY: JANE LEW STATE: WV ZIP CODE: 26378</p>	<p>DESIGNATED AGENT: DEE SOUTHALL</p> <p>ADDRESS: P.O. BOX 1300</p> <p>CITY: JANE LEW STATE: WV ZIP CODE: 26378</p>
---------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

<p>LEGEND:</p> <ul style="list-style-type: none"> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ⊙ EXISTING / PRODUCING WELLHEAD ⊗ ABANDONED WELL ⊗ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR ----- LEASE BOUNDARY ----- 500' DHP BUFFER -UPP 9 >- DOWN HOLE PATH ----- ABANDONED PATH 	<p>REVISIONS:</p>	<p>DATE: 10-16-2015</p> <p>DRAWN BY: E. LYTLE</p> <p>SCALE: 1" = 2000'</p> <p>DRAWING NO: 050-5494</p> <p>WELL LOCATION PLAT</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------	----------------------------------------------------------------------------------------------------------------------------------

Longitude: 80°32'30"

EXHIBIT "A"

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by Southwestern Production Company, L.L.C., Operator
Mark Hickman OH# 9H
Ohio County, West Virginia

#	TMP	SURFACE OWNER	DEEDED ACREAGE	LEASE #	LESSOR	STATUS	ADDRESS
1	06-T14-48	Harry Alexander Phillips III and Brenda Sue Phillips	5.3100	OPEN	Harry Alexander Phillips III and Brenda Sue Phillips	OPEN	167 Mustang Lane, Triadelphia, WV 26059
2	06-T19-21	David Edward Yahn	5.0500	OPEN	David Edward Yahn	OPEN	1600 Brooks Run, Oviedo, FL 32765
3	12-S-9	Erin Myers	72.1110	OPEN	Erin Myers	OPEN	4902 Stone Church Road, Dallas WV 26036
4	06-T14-38.1	Glen Alan Mencer	1.0000	OPEN	Glen Alan Mencer	OPEN	37 Grandmas Lane, Triadelphia, WV 26059
5	06-T14-22.3	Blanche Rybeck	82.6398	OPEN	Blanche Rybeck	OPEN	347 Arts Way, Triadelphia, WV 26059 (Johnson) 467 Wildlife Road, Valley Grove, WV 26060
6	06-T14-26.6	Curtis W. Johnson and Lois A. Johnson	141.139	Leased	Curtis W. Johnson and Lois A. Johnson	Marcellus-CHK 817/690 Utica- Fossil Creek 876/408	(Fossil Creek) 1400 Brown Trail, Suite B, Bedford, Texas 76022

Raines, Cindy J

From: Raines, Cindy J
Sent: Thursday, July 21, 2016 10:10 AM
To: 'Brittany Woody'
Subject: RE: Offset Operators- Mark Hickman 9H

The tracts within the 1500' radius must be labeled to correspond to the offset operator (AND UNleased mineral owner) listing you provided.

From: Brittany Woody [mailto:Brittany_Woody@SWN.COM]
Sent: Thursday, July 21, 2016 9:41 AM
To: Raines, Cindy J <Cindy.J.Raines@wv.gov>
Subject: RE: Offset Operators- Mark Hickman 9H

SWN

Attached us the 1500' radius map of offset/unleased operators. We are still waiting on the mylar.

Thanks!

Brittany Woody
Regulatory Analyst



$$\frac{R^2}{A} \rightarrow V^+$$

179 Innovation Drive
Jane Lew, WV 26378
Office: 304-884-1613
Mobile: 304-997-2598
Brittany_Woody@swn.com
www.swn.com

From: Raines, Cindy J [mailto:Cindy.J.Raines@wv.gov]
Sent: Wednesday, July 20, 2016 2:45 PM
To: Brittany Woody <Brittany_Woody@SWN.COM>
Subject: RE: Offset Operators- Mark Hickman 9H

I have not received the 1500' radius map for the offset/unleased operators

From: Brittany Woody [mailto:Brittany_Woody@SWN.COM]
Sent: Thursday, July 14, 2016 1:51 PM
To: Raines, Cindy J <Cindy.J.Raines@wv.gov>
Cc: Dee Southall <Dee_Southall@SWN.COM>
Subject: Offset Operators- Mark Hickman 9H

Attached please find the list of offset operators. Let me know if there is anything else you need.

Thanks!

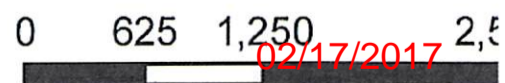
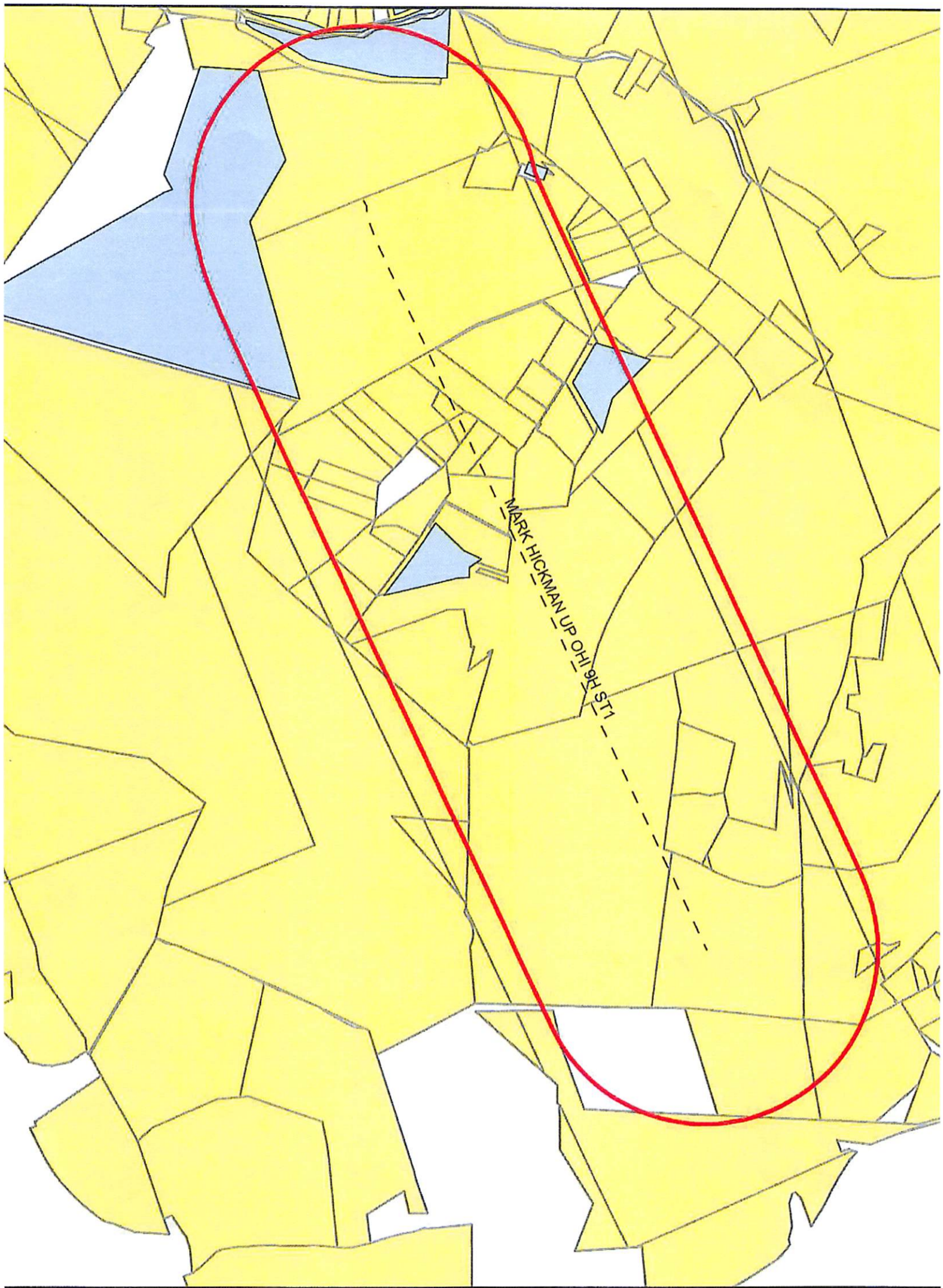
Brittany Woody
Regulatory Analyst



179 Innovation Drive
Jane Lew, WV 26378
Office: 304-884-1613
Mobile: 304-997-2598
Brittany_Woody@swn.com
www.swn.com

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Mark Hickman UP OHI 9H
 Triadelphia District
 Ohio Co., WV

- MARK_HICKMAN_UP_OHI_9H_La
- 1500ft Buffer
- swn Active Leasehold
- Offset Operators

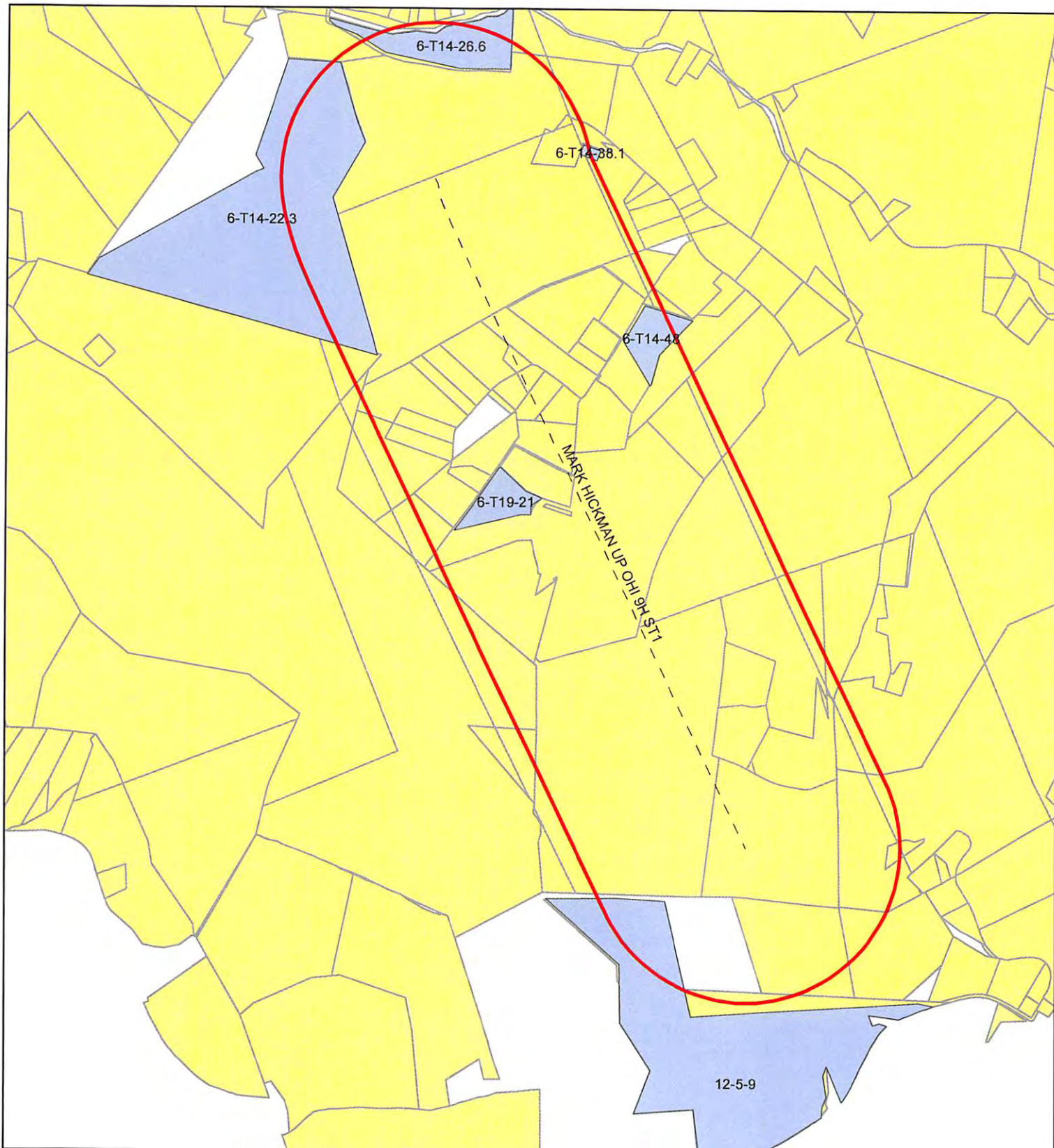
1 inch = 1,250 feet

Date Saved: 7/21/2016

EXHIBIT "A"

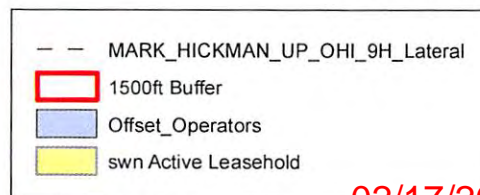
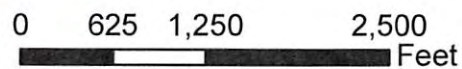
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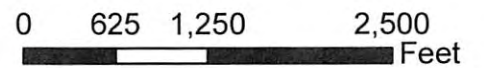
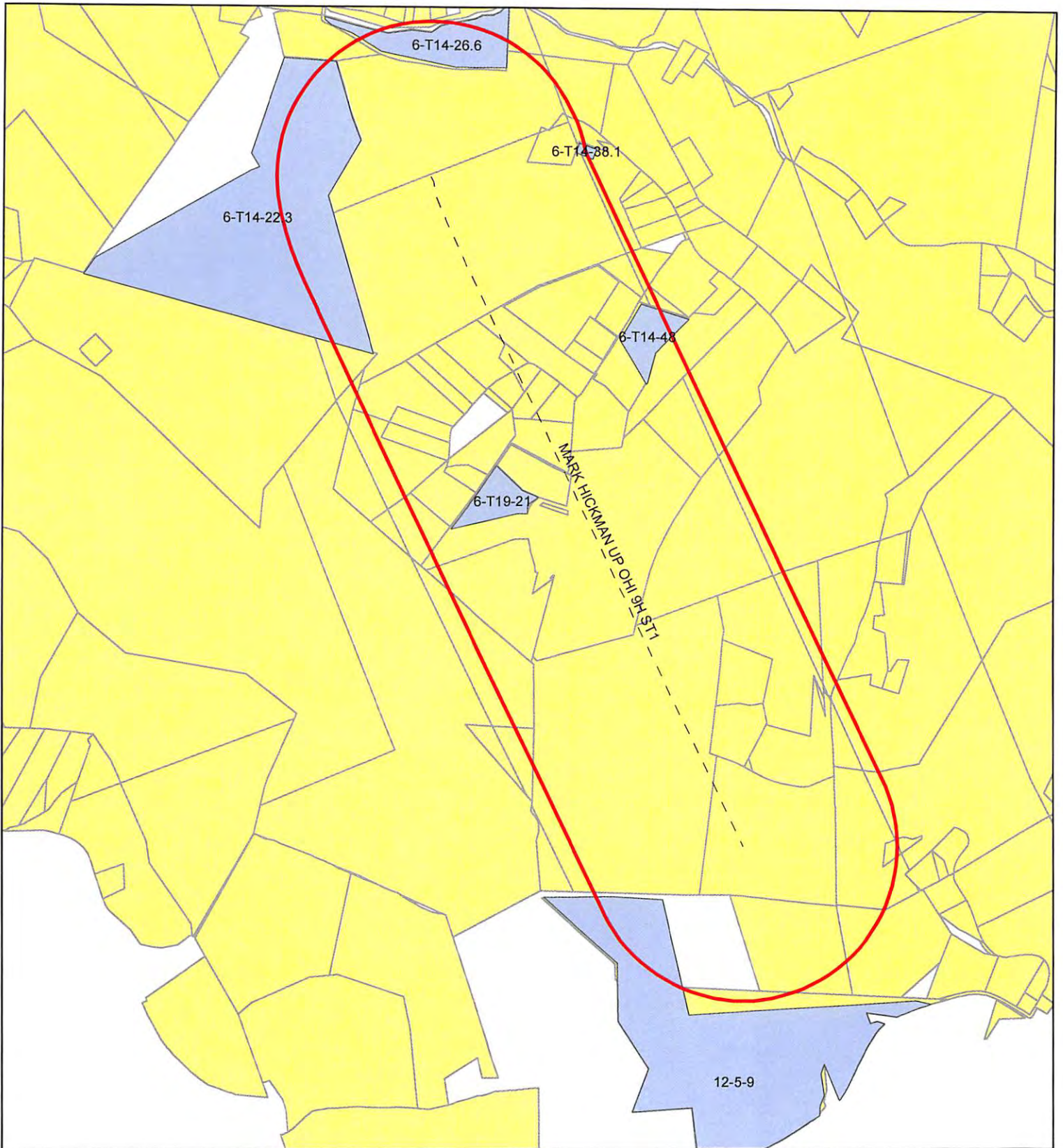
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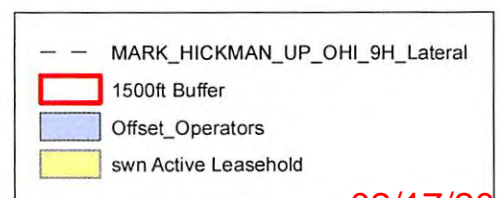
02/17/2017

Date Saved: 7/21/2016 3:08:39 PM



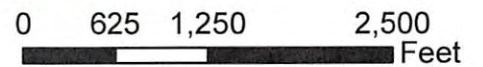
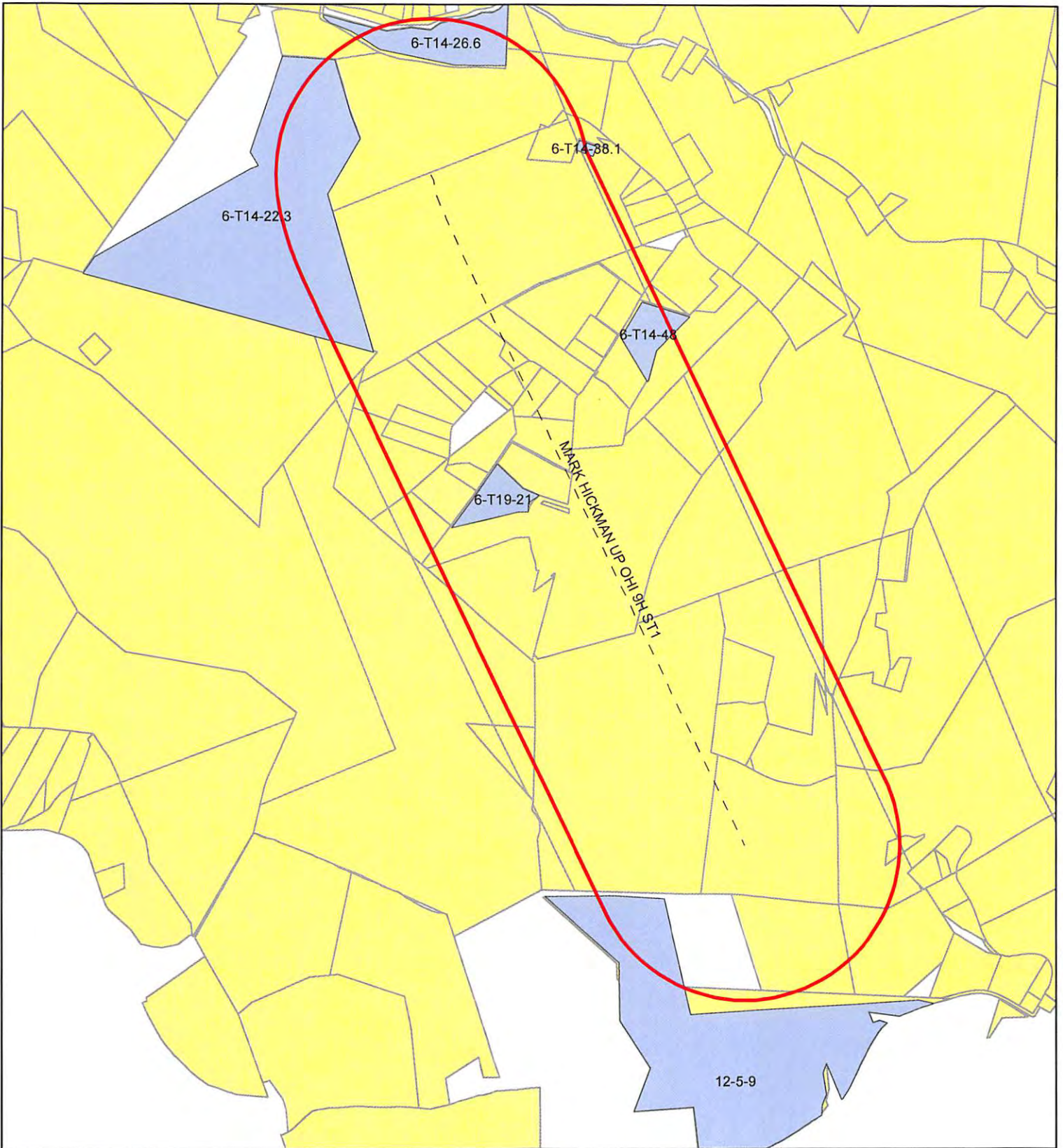
Mark Hickman UP OHI 9H
Triadelphia District
Ohio Co., WV

1 inch = 1,250 feet



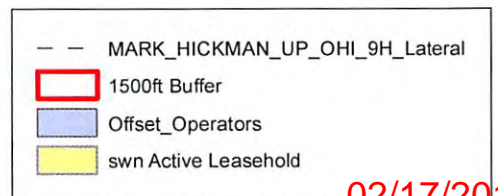
02/17/2017

Date Saved: 7/21/2016 3:08:39 PM



Mark Hickman UP OHI 9H
Triadelphia District
Ohio Co., WV

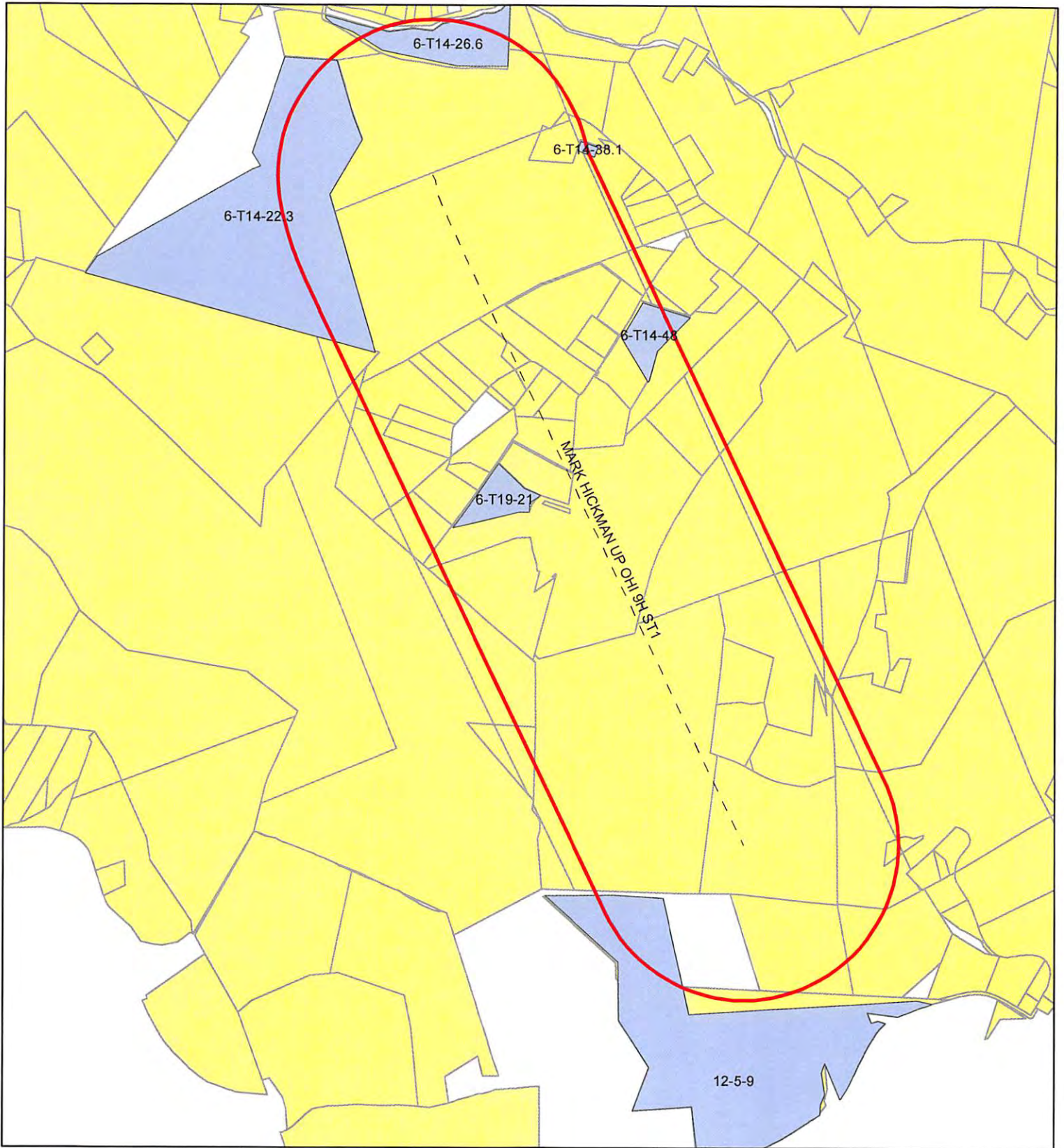
1 inch = 1,250 feet



02/17/2017

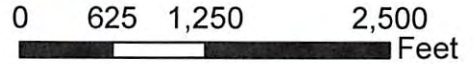
Date Saved: 7/21/2016 3:08:39 PM





Mark Hickman UP OHI 9H
Triadelphia District
Ohio Co., WV

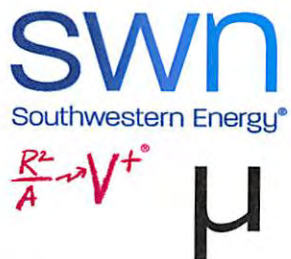
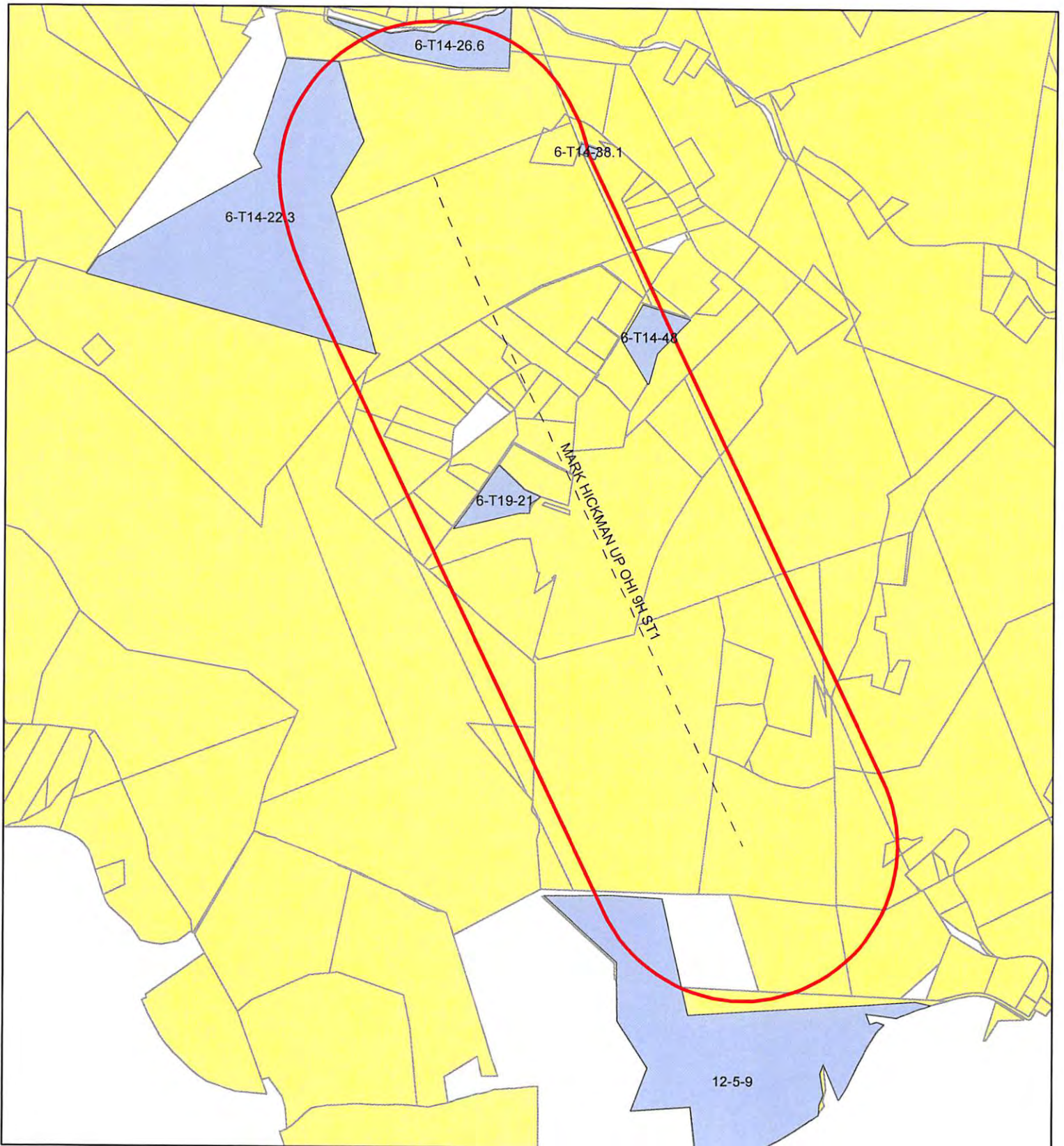
1 inch = 1,250 feet



	MARK_HICKMAN_UP_OHI_9H_Lateral
	1500ft Buffer
	Offset_Operators
	swn Active Leasehold

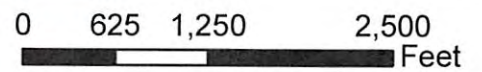
02/17/2017

Date Saved: 7/21/2016 3:08:39 PM



Mark Hickman UP OHI 9H
 Triadelphia District
 Ohio Co., WV

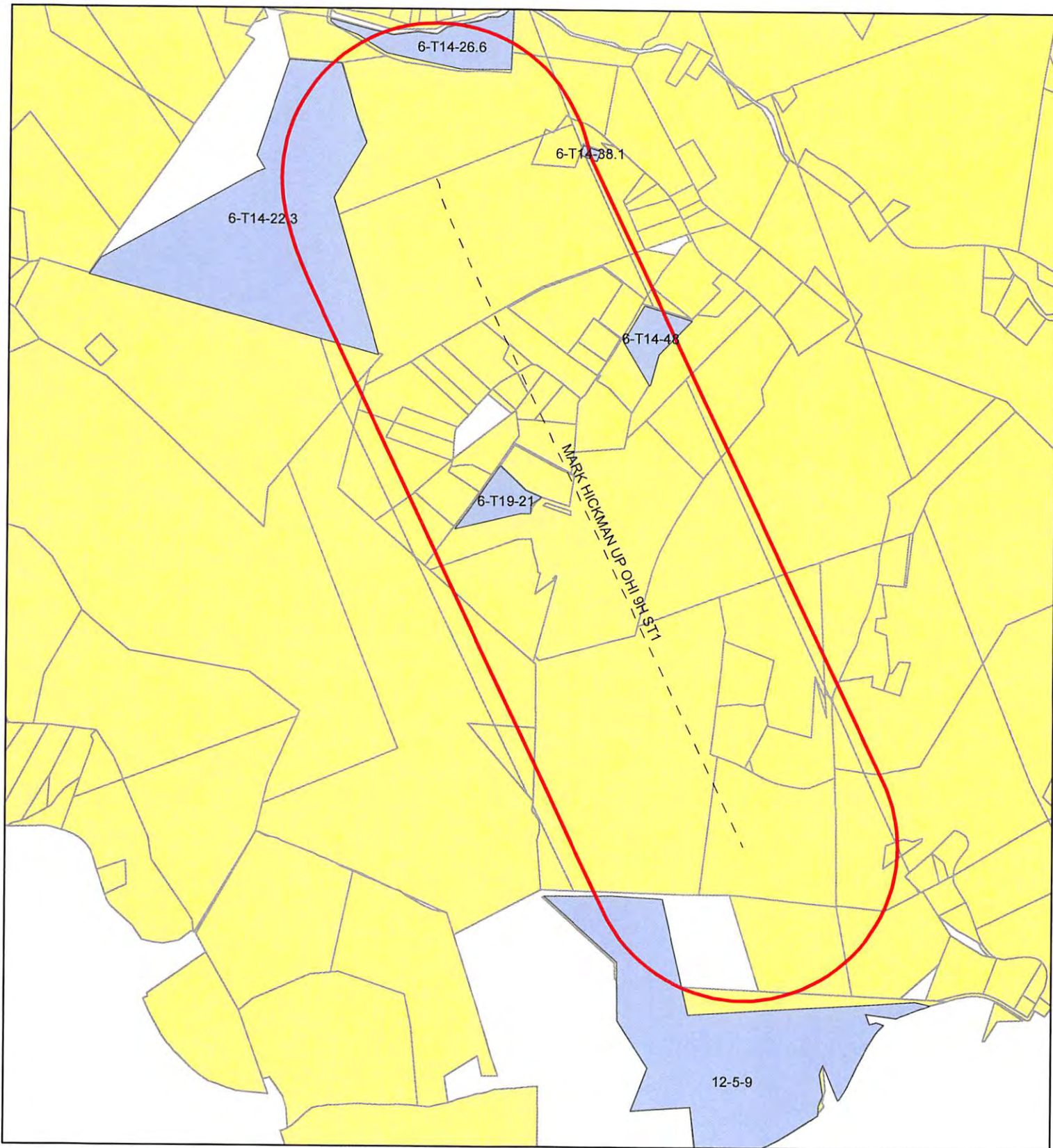
1 inch = 1,250 feet



- - MARK_HICKMAN_UP_OHI_9H_Lateral
- 1500ft Buffer
- Offset_Operators
- swN Active Leasehold

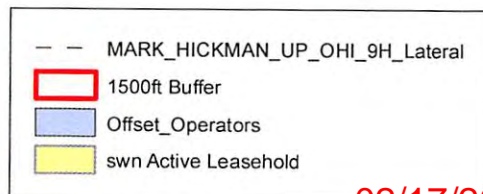
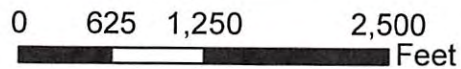
02/17/2017

Date Saved: 7/21/2016 3:08:39 PM



Mark Hickman UP OHI 9H
Triadelphia District
Ohio Co., WV

1 inch = 1,250 feet



02/17/2017

Date Saved: 7/21/2016 3:08:39 PM

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 Ohio Tridelp Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: Mark Hickman UP OHI 9H Well Pad Name: Mark Hickman OHI Pad

3) Farm Name/Surface Owner: Mark Hickman Public Road Access: Dallas Pike

4) Elevation, current ground: 1281' Elevation, proposed post-construction: 1281'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No yes *E. B. 10-14-15*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation-Point Pleasant, Target Top TVD- 11,875', Target Base TVD- 11,712', Anticipated Thickness- 126', Associated Pressure- 7017#

8) Proposed Total Vertical Depth: 14,888' 11695' 9/ 10-14-15

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 18,452'

11) Proposed Horizontal Leg Length: 7499'

12) Approximate Fresh Water Strata Depths: 446'

13) Method to Determine Fresh Water Depths: from deepest nearby water wells

14) Approximate Saltwater Depths: 897'

15) Approximate Coal Seam Depths: 719'

16) Approximate Depth to Possible Void (coal mine, karst, other): possible void 580'

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: _____

RECEIVED
Office of Oil and Gas
JUL 14 2016
WV Department of
Environmental Protection

*Revised
7/14/2016*

CERTIFICATE OF CONSENT AND EASEMENT

We, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Triadelphia District, Ohio County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b) (4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to Southwestern Energy, LLC. ("SWN"), its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 31 day of May, 2016.

[Signature]
Cecil Lee Hickman

STATE OF OHIO

COUNTY OF Franklin To-Wit

I, Dee Rowland, a Notary Public in and for the aforesaid County and State, do hereby certify that Cecil Lee Hickman, whose name is signed to the writing above, bearing date on the 31 day of May, 2016, has this day acknowledged the same before me, in my said County and State.

Given under my hand this 31 day of May, 2016.

[Signature]

My Commission expires on:

This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304



DEE ROWLAND
Notary Public, State of Ohio
My Commission Expires
April 24, 2020

RECEIVED
Office of Oil and Gas
JUL 14 2016
WV Department of
Environmental Protection

02/17/2017

CERTIFICATE OF CONSENT AND EASEMENT

We, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Triadelphia District, Ohio County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b) (4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to Southwestern Energy 'SWN', its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 16 day of April, 2016.

Carol Sue Criswell
CAROL SUE CRISWELL

STATE OF WEST VIRGINIA

COUNTY OF Ohio To-Wit

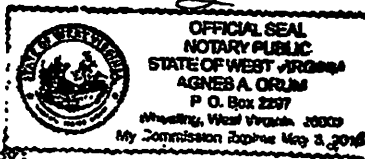
I, Agnes A. Orum, a Notary Public in and for the aforesaid County and State, do hereby certify that Carol Sue Criswell, whose name is signed to the writing above, bearing date on the 16 day of April, 2016, has this day acknowledged the same before me, in my said County and State.

Given under my hand this 16th day of April, 2016.

Agnes A. Orum

My Commission expires on:

5/3/2016



This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304

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Office of Oil and Gas

JUL 14 2016

WV Department of
Environmental Protection

02/17/2017

CERTIFICATE OF CONSENT AND EASEMENT

We, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Triadelphia District, Ohio County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b) (4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to Southwestern Energy 'SWN', its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 16 day of APRIL, 2016.

Lawrence Grant Hickman
LAWRENCE GRANT HICKMAN

STATE OF WEST VIRGINIA

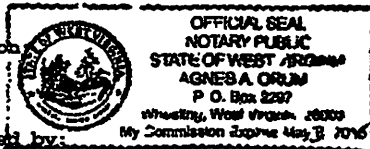
COUNTY OF Ohio To-Wit

I, Agnes A. Orum, a Notary Public in and for the aforesaid County and State, do hereby certify that Lawrence Grant Hickman, whose name is signed to the writing above, bearing date on the 16th day of April, 2016, has this day acknowledged the same before me, in my said County and State.

Given under my hand this 16th day of April, 2016.

Agnes A. Orum

My Commission expires on 5/3/2016



This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304

RECEIVED
Office of Oil and Gas

JUL 14 2016

WV Department of
Environmental Protection

02/17/2017

CERTIFICATE OF CONSENT AND EASEMENT

We, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Triadelphia District, Ohio County, State of West Virginia, shown on the attached plat or survey, or hereby consent and grant an easement, pursuant to West Virginia Code, Section 22C-9-7(b) (4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to Southwestern Energy 'SWN', its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 16 day of APRIL, 2016.


JOHN MARK HICKMAN

STATE OF WEST VIRGINIA

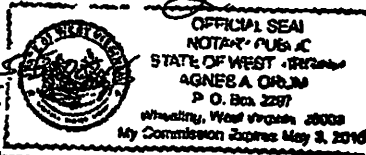
COUNTY OF Ohio To-Wit

I, Agnes A. Oram, a Notary Public in and for the aforesaid County and State, do hereby certify that Patsy John Mark Hickman, whose name is signed to the writing above, bearing date on the 16 day of April, 2016, has this day acknowledged the same before me, in my said County and State.

Given under my hand this 16th day of April, 2016.



My Commission expires on: 5-3-2016



This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304

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Office of Oil and Gas

JUL 14 2016

WV Department of
Environmental Protection

Raines, Cindy J

6B - 7/14
1/14 → need 7/14
Consent + E

From: Raines, Cindy J
Sent: Thursday, January 14, 2016 11:05 AM
To: 'Brittany Woody'
Subject: FW: Mark Hickman 9H
Attachments: EXAMPLE - Offset Operator Deviation Notice.pdf

I just sent this to Dee, but you can probably handle it so I am forwarding it to you. Also, the same changes on the 6B needs to be done for the Mark Hickman as was done for the Worthley & Stroupe.

Thanks,
Cindy

From: Raines, Cindy J
Sent: Thursday, January 14, 2016 10:52 AM
To: Dee Southall (Dee_Southall@SWN.COM) <Dee_Southall@SWN.COM>
Subject: Mark Hickman 9H

Still haven't received revised plat nor have I received the 1500' radius map and listing. Please remember that on the 1500' radius map each tract needs to be labeled and the mineral owner or lessee name and address need to be included on the listing.

This is an older one but should help.....the plat doesn't not show the BH tick mark which we now require.

Thanks,
Cindy

Plat -

- ① unit boundary not on legend.
- ② Det marked as 'deep'
- ③ TH is w/ 400 of unit boundary
- ④ BH tick mark omitted ✓

12/9 - 6B ~~needs~~ needs work

Plat
Offset w/ map
C+E
BH Ticks
force pool?

Raines, Cindy J

From: Raines, Cindy J
Sent: Tuesday, January 19, 2016 8:42 AM
To: 'Dee Southall'
Subject: RE: Mark Hickman 9H

Dee,
I am unable to send notices of deviation without the 1500' radius map. I rec'd the list of offset operators/unleased mineral owners but still need the map and revised plat.

Cindy
From: Dee Southall [mailto:Dee_Southall@SWN.COM]
Sent: Friday, January 15, 2016 7:20 AM
To: Raines, Cindy J <Cindy.J.Raines@wv.gov>
Subject: RE: Mark Hickman 9H

many face pool

Here you go! I will request the plat☺
From: Raines, Cindy J [mailto:Cindy.J.Raines@wv.gov]
Sent: Friday, January 15, 2016 7:10 AM
To: Dee Southall <Dee_Southall@SWN.COM>
Subject: RE: Mark Hickman 9H

There was no attachment. The application must be complete before I schedule for hearing (revised plat).

From: Dee Southall [mailto:Dee_Southall@SWN.COM]
Sent: Thursday, January 14, 2016 2:47 PM
To: Raines, Cindy J <Cindy.J.Raines@wv.gov>
Cc: Brittany Woody <Brittany_Woody@SWN.COM>
Subject: RE: Mark Hickman 9H

offset

Attached please find the list of offset operators. As far as the plat, we would like to wait until after the hearing to update.

From: Raines, Cindy J [mailto:Cindy.J.Raines@wv.gov]
Sent: Thursday, January 14, 2016 10:52 AM
To: Dee Southall <Dee_Southall@SWN.COM>
Subject: Mark Hickman 9H

Still haven't received revised plat nor have I received the 1500' radius map and listing. Please remember that on the 1500' radius map each tract needs to be labeled and the mineral owner or lessee name and address need to be included on the listing.

This is an older one but should help.....the plat doesn't not show the BH tick mark which we now require.

Thanks,

Cindy

Notice: This e-mail may contain privileged and/or confidential information and is intended only for the addressee. If you are not the addressee or the person responsible for delivering it to the addressee, you may not copy or distribute this communication to anyone else. If you received this communication in error, please notify us immediately by telephone or return e-mail and promptly delete the original message from your system.

Notice: This e-mail may contain privileged and/or confidential information and is intended only for the addressee. If you are not the addressee or the person responsible for delivering it to the addressee, you may not copy or distribute this communication to anyone else. If you received this communication in error, please notify us immediately by telephone or return e-mail and promptly delete the original message from your system.

SWN

Southwestern Energy®

PO Box 1300
Jane Lew, WV 26378
PHONE: (832) 796-1610

12/9

NOD

Plat

~~6B~~

offset operators

L map

C+E

October 21, 2015

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

RE: Proposed New Mark Hickman U OHI 9H

Dear Ms. Adkins

Enclosed please find the Well Work Permit Application for the above captioned well. This well is situated on the Hickman's property, in Triadelphia District, Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1614

Thank you.

Sincerely,

Dee Southall
Regulatory Supervisor
Southwestern Energy Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

RECEIVED
Office of Oil and Gas

OCT 23 2015

WV Department of
Environmental Protection

$\frac{R^2}{A} \rightarrow V^+$

The Right People doing the Right Things,
wisely Investing the cash flow from
our underlying Assets, will create Value+

02/17/2017

- WW-6AC Notice Certifications, notarized
- WW-6A Notice of Application notarized w/ any attachments
- Topographic Map with labeled surrounding water wells
- Certified Mail receipts for WW-6A
- WW-6A3 Notice of Entry for Plat Survey
- Certified Mail receipts for WW-6A3
- WW-6A4 Notice of Intent to Drill
- Certified Mail receipts for WW-6A4
- WW-6A5 Notice of Planned Operation
- Certified Mail receipts for WW-6A5
- WW-6RW Well Location Restriction Waiver
- WW-6AW Voluntary Statement of No Objection
 - Waiver for Surface Owner at Wellhead
 - Waiver for Surface Owner for Roads or other Disturbances
 - Waiver for Coal Owner, Operator or Lessee
 - Waiver for surface owner for Impoundment or Pit
 - Waiver for Surface Owner or Water Purveyor within 1500 feet of Center of Pad
 - Waiver for Natural gas Storage Field Operator
- Road Bonding Agreement / DOH Certification
- Frac Additives List of Chemical Names & CAS #s
- Site Construction, Reclamation, Erosion & Sediment Control Plans
- Copy of To Scale Plans
- Inspector packet mailed to inspector (Plat, Topographic Map, WW-6B, WW-9, All Plans)
- Bond (\$250,000)
- Operator is registered with the SOS

RECEIVED
 Field Approval
Office of Oil and Gas
 OCT 28 2015
Department of
Environmental Protection

Workers Compensation / Unemployment Insurance account is OK

Professional Engineer/Company has COA

Check for Mine Data at proposed coordinates

Check for Floodplain Data at proposed coordinates

IMP-1A Associated Pit or Impoundment

WW-6A7 Well Restrictions Form w/ Signature

_____ At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland

_____ DEP Waiver and Permit Conditions

_____ At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream

_____ DEP Waiver and Permit Conditions

_____ At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply

_____ DEP Waiver and Permit Conditions

_____ At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

_____ At Least 625 Feet from an Occupied Dwelling Structure to the Center of the Pad

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

_____ At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad

_____ Surface Owner Waiver and Recorded with County Clerk, OR

_____ DEP Variance and Permit Conditions

RECEIVED
Office of Oil and Gas
OCT 23 2015

DEPARTMENT OF
Environmental Protection

Horizontal 6A Well Permit App. Checklist:

Received Date: 10/23/2015 API: 6900204
 Operator: SWN PRODUCTION COMPANY, LLC WELL: MARK HICKMAN UP OHI 9H
 Pad Name: MARK HICKMAN OHI PAE End Comment Period: 11/23/15
 Pad Built: Yes No Date Reviewed: _____ INT. _____

CHECKLIST FOR FILING A PERMIT
Horizontal 6A Well

Please include these required elements in the Horizontal Well 6A applications, in order listed below. Do not use staples.

First Well	Subsequent Well
10,150.00 <input type="checkbox"/>	5,150.00 <input checked="" type="checkbox"/>

Check#: 999422

- Fees Paid
- Checklist / Cover letter
- WW-6B Notice of Application Field Approved
- Cement Additives
- Well Bore Schematic (not required)
- WW-9 Fluids/Cuttings Disposal and Reclamation Plan Field Approved
- Site Safety Plan Field Approved
- Water Management Plan DWWM Approval
- Topographic map showing access road
- Mylar Plat (Signed and sealed) (Surface Owner matches WW-6A) Plat Spotted
- WW-6A1 Lease Information
- Road Crossing Letter (if drilling under road)
- WW-PN Application Notice by Publication
- Public Notice (dated copy of advertisement or affidavit of publication)
- WW-6AC Notice Certifications and Waivers
- WW-6A Notice of Application notarized w/ any attachments
- Topographic Map with labeled surrounding water wells (not required)
- Certified Mail receipts for WW-6A
- WW-6A3 Notice of Entry for Plat Survey (if one was conducted)

02/17/2017

- Certified Mail receipts for WW-6A3
- WW-6A4 Notice of Intent to Drill (if no WW-6A3)
- Certified Mail receipts for WW-6A4
- WW-6A5 Notice of Planned Operation
- Certified Mail receipts for WW-6A5
- WW-6RW Well Location Restriction Waiver (if applicable)
- WW-6RW Voluntary Statement of No Objection (if applicable)
 - Waiver for Surface Owner at Wellhead
 - Waiver for Surface Owner for Roads or other Disturbances
 - Waiver for Coal Owner, Operator or Lessee
 - Waiver for surface owner for Impoundment or Pit
 - Waiver for Surface Owner or Water Purveyor within 1500 feet of Center of Pad
 - Waiver for Natural gas Storage Field Operator
- DOH Road Bonding Letter
- Frac Additives List of Chemical Names & CAS#s
- Site Construction, Reclamation, Erosion & Sediment Control Plans DEP Engineer Approved
- MSDS Sheets

Reviewer outside checks:

- Comments - Public, Surface Owner, Water Well Purveyor
- Bond (\$250,000)
- Operator is registered with the SOS
- Workers Compensation / Unemployment Insurance account is OK
- Professional Engineer/Company has COA
- Check for mine data at proposed coordinates
- Check for floodplain data at proposed coordinates

- IMP-1A Associated Pit or Impoundment (if applicable)
- WW-6A7 Well Restrictions Form w/ Signature
 - At Least 100 Feet from Pad and LOD (including any ES Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland
 - DEP Waiver and Permit Conditions
 - At Least 300 Feet from Pad and LOD (including any ES Control Feature) to any Naturally Producing Trout Stream
 - DEP Waiver and Permit Conditions
 - At Least 1000 Feet from Pad and LOD (including any ES Control Feature) to any Groundwater Intake or Public Water Supply
 - DEP Waiver and Permit Conditions
 - At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
 - At Least 625 Feet from an Occupied Dwelling Structure to the Center of the Pad
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
 - At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions

OPERATOR: SWN Production Co., LLC

PAD NAME: Mark Hickman OHI Pad WELL: Mark Hickman UP OHI 9H

PAD BUILT: YES NO DATE REVIEWED: _____ INT. _____

REVIEWED BY (APPLICANT): _____

CONTACT PHONE: _____ EMAIL: _____

APPLICANT SIGNATURE: 

Handwritten notes:
CK
999422
515000

CHECKLIST FOR FILING A PERMIT HORIZONTAL 6A WELL

Please include these required elements in the Horizontal Well 6A applications, in order listed below.
Do not use staples.

First Well	Subsequent Well
\$10,150.00 <input type="checkbox"/>	\$5,150.00 <input checked="" type="checkbox"/>

- Fees
- Checklist / Cover letter
- WW-6B Notice of Application _____ Field Approved
- Cement Additives
- Well Bore Schematic
- WW-9 Fluids/Cuttings Disposal and Reclamation Plan
- Site Safety Plan
- Water Management Plan
- Topographic Map w/water purveyors, showing access road
- Mylar Plat (Signed and sealed) (Surface Owner matches WW-6A)
- WW-6AI Lease Information
- Road Crossing Letter
- WW-PN Application Notice by Publication
- Public Notice (dated copy of advertisement or affidavit of publication)

EB 10-17-15
Field Approved

Field Approved

RECEIVED
Office of Oil and Gas

OCT 23 2015

WV Department of
Environmental Protection

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 Ohio Tridelp Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: Mark Hickman UP OHI 9H Well Pad Name: Mark Hickman OHI Pad

3) Farm Name/Surface Owner: Mark Hickman Public Road Access: Dallas Pike

4) Elevation, current ground: 1281' Elevation, proposed post-construction: 1281'

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

Other _____

(b) If Gas Shallow _____ Deep

Horizontal

E. B. 10-14-15

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation-Point Pleasant, Target Top TVD- 11,675', Target Base TVD- 11,712', Anticipated Thickness- 126', Associated Pressure- 7017#

8) Proposed Total Vertical Depth: 11,888' *11695' 98 10-14-15*

9) Formation at Total Vertical Depth: Point Pleasant

10) Proposed Total Measured Depth: 18,452'

11) Proposed Horizontal Leg Length: 7499'

12) Approximate Fresh Water Strata Depths: 446'

13) Method to Determine Fresh Water Depths: from deepest nearby water wells

14) Approximate Saltwater Depths: 897'

15) Approximate Coal Seam Depths: 719'

16) Approximate Depth to Possible Void (coal mine, karst, other): possible void 580'

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: _____

RECEIVED
Office of Oil and Gas

OCT 23 2015

WV Department of
Environmental Protection

Southwestern Energy Company

Proposed Drilling Program

Well: MARK HICKMAN UP OHI 9
 Field: PANHANDLE FIELD
 County: OHIO
 SHL: 40.039658 Latitude -80.547505 Longitude
 BHL: 40.021892 Latitude -80.536727 Longitude
 KB Elev: 1,307 ft MSL KB: 26 ft AGL GL Elev: 1,281 ft MSL

Re-entry Rig: TBD
 Prospect: PANHANDLE
 State: WV



E. J. Bell 10/14/15

Tubular Detail						
	Size (in)	Weight	Grade	Cxn	From	To
Conductor	30	94.0 #			0'	126'
Surface	20	94.0 #	J-55	BTC	0'	775'
1st Intermediate	13.375	54.5 #	J-55	BTC	0'	2,163'
2nd Intermediate	9.625	53.5 #	P-110	CDC	0'	9,682'
Production	5.5	23.0 #	HCP-110	HT CDC	0'	18,452'

Cement Detail			
	Sacks	Class	Density
Conductor	323	A	19.3
Surface	1554	A	15.6
1st Intermediate	1908	A	15.6
2nd Intermediate	2113	A	15.4
Production Lead	432	A	16.4
Production Tail	1717	A	16.4

0' to 775' Air / Mist
 775' to 2,163' Air / Mist
 2,163' to 11,204' Air / Mist
 Air TD at 11,204'
 11,204' to 12,015' 14.0 - 17.0 ppg
 12,015' to 18,452' 14.0 - 17.0 ppg

TOC Lead at 9682' MD

KOP at 11,204' MD

TOC Tail at 11500' MD

EOB at 11,695' TVD

Water Depth - 446' TVD
 Coal Void - 719' TVD
 TVD - 11,695'
 TMD - 18,452'

11,695' Target Center

TD at 18,452' MD


11,769' Trenton Limestone
 11,888' Pilot Hole TD

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	New	J-55	234#	126'	126'	CTS
Fresh Water	20"	New	J-55	94#	775'	775'	1554 sx/CTS
Coal	13 3/8"	New	L-80	68#	2163'	2163'	1908 sx/CTS
Intermediate	9 5/8"	New	P110	53.5#	9682'	9682'	2113 sx/CTS
Production	5 1/2"	New	HCP-110	23#	Approx. 18,452'	Approx. 18,452'	Lead 432 sx tail 1717 sx/100' inside of 
Tubing							
Liners							

Handwritten signature: E. B. L. 10-19-15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	30"	0.75	2780	81	Class A	1.19/50% Excess
Fresh Water	20"	24"	0.438	2110	633	Class A	1.19/50% Excess
Coal	13 3/8"	17.5"	0.33	2730	1768	Class A	1.19/50% Excess
Intermediate	9 5/8"	12 1/4"	0.395	5750	3898	Class A	1.68/1.25
Production	5 1/2"	8 3/4"	0.415	14520	9918	Class A	1.68/1.25
Tubing							
Liners							

PACKERS

Kind:	10K Arrowset AS1-X				RECEIVED Office of Oil and Gas OCT 23 2015
Sizes:	5 1/2"				
Depths Set:					

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

Drill to 150' below the base of the Point Pleasant formation and then plug back with solid cement from TD to the kick off point and then drill horizontally into the Utica.. **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. Run casing not less than 20' below void nor more than 50'-75' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' 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 unites, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 80 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 13.4

22) Area to be disturbed for well pad only, less access road (acres): 7.6

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.

*Note: Attach additional sheets as needed.

OK 9/14

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

Drill to the Trenton and then plug back with solid cement from TD to the kick off point and then drill horizontally into the Utica.. **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. Run casing not less than 20' below void nor more than 50'-75' below void. (*If freshwater is encountered deeper than anticipated it must be protected, set casing 50'-75' 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 unites, vertical separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 80 barrels a minute.

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See Attachment ***

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Intermediate Surface	S001	accelerator	calcium chloride	10043-52-4
	S001	accelerator	calcium chloride	10043-52-4
Kick Off Plug	D080	dispersant	sodium polynaphthalene sulfonate	9008-63-3
	D801	retarder	aromatic polymer derivative	proprietary
	D047	antifoam	polypropylene glycol	25322-69-4
Production-Lead	D167	fluid loss	aliphatic amide polymer	proprietary
	D154	extender	non-crystalline silica	7631-86-9
	D400	gas migration	boric acid	10043-35-3
	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D201	retarder	chrystalline silica	14808-60-7
			metal oxide	proprietary
	D202	dispersant	sulphonated synthetic polymer	proprietary
formaldehyde (impurity)			proprietary	
Production-Tail	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrystalline silica	14808-60-7
			metal oxide	proprietary
D153	anti-settling	chrystalline silica	14808-60-7	

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WW-9
(9/13)

API Number 47 - 69 - _____
Operator's Well No. Mark Hickman UP OHI 9H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 49447757

Watershed (HUC 10) Wheeling Creek Quadrangle Valley Grove

Elevation 1281' County Ohio District Tridelphia

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

Will a pit be used? Yes No

If so, please describe anticipated pit waste: closed loop system in place at this time- cuttings will be taken to a permitted landfill.

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 2D0072539/ 2D0413175/ 2D0610306/ 2D0610317)
- Reuse (at API Number at next anticipated well, API# will be included with the WR-34/DDMR &/or permit addendum.)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain flow back fluids will be put in steel tanks and reused or taken to a permitted disposal facility.

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air drill to KOP, Fluid drill with SOBM from KOP to TD

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

Additives to be used in drilling medium? see attached sheets

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. landfill

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

-Landfill or offsite name/permit number? meadow SWF- 1032, SS Grading SWF- 4902, Northwestern SWF- 1025, Short Creek 1034/WV0109517/CID28726, Carbon Limestone 28726, Valley Grove 13688
Arden Landfill 10072, American U2-12954, Country wide 38390/CID38390, Valley Grove 13688

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

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

Company Official Signature [Signature]

Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Supervisor



Subscribed and sworn before me this 10th day of October, 20 15

Brittany R Woody Notary Public

My commission expires 11/27/22

02/17/2017

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime ^{as determined by pH test min. 2} _____ Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 600 lbs/acre

Mulch Hay/Straw 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
White Grove	15	White Grove	15
Red Top	15	Red Top	15
Orchard Grass	20	Orchard Grass	20

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *C. Thel* 10-14-15

Comments: _____

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Title: Oil and Gas Inspector Date: *C. Thel* 10-14-15

Field Reviewed? () Yes () No

**Marcellus Well Drilling Procedures
And Site Safety Plan**

SWN Production Co., LLC

47 - 051 -

Well name: Mark Hickman UP OHI 9H
Valley Grove, Quad
Tridelphia, District
Ohio County, West Virginia

Submitted by:


Danielle Southall

10/6/2015

Date:

Title Regulatory Supervisor

SWN Production Co., LLC

Approved by:



Date:

10-14-15

Title: Oil & Gas Inspector

Approved by:

Date:

Title:

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I. Contacts, Schedules, and Meetings

A. SWN Production Company, LLC. 24 Hour Hotline: 1-877-879-0376

B(a). Emergency Telephone Numbers:

Agency Type	Name	Phone Number	Cell
County Police	Marshall County	911 or 304-843-1500	
State Police	Marshall County	304-843-4100	
Ambulance Service	Marshall County	911 or 304-843-1500	
Hospital		304-845-3211	
Fire Department	Marshall County	911 or 304-842-1500	
Dicky Hall	Drilling Engineer Manager	832-796-7139	
Bill Igou	Drilling Superintendent	570-996-4272	501-654-4161
Danny Brooks	Drilling Superintendent	570-996-4298	501-269-2946
Peter Cain	HSE Field Specialist	281-217-4552	
Derek Cutright	Operations General Manager	281-618-7473	
Chris Flanagan	Production Field Manager	832-796-1626	
Michelle McCracken	Manager HSE	281-618-6284	
Jim Nicholson	WV Oil and Gas Inspector		304-380-2467
Joe McCourt	Inspector Supervisor		304-380-2467
James Martin	Chief	304-926-0499 x 1654	
Marshall Co OEM	Marshall County	1-304-843-1130	
WV DEP	Emergency Pollution and Spills	1-800-642-3074	
Contractor's	Company	Phone	
Well Control Co's	Boots & Coots	1-800-256-9688	
	Halliburton	1-800-409-6479	
Earthwork/Equipment	Triple J Contractors	304-472-3962	
Remediation/Cleanup	Weaverton Environmental	724-746-4850	
Remediation/Cleanup	Ryan Environmental	304-842-5578	
Remediation/Cleanup	Central Environmental Services	304-863-8867	
Heavy Equipment	Kanawha Stone	304-755-8271	
Heavy Equipment/Rouster	Arvilla Pipeline	304-665-2652	
Heavy Equipment	Hoy Contracting	724-627-0272	
Cleanup Supplies	McJunkin Supply	304-472-3565	

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B(b). All Schools and Public Facilities within 1 Mile Radius:

Name:	Address:	Phone:
Middle Creek School	579 Middle Creek Rd Triadelphia, WV 26059	304-243-0369

C. A formal pre-spud meeting will be held prior to this well being drilled. Discussions between the drilling rig toolpusher and SWN representatives will be held weekly regarding general safety and environmental issues.

- 1. Drilling Superintendents: Bill Igou 501-654-4161
 Danny Brooks 501-269-2946
- 2. Inspector: Jim Nicholson
- 3. Personnel in attendance for pre-spud meeting:

Drilling
Land
Regulatory
Coal
Geology
Field

D. General safety and environmental awareness meetings will be held with the rig toolpusher weekly or more often if needed.

- 1. The Well Site Safety Meetings are conducted twice a day at the beginning of each shift with all employees on location on the drilling site.
- 2. The highest ranking drilling contractor representative present shall keep an accurate count of all drilling personnel on the drilling location at all times. All non-drilling (i.e., non-SWN and non-drilling contractor) personnel will be required to sign the attached ACCESS CONTROL REPORT (see attachment #1). All non-essential persons will be kept off the drilling location at all times, and such access will be enforced by the highest ranking drilling contractor representative present.

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Attachment #2

ACCESS CONTROL REPORT
Well Name: Mark Hickman UP OHI 9H

DATE	NAME	TIME IN	TIME OUT

- 2. Maps and Diagrams**
- A. Plan View Map--See Attachment #3
 - B. 1 Mile Map-- See Attachment #4
 - C. Evacuation Plan--See Attachment #5

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- Legend**
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Hickman_Pad
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Hickman_Pad_1_Mile_Buffer
 - WV Department of Environmental Protection
sde.GISPUB.bmp_Cemeteries
 - sde.GISPUB.bmp_Churches
 - sde.GISPUB.bmp_Schools

Mark Hickman-1 Mile Ohio County, West Virginia

02/17/2017

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet

WEST VIRGINIA

OWNER	Mailing Address	Phone
ALDERMAN CHAS S & D J	1119 TIMBER HAVEN RD TRIADELPHIA WV 26059	#N/A
AMC CORP	703 MAIN ST BRIDGEPORT OH 43912	#N/A
ANDERSON PAUL & VERNA	RR 1 BOX 208B TRIADELPHIA WV 26059	N/A
ANTHONY LOUIS J & N M	1207 MCCOLLOCH ST WHEELING WV 26003	#N/A
ANTHONY MITCHELL J	828 MUSTANG LN TRIADELPHIA WV 26059	304-547-9030
AUBER JAMES GARY & DARLEEN T	586 MUSTANG LN TRIADELPHIA WV 26059	#N/A
AUBER JAMES GARY & DARLEEN T	586 MUSTANG LN TRIADELPHIA WV 26059	#N/A
BEAVER DAVID G & J A	375 MUSTANG LN TRIADELPHIA WV 26059	304 547-0221
BEITER DENNIS A & BRENDA L	206 MUSTANG LN TRIADELPHIA WV 26059	304 547-0192
BILICK BARTON J & JAMIE L	7 BILICK FARM LN VALLEY GROVE WV 26060	304-547-0306
BILICK BARTON J & JAMIE L	RR 1 BOX 172-1 VALLEY GROVE WV 26060	304-547-0306
BILICK KENNETH E & P A	384 BILICK FARM LN VALLEY GROVE WV 26060	304-547-1132
BILICK SYLVIA A	950 WILDLIFE RD VALLEY GROVE WV 26060	#N/A
BLACK DIAMOND GIRL SCOUT	RR 1 BOX 236 TRIADELPHIA WV 26059	304-232-8601 ext 1037
BLOSSER MARY J	RR 2 BOX 183 TRIADELPHIA WV 26059	#N/A
BOPP CHRISTY M	2083 UNION HILL RD TRIADELPHIA WV 26059	#N/A
CALDWELL ROLLIN A & LILLIAN A	355 ARBORLAND RD WHEELING WV 26003	304-238-0150
CHURCH LONNIE & THEDA A	454 MUSTANG LN TRIADELPHIA WV 26059	304-547-1866
CLOVIS DANA E & R J	RR 1 BOX 233 TRIADELPHIA WV 26059	304-547-0406
CLOVIS DANA E & R J	RR 1 BOX 233 TRIADELPHIA WV 26059	304-547-0406
CLOVIS ELEANOR L (LIFE ESTATE)	RR 1 BOX 233 TRIADELPHIA WV 26059	304-547-5601
CLUTTER TERRY L	RR 1 BOX 231 TRIADELPHIA WV 26059	304-497-3578
CRUPE BRUCE R & J L	RR 1 BOX 178 VALLEY GROVE WV 26060	304-547-0726
CRUPE JEREMY BRUCE	RR 1 BOX 188 VALLEY GROVE WV 26060	304-547-1106
CUSTER CLARENCE D &	RR 1 BOX 238A TRIADELPHIA WV 26059	304-547-0171
DALLAS PIKE BAPTIST CHURCH	DALLAS PIKE TRIADELPHIA WV 26059	304-547-0082
DEPTO ALBERT D	RR 1 BOX 187 TRIADELPHIA WV 26059	304-547-0332
DILORENZO RONALD J & ROBERTA P	495 MUSTANG LN TRIADELPHIA WV 26059	304-905-0169
DISAIA CHARLES D & REBECCA J	RR 1 BOX 205 TRIADELPHIA WV 26059	304 547-0134
DVORCEK JEREMY L	RR 1 BOX 190C TRIADELPHIA WV 26059	#N/A
EARLIWINE GARY L & F D	RR 1 BOX 202 TRIADELPHIA WV 26059	304 547-0820
EARLIWINE GARY L & FAY D	RR 1 BOX 202 TRIADELPHIA WV 26059	304 547-0820
EARLIWINE LEMOYNE & DELLA	RR 1 BOX 203 TRIADELPHIA WV 26059	304 547-1113
FERRELL MICHAEL & THEODORA	RR 1 BOX 203A TRIADELPHIA WV 26059	304 547-1594
FERRELL MICHAEL E & THEODORA A	RR 1 BOX 203A TRIADELPHIA WV 26059	305 547-1594
FERRELL ROY & EMMA	RR 1 BOX 189 VALLEY GROVE WV 26060	
FERRELL ROY E	RR 1 BOX 178 VALLEY GROVE WV 26060	304-547-1129
FERRELL ROY E	RR 1 BOX 178 VALLEY GROVE WV 26060	304-547-1129
FLETCHER GRANT T & LINDA D	RR 1 BOX 200A TRIADELPHIA WV 26059	#N/A
FOSTER MARK A & AMY M	RR 1 BOX 232 TRIADELPHIA WV 26059	304 547-1469
FUGATE KERMIT L & K J	425 WEST WIND LN TRIADELPHIA WV 26059	304-547-0118
FUGATE KERMIT L & K J	425 WEST WIND LN TRIADELPHIA WV 26059	304-547-1444
FYNMORE MICHAEL J & COAD A A	633 CRUZER RD TRIADELPHIA WV 26059	304-547-0574
GEORGE CHRISTOPHER T & E A	RR 1 BOX 204 TRIADELPHIA WV 26059	304-547-1418
GOFF STEPHANIE A	RR 1 BOX 189A VALLEY GROVE WV 26060	#N/A
GORBY RITA	RR 1 BOX 218 TRIADELPHIA WV 26059	#N/A
GREGORY S EDWARDS LEASING INC	RR 1 BOX 239A TRIADELPHIA WV 26059	#N/A
GRIFFITH RICHARD & KATORAH R	3955 DALLAS PIKE TRIADELPHIA WV 26059	#N/A
HALL CLARENCE W SR	RR 1 BOX 198 TRIADELPHIA WV 26059	#N/A
HICKMAN JOHN MARK	RR 1 BOX 207 TRIADELPHIA WV 26059	304-280-3278
HICKMAN JOHN MARK	RR 1 BOX 207 TRIADELPHIA WV 26059	304-280-3278

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HICKMAN LG; HICKMAN JM;	RR 1 BOX 207 TRIADELPHIA WV 26059	#N/A
HICKMAN LG; HICKMAN JM;	RR 1 BOX 207 TRIADELPHIA WV 26059	#N/A
HOLMES MITCHELL R & P A	RR 3 BOX 120 WHEELING WV 26003	304-547-5166
JOHNSON CURTIS W & LOIS A	467 WILDLIFE RD VALLEY GROVE WV 26060	304-547-0600
JOHNSON CURTIS W & LOIS A	467 WILDLIFE RD VALLEY GROVE WV 26060	304-547-0600
JOHNSON CURTIS W & LOIS A	467 WILDLIFE RD VALLEY GROVE WV 26060	304-547-0600
JONES KURTIS HARLEY	4053 DALLAS PIKE TRIADELPHIA WV 26059	304 547-1870
KLIMASZEWSKI D AND F	191 WILDLIFE RD TRIADELPHIA WV 26059	304 547-0645
KLIMASZEWSKI DEBRA & FRANK	191 WILDLIFE RD TRIADELPHIA WV 26059	304 547-0645
KLIMASZWESKI FRANK E & D K	191 WILDLIFE RD TRIADELPHIA WV 26059	304 547-0645
LEINWEBER PATRICK E & L M	349 MUSTANG LN TRIADELPHIA WV 26059	304-547-0543
LICHWA KATHLEEN A	RR 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK & KATHY	RR 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK AND KATHLEEN A	RD 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK AND KATHLEEN A	RD 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK AND KATHLEEN A	RD 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK F	RR 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK F & KATHLEEN	RR 1 BOX198C TRIADELPHIA WV 26059	304-547-0012
LICHWA MARK F & KATHLEEN A	RR 1 BOX 198C TRIADELPHIA WV 26059	304-547-0012
LUCRO REALTY LLC	174 ROSE MDWS TRIADELPHIA WV 26059	#N/A
LUZADER KIRK & JUDY	RR 1 BOX 368A TRIADELPHIA WV 26059	#N/A
MAGERS ROBERT D & S A	PO BOX 22 ROBINSON CREEK KY 41560	606-639-6501
MCCONN ASAKO GENERATION-	415 ROCK LINE SCHOOL RD VALLEY GROVE WV 26060	#N/A
MCCONN ASAKO GENERATION-	415 ROCK LINE SCHOOL RD VALLEY GROVE WV 26060	#N/A
MCCONN NANCY	RR 1 BOX 206 TRIADELPHIA WV 26059	304-547-1939
MCGLUMPHY KEITH II & NANCY	133 MUSTANG LN TRIADELPHIA WV 26059	304-547-0181
MCKENZIE JEFFREY D & F M	1142 JENKINS LN TRIADELPHIA WV 26059	304-277-1192
MCWHORTER LEONARD E & K L	RR 1 BOX 217 TRIADELPHIA WV 26059	304-639-9494
MENCER GLEN ALAN &	RR 1 BOX 208 TRIADELPHIA WV 26059	304-547-1651
MISCOVICH JOHN J	RR 1 BOX 239 TRIADELPHIA WV 26059	#N/A
MISCOVICH JOHN J & A L	RR 1 BOX 239 TRIADELPHIA WV 26059	#N/A
MOCZEK H C	664 MUSTANG LN TRIADELPHIA WV 26059	304-905-1971
MOCZEK PATRICK R & C L	686 MUSTANG LN TRIADELPHIA WV 26059	304 547-9468
MOCZEK PATRICK R & CLARA L	RR 1 BOX 191 TRIADELPHIA WV 26059	304 547-9468
MOORE DOUGLAS C & LINDA L	113 MUSTANG LN TRIADELPHIA WV 26059	304 547-0888
NASH ELIZABETH R	278 TIMBER HAVEN RD TRIADELPHIA WV 26059	#N/A
NASH JANIS C & PETER L	RR 1 BOX 220 TRIADELPHIA WV 26059	304 547-1661
NASH PETER L & JANIS C	RR 1 BOX 220 TRIADELPHIA WV 26059	304 547-1661
OLIVER DANIEL R & REBECCA L	427 MUSTANG LN TRIADELPHIA WV 26059	304 547-0264
ORTH CHARLES M & L S	RR 1 BOX 209 TRIADELPHIA WV 26059	304 547-5778
ORUM BERTIE HELEN	RR 1 BOX 222 TRIADELPHIA WV 26059	304-547-1519
ORUM BERTIE HELEN	RR 1 BOX 222 TRIADELPHIA WV 26059	304-547-1519
ORUM BERTIE HELEN	RR 1 BOX 222 TRIADELPHIA WV 26059	304-547-1519
ORUM BERTIE HELEN	RR 1 BOX 222 TRIADELPHIA WV 26059	304-547-1519
ORUM HAROLD & WILMA	3742 DALLAS PIKE RD TRIADELPHIA WV 26059	304 547-0059
ORUM HAROLD & WILMA	RR 1 BOX 223 TRIADELPHIA WV 26059	304-547-0059
ORUM JOHN W JR	3778 DALLAS PIKE TRIADELPHIA WV 26059	304-243-0235
ORUM JOHN W JR	PO BOX 283 TRIADELPHIA WV 26059	304-243-0235
ORUM JOHN W JR	3778 DALLAS PIKE TRIADELPHIA WV 26059	304-243-0235
ORUM JOHN W JR & A A	PO BOX 283 TRIADELPHIA WV 26059	304-243-0235
ORUM WILLIAM S & S K	169 WILDLIFE RD TRIADELPHIA WV 26059	304-242-2264
ORUM WILLIAM S & SONYA K	169 WILDLIFE RD TRIADELPHIA WV 26059	304-242-2264

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OZOSKY LESLIE H	RR 1 BOX 182 TRIADELPHIA WV 26059	304-547-0773
PARSONS DALE J	494 MUSTANG LN TRIADELPHIA WV 26059	304-243-0924
PATTISON ERIC & CAROLYN	RR 1 BOX 224 TRIADELPHIA WV 26059	304-547-0212
PHILLIPS HARRY	755 WILDLIFE RD VALLEY GROVE WV 26060	#N/A
POLING CHARLES D	RR 1 BOX 192 TRIADELPHIA WV 26059	304-265-4459
POLING CHARLES D	RR 1 BOX 192 TRIADELPHIA WV 26059	304-265-4459
POLING CHARLES D	7105 CORPORATE DR PLANO TX 75024	304-265-4459
RICHEY RALPH W & ROSELLA	RR 1 BOX 188 TRIADELPHIA WV 26059	#N/A
RICHEY RALPH W & ROSELLA	RR 1 BOX 188 TRIADELPHIA WV 26059	#N/A
RICHEY RALPH W & ROSELLA	RR 1 BOX 188 TRIADELPHIA WV 26059	#N/A
RIDDLE PATRICK L	RR 1 BOX 197 TRIADELPHIA WV 26059	304-547-0979
RIGGIN ROBERT L & MARENA L	2351 W DETROIT ST ABILENE KS 67410	304-232-8151
ROBBINS MICHAEL A & CYNTHIA K	RR 1 BOX 192B TRIADELPHIA WV 26059	#N/A
RODAK PATRICK M	RR 1 BOX 177 VALLEY GROVE WV 26060	304-547-9720
RYBECK BLANCHE F	629 CRAFTS RUN RD MAIDSVILLE WV 26541	304-685-9829
RYBECK THEODORE B	34 SHERMAN ST CAMBRIDGE MA 02138	617-547-2989
RYBECK THEODORE B	34 SHERMAN ST CAMBRIDGE MA 02138	617-547-2989
SCHNEIDER CARL R JR & D K	265 MUSTANG LN TRIADELPHIA WV 26059	304 547-1966
SCHUL ERIN E	190 A MUSTANG LN TRIADELPHIA WV 26059	304 547-0086
SCHUL ERIN E	649 MUSTANG LN TRIADELPHIA WV 26059	304 547-0086
SCHUL ERIN E	190 A MUSTANG LN TRIADELPHIA WV 26059	304 547-0086
SCOTT JERRY R SR	104 BROOK ST WHEELING WV 26003	304-336-7137
SCOTT RICHARD L & R J	108 MUSTANG LN TRIADELPHIA WV 26059	304 547-0551
SHARP HERBERT & A M	37 SHARP LN TRIADELPHIA WV 26059	304-547-9247
SPRY CLEVE & SARA ANN	823 WILDLIFE RD VALLEY GROVE WV 26060	304-547-1823
STEPHEN BETH ANN ET AL	21 7TH ST MC MECHEN WV 26040	#N/A
STEPHEN BETH ANN ET AL	PO BOX 183 WEST LIBERTY WV 26074	#N/A
STRAIT CHRISTOPHER D	60 SKYVIEW EST WHEELING WV 26003	304-639-3743
STRAWN HAROLD R	RR 1 BOX 176 VALLEY GROVE WV 26060	304-547-1692
STRAWN HAROLD R	RR 1 BOX 176 VALLEY GROVE WV 26060	304-547-1692
STRAWN HAROLD R & D	RR 1 BOX 76 VALLEY GROVE WV 26060	304-547-1692
STRAWN REX M & BETH ANN	RR 1 BOX 176A VALLEY GROVE WV 26060	304-547-1692
STRICKLIN VAUGHN & KATHRYN	RR 1 BOX 186 TRIADELPHIA WV 26059	304-547-1504
STRICKLIN VAUGHN D & K A	RR 1 BOX 186 TRIADELPHIA WV 26059	304-547-1504
STRICKLIN VAUGHN D & K A	RR 1 BOX 186 TRIADELPHIA WV 26059	304-547-1504
SUPLER GREGORY E SR & PEGGY S	RR 3 BOX 140B WHEELING WV 26003	304-547-5019
THORNBURG ROBT L & RUTH A	167 MUSTANG LN TRIADELPHIA WV 26059	304-547-0325
TOLAND MICHAEL E & SARAH E	RR 1 BOX 201 TRIADELPHIA WV 26059	304 547-1463
TRAVIS JR ROBERT E	539 MUSTANG LN TRIADELPHIA WV 26059	304-232-8545
TRAVIS ROBERT E JR	539 MUSTANG LN TRIADELPHIA WV 26059	304-232-8545
TYRAS JACK & NORMA J	RR 1 BOX 190 VALLEY GROVE WV 26060	304-547-1541
WEEKS ESTHER H	1 HAZLETT CT WHEELING WV 26003	304-232-8502
WEEKS JOHN E	1528 OKLAHOMA RD WHEELING WV 26003	304-547-5292
WEEKS JOHN E	1528 OKLAHOMA RD WHEELING WV 26003	304-547-5292
WEEKS JOHN E	1528 OKLAHOMA RD WHEELING WV 26003	304-547-5292
WEITZEL JOHN E & T M	1336 TIMBER HAVEN RD TRIADELPHIA WV 26059	304-547-0323
WEITZEL JOHN E & TRINA M	RR 1 BOX 228 TRIADELPHIA WV 26059	304-547-0323
WHEELING CREEK WATERSHED PROT	1500 CHAPLINE ST WHEELING WV 26003	#N/A
WOOD ARTHUR E SR	RR 1 BOX 186 ST TRIADELPHIA WV 26059	#N/A
YAHN DAVID E	1600 BROOKS LN OVIEDO FL 32765	#N/A

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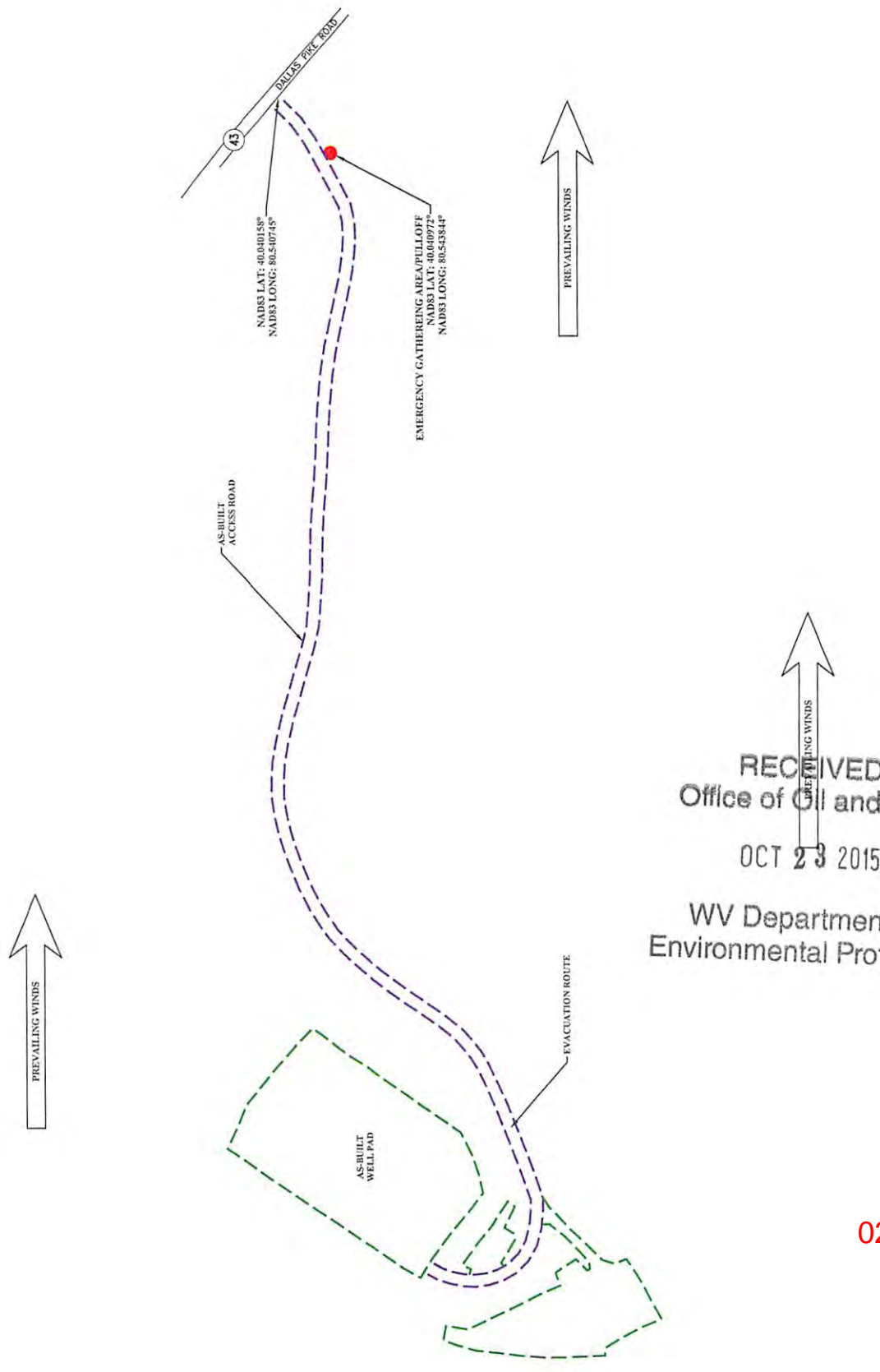
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HS

EVACUATION ROUTE PLAN LEGEND

- TTG AS-BUILT ROAD EDGE
- TTG AS-BUILT PAD EDGE
- TTG AS-BUILT EDGE OF PAVEMENT



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THRASHER
SURVEYING & CONSULTING, INC.
600 WHITE OAKS DRIVE
PO BOX 100
BRIDGEPORT, WV 26330
PHONE (304) 624-4108 FAX (304) 624-7831

SWN
Southwestern Energy

SOUTHWESTERN ENERGY
AS-BUILT PLANS FOR THE
MARK HICKMAN U OHI PAD "A"
OHIO COUNTY, WV
EVACUATION ROUTE/PREVAILING WINDS

PHASE No.
CONTRACT No.
PROJECT No.
101-050-5494

SCALE	DATE
DRAWN	DATE
CHECKED	DATE
APPROVED	DATE
SURVEY DATE	
FIELD BOOK No.	

NO.	BY	DATE	DESCRIPTION

02/17/2017

3. Well Work

A. Well Work and Procedures

1. -Well Work Detail: Drill and stimulate the ^{Point Pleasant} Marcellus formation. If we should encounter a void, place a basket above and below the void area – balance cement to bottom of void and grout from basket to surface. Run casing not less than 50’ below void nor more than 100’ below void. If freshwater is encountered deeper than anticipated it must be protected, set casing at least 50’ below but not more than 100’ below freshwater and cts.
2. -All casing cemented will not be disturbed for at least 8 hours after cementing operations.
3. -Surface, Coal, and Intermediate strings will be pressure tested at a pressure 20% greater than what is expected to be exerted on each string throughout the remainder of the well operations.
4. -No oil or gas production or pressure should exist on the surface or coal protection strings.
5. -A Formation Integrity Test (FIT) will be performed immediately following the drill out of intermediate casing.
6. -Centralizers will be used in the well. However, the placement of the centralizers will be contingent on the final well log and directional data.
7. -Production casing will be pressure tested at a pressure 20% greater than what is expected to be exerted upon it during fracturing operations. Upon completion of fracturing operations the production casing will be pressure tested at a pressure 20% greater than expected shut in pressure.
8. -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, vertical separation units, water and oil storage tanks.
9. See Attachment #1

B. A copy of the Site Safety Plan will be provided to the local county emergency office at least 7 days before dirt work or well work commences

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4. Chemical Inventory & MSDS

- A. MSDS- please refer to CD
- B. MSDS sheets will be available in the tool- pusher's office.
- C. Please see below:

Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Surface	S001	accelerator	calcium chloride	10043-52-4
	S001	accelerator	calcium chloride	10043-52-4
Intermediate	D080	dispersant	sodium polynaphthalene sulfonate	9008-63-3
	D801	retarder	aromatic polymer derivative	proprietary
	D047	antifoam	polypropylene glycol	25322-69-4
Kick Off Plug	D167	fluid loss	aliphatic amide polymer	proprietary
	D154	extender	non-crystalline silica	7631-86-9
	D400	gas migration	boric acid	10043-35-3
	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D201	retarder	chrySTALLine silica	14808-60-7
			metal oxide	proprietary
	D202	dispersant	sulphonated synthetic polymer	proprietary
formaldehyde (impurity)			proprietary	
Production-Lead	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrySTALLine silica	14808-60-7
			metal oxide	proprietary
D153	anti-settling	chrySTALLine silica	14808-60-7	
Production-Tail	D046	antifoam	polypropylene glycol	25322-69-4
			fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
	D065	dispersant	sodium polynaphthalene sulfonate	9008-63-3
			sodium sulfate	7757-82-6
	D201	retarder	chrySTALLine silica	14808-60-7
			metal oxide	proprietary
D153	anti-settling	chrySTALLine silica	14808-60-7	

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5. BOP and Well Control

A. The following is a list of the blow-out prevention equipment that will be utilized at various times during the drilling of the well:

13-3/8" Casing String
13- 5/8" Annular

9-5/8" Casing String
11" ~~5000~~ psi BOP Stack

*10000
CB 10.14.15*

B. Testing of the BOP stack intermediate drilling phase will be conducted upon initial set up and the annular tested to 70% of capacity. For the Bottom and horizontal wellbore drilling phase, the BOP equipment will be tested upon initial installation – Annulars to 70% of capacity and rams to 80% of capacity. Bottom & Horizontal drilling phase also requires testing every 21 days and after every bit trip.

C. The BOP equipment shall be function tested upon initial installation, weekly, and after each bit trip unless otherwise authorized by the Office as part of a well work permit. It shall be pressure tested upon initial installation and every twenty-one (21) days thereafter. All pressure tests shall be performed for thirty (30) minutes. Annular preventers should be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity.

D. BOP equipment and assembly installation schedule:

BLOWOUT PREVENTER SCHEMATIC

WELL : SWN Production Company, LLC.
 FIELD :
 RIG :
 COUNTY :
 OPERATION : 17 1/2" Surface Hole

STATE :
 REVISION : : / /

Component Descriptions		
Size	Pressure	Description
A	13 3/8"	500 psi Rotating Head
B		
C		
D		
E		
F		
G		
H		
DSA		
C Sec		
B Sec		
A Sec		

Flowline to closed loop pits with bypass vent line to flare

Kill Line		
ID	Pressure	Description

Choke Line		
ID	Pressure	Description

Testing Requirements		
Item	Pressure	Frequency
Rotating Head	250 / 500 psi	Once prior to DO shots

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BLOWOUT PREVENTER SCHEMATIC

WELL :
 FIELD :
 RIG :
 COUNTY :
 OPERATION : 12 1/4" Intermediate Hole

STATE :
 REVISION : : / /

Component Descriptions

	Size	Pressure	Description
A	13 3/4"	5,000 psi	Rotating Head
B	13 3/4"	3,000 psi	Annular
C	13 3/4"	3,000 psi	Mud Cross
D	13 3/4"	3,000 psi	Drilling Spool
E			
F			
G			
H			
DSA			
C Sec			
B Sec			
A Sec	13 3/4" SOW x 13 3/4" 3M w/ 3M Gate Valve		

Revision	Description

Trip Tank Required: Yes No

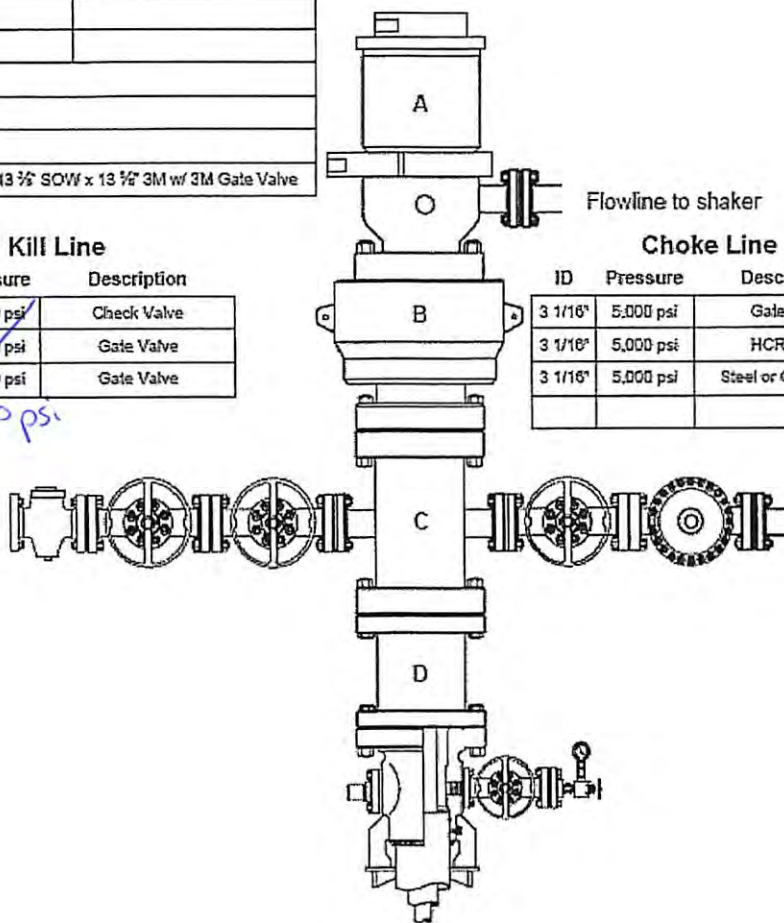
Kill Line

ID	Pressure	Description
2 1/16"	5,000 psi	Check Valve
2 1/16"	5,000 psi	Gate Valve
2 1/16"	5,000 psi	Gate Valve

2 1/16" 5,000 psi

Choke Line

ID	Pressure	Description
3 1/16"	5,000 psi	Gate Valve
3 1/16"	5,000 psi	HCR Valve
3 1/16"	5,000 psi	Steel or Coffex Line



Testing Requirements

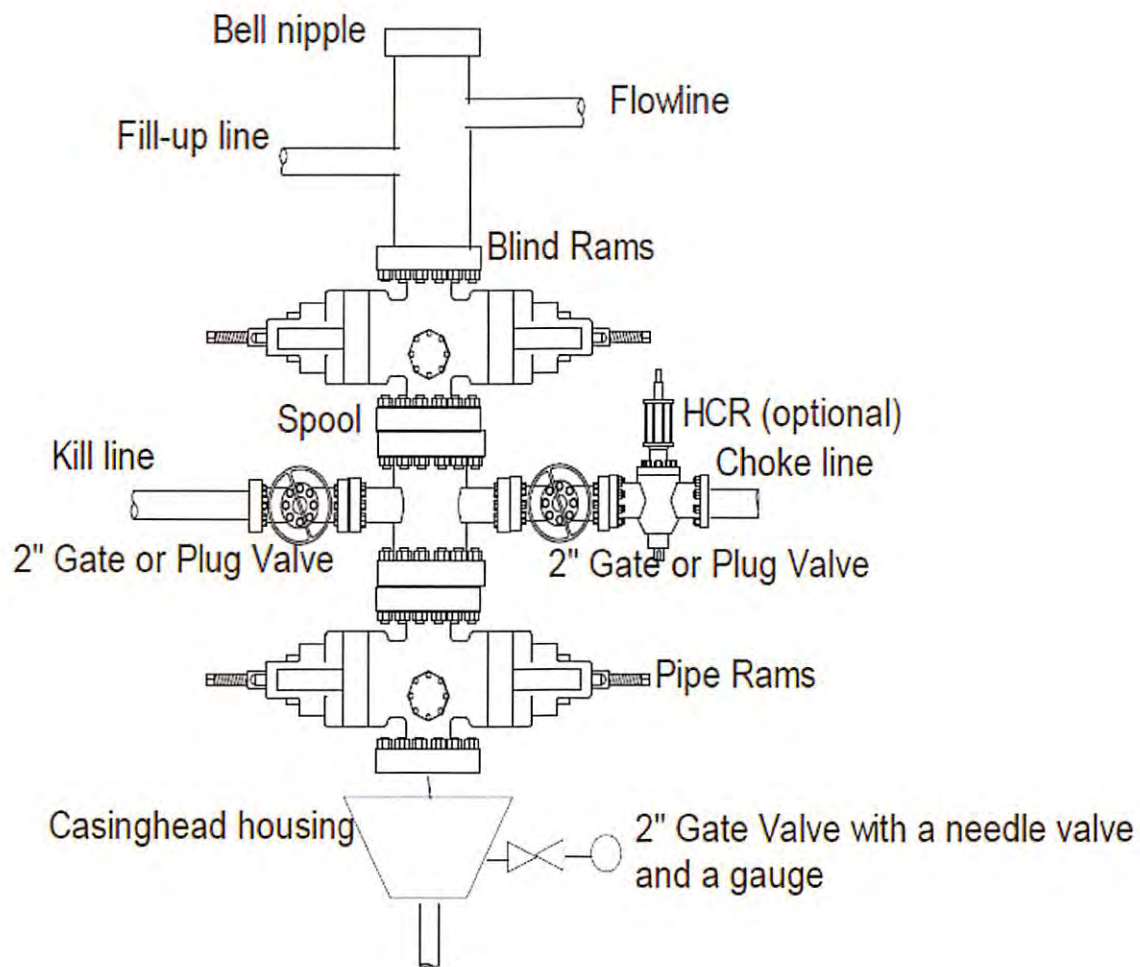
Item	Pressure	Frequency
Rotating Head	250 / 500 psi	Once prior to OO shoe
Annular	250 / 1,500 psi	Every 21 Days
Choke Manifold	250 / 1,500 psi	Every 21 Days
<input checked="" type="checkbox"/> Function test on trips		

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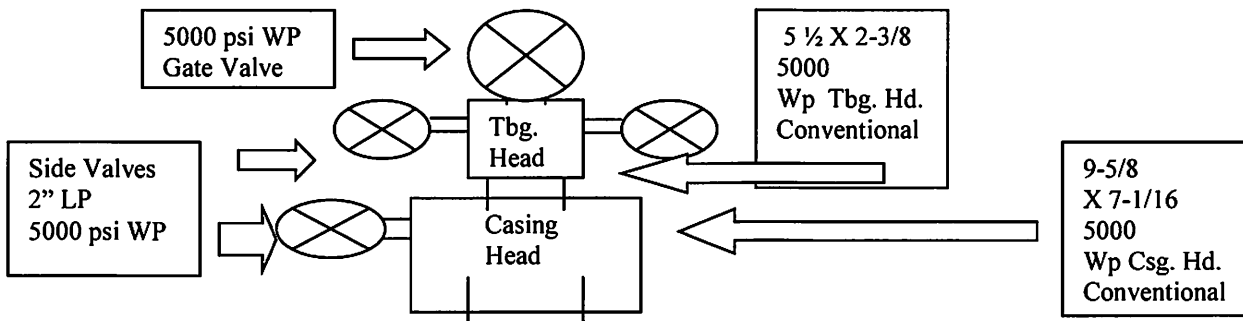
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D. The following persons that will be involved in the drilling operations are BOP certified:

Rig Toolpusher
Rig Morning Tour Driller
Rig Evening Tour Driller

E-G. See diagram below:



H. Well Killing Operations Method and Type

1. Barite and saturated brine will be available if necessary to weight up beyond the proposed compositions. Should a significant gas flow occur, historical data from the field shows that the brine is of sufficient weight to kill the well.
2. No mixing units will be required since only brine would be utilized in the unlikely event of a significant gas show.
3. Once it is confirmed that a significant gas flow has occurred, the wait and weight method will be employed. The mud weight required to kill the well will be calculated and the surface mud system density will be increased to the desired weight. A pumping schedule to circulate the kick out of the well will be calculated and followed once the surface mud system is of proper density.

6. Hydrogen Sulfide (H2S)

1. A. Safety Equipment

1. (10) 5 – minute escape packs will be installed on the rig floor for a quick escape.
2. (1) 10 – minute escape pack will be installed on the board.
3. (4) 30 – minutes SCBA's will be on-site. Two SCBA's will be placed at the entrance to the location (Muster Point #1) and the other two placed at Muster Point #2 on the other side of the location. This will allow either equipment to be in area that is upwind.
4. (1) 4 – multichannel H2S Monitor with sensors placed on the floor, shaft, and other to be placed where needed.
5. (2) hand held multi-gas monitor or a box of H2S tubes and a box of SO2 tubes to perform test in the event a monitor has been sounded.
6. (2) Safety Area Signs
7. (1) Condition Sign

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8. (2) Wind socks that are to be placed in areas that can be seen at all times on the rig and at an height with good wind flow.

B. Training

1. Basic awareness training (either video or booklet review) will occur on-site and may require two trips in order to train all rig crew members
2. Each crew member will be given certification test to verify his competence to respond in an H2S situation.
3. Physically show members how to properly don a mask and perform a qualitative fit test (banana oil) if utilizing a tight fitting mask as an escape unit.
4. Identify and discuss the location of escape units, SCBA's and location of H2S monitors and sensors.

C. In the unlikely event that hydrogen sulfide would be present, all affected residents and agencies would be notified by telephone or in person by a SWN Production Company, LLC representative, and access would be controlled by a sign, color coded flags and a sign-in sheet. Oil and Gas Inspector Eric Blend will be called at 304-552-3874.

D. In case of an emergency on the drilling site, all persons on location will exit via the access road and meet at the evacuation meeting area designated on the attached EVACUATION PLAN. The highest ranking drilling contractor representative will be responsible for comparing the persons that were present on location to those persons gathered at the designated evacuation meeting area. Any evacuation deemed necessary of residents in the surrounding area will be accomplished by telephone or door-to-door contact from a SWN representative.

E. We will establish Protection Zones while drilling that will be located at the predetermined muster points furthest upwind of the location of the H2S.

F. PPE Available

1. (10) 5 – minute escape packs will be installed on the rig floor for a quick escape.
2. (1) 10 – minute escape pack will be installed on the board.
3. (4) 30 – minutes SCBA's will be on-site. Two SCBA's will be placed at the entrance to the location (Muster Point #1) and the other two placed at Muster Point #2 on the other side of the location. This will allow either equipment to be in area that is upwind.

Detection, Warning, and Monitoring Equipment

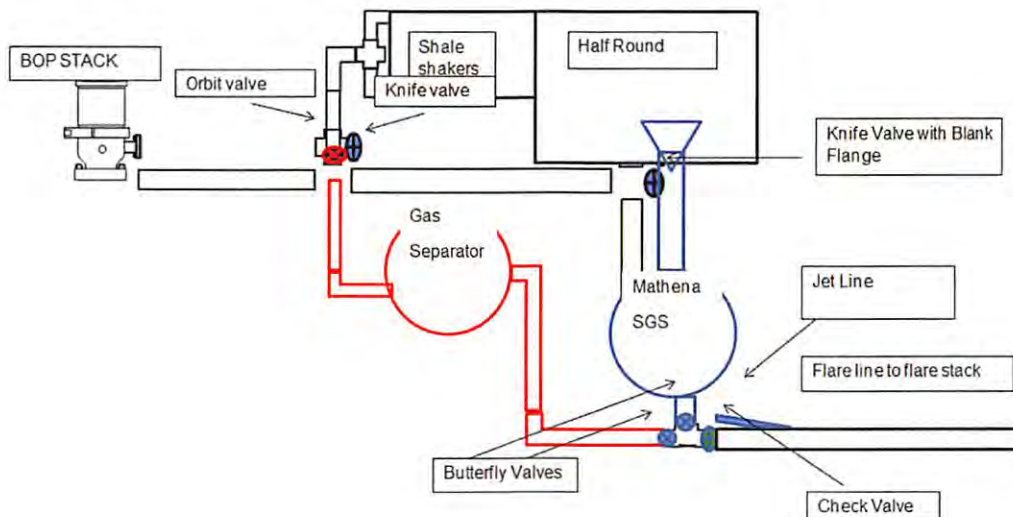
1. (1) 4 – multichannel H2S Monitor with sensors placed on the floor, shakers, bell nipple and other to be placed where needed.
2. (2) hand held multi-gas monitor or a box of H2S tubes and a box of SO2 tubes to perform test in the event a monitor has been sounded.
3. (2) Safety Area Signs
4. (1) Condition Sign
5. (2) Wind socks that are to be placed in areas that can be seen at all times on the rig and at an height with good wind flow.

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7. Flaring

A. Well Flaring

1. No flaring is anticipated on this well and therefore no flare lines will be utilized. Based on offset well information no significant gas flows should be encountered during drilling. If a significant show is encountered the gas would be flared through the 7" flanged flowline. This flowline will be anchored to the ground using chains and deadman stakes, and will be approximately 75 feet long.
2. In the unlikely event that gas needs to be flared. The well would be shut-in, and a smudge pot would be set up as a primary ignition with a marine flare pistol used as a backup igniter.
3. All flammable material within a minimum distance of 50' from the end of the flow line will be cleared, in case a flare would be needed.
4. The fire department will be notified immediately prior to flaring.
5. The duration of flaring typically will not last more than 7 days.
6. Schematic:



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SOUTHWESTERN ENERGY

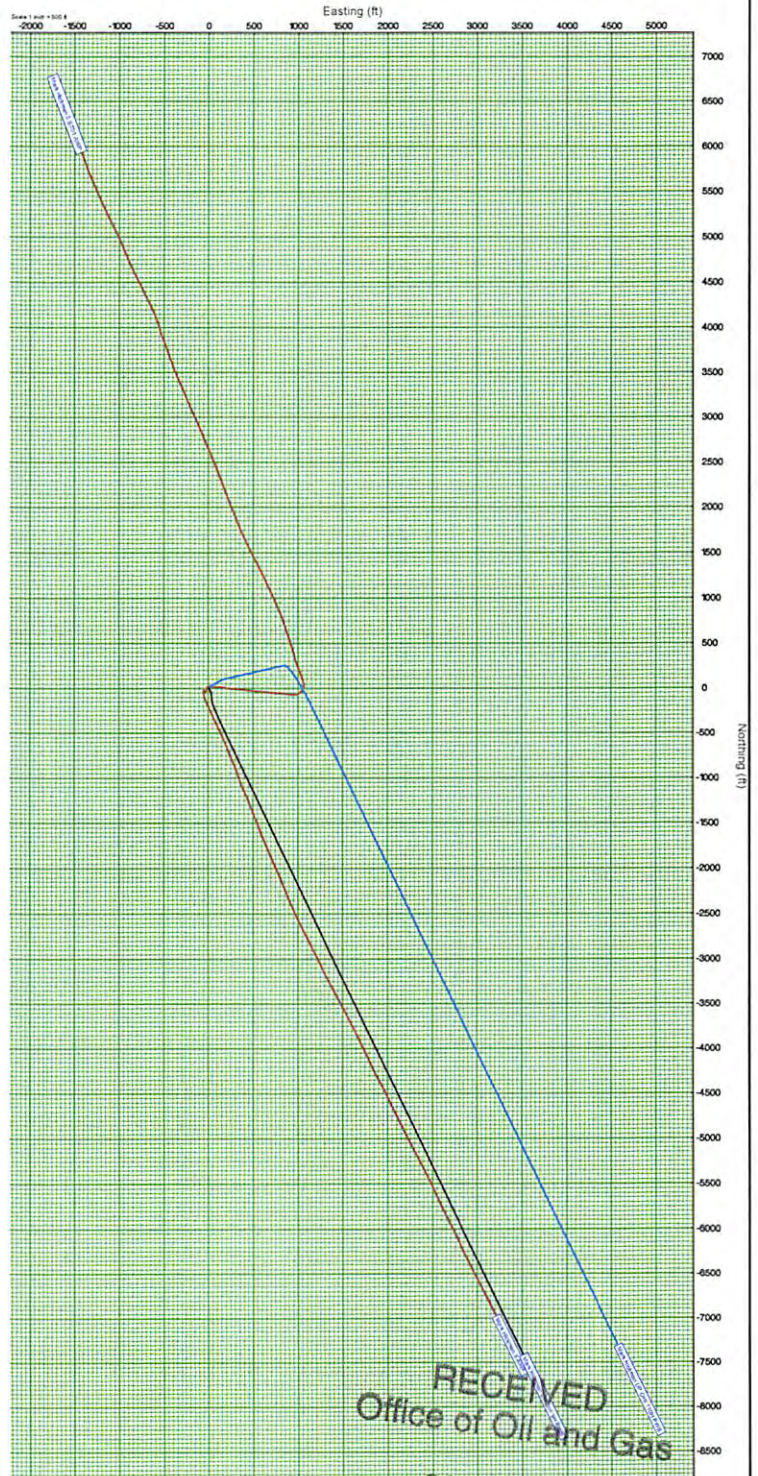
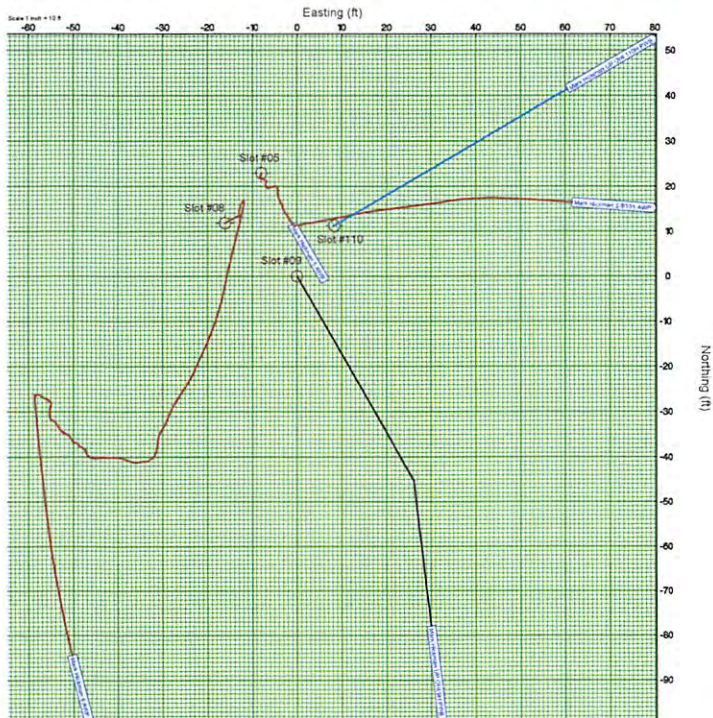
Location: Ohio County, WV Slot: Slot #09
 Field: Ohio Well: Mark Hickman UP OHI 9H
 Facility: Mark Hickman OHI Pad Wellbore: Mark Hickman UP OHI 9H PWB

Plot reference wellpath is Mark Hickman UP OHI 9H PWP Ex-04
 True vertical depths are referenced to Rig on Slot #09 (KB)
 Measured depths are referenced to Rig on Slot #09 (KB)
 Rig on Slot #09 (KB) to Mean Sea Level: 1307 feet
 Mean Sea Level to Mud line (At Slot: Slot #09): -1281 feet
 Coordinates are in feet referenced to Slot

Grid System: NAD83 / UTM Zone 17 North, US feet
 North Reference: Grid north
 Scale: True distance
 Depths are in feet
 Created by: thomsuzc on 9/8/2015

Well Data

Slot	Well	Wellbore	Wellpath
Slot #05	Mark Hickman 5	Mark Hickman 5 AWP	Mark Hickman 5 AWP See Comments (2205)
Slot #09	Mark Hickman 5 ST01	Mark Hickman 5 ST01 AWP	Mark Hickman 5 ST01 AWP PTB: 1307' MD
Slot #08	Mark Hickman 8	Mark Hickman 8 AWP	Mark Hickman 8 AWP PTB: 1415' MD
Slot #09	Mark Hickman UP OHI 9H	Mark Hickman UP OHI 9H PWB	Mark Hickman UP OHI 9H PWP Ex-04
Slot #110	Mark Hickman UP OHI 110H	Mark Hickman UP OHI 110H PWB	Mark Hickman UP OHI 110H PWP Ex-01



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8. Collision Avoidance

Wellbore Anti-Collision and Directional Surveying

1. Survey Requirements

- a. All wells shall be surveyed from the wellhead to a total depth using the guidelines specified in this document.
- b. Survey tool selection shall be based on the anti-collision requirements, survey tool accuracy, target size, and depth. Survey accuracy objectives shall be specified for each well in multiwell pad design.
- c. SWN preferred method of survey calculations shall be the Minimum Radius of Curvature method.
- d. All survey data shall be required to have azimuths pre-corrected to Grid North. The values for convergence and declinations and depth datum details used shall be reported on all definitive surveys. Additionally, survey tool accuracy should be specified on all surveys presented to SWN.
- e. During collision scans all offset well surveys will be evaluated for accuracy.

1.1 General Requirements

In all development wells, regularly spaced MWD or Magnetic Single Shot Surveys shall be taken at a frequency not to exceed 300'. During directional drilling the frequency shall be increased to every 90'. Additional surveys may be taken at the discretion of the directional driller, Drilling Representative, Drilling Superintendant, or Drilling Engineer.

Additional multi-shot surveys shall be taken in the following circumstances:

- 1.1.1 Gyro Single Shot Surveys shall be taken when drilling surface hole sections whenever magnetic interference is detected.
- 1.1.2 Gyro Multi Shot Surveys shall be taken to decrease positional uncertainty prior to drilling critical hole sections (i.e. high pressure sections, critical wellbore proximity hole sections, etc.). In this instance the requirements for the GMS shall be clearly stated in the drilling program.

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1.1.3 In all pad drilling operations of multiple wells all surface casings will be surveyed with GMS before drilling out of that string.

1.2 *Magnetic Survey Requirements*

1.2.1 MWD or Magnetic Single Shot (MSS) Surveys shall be taken at intervals of not more than 300' in vertical wells and at intervals of not more than 180' in tangent sections of deviated wells and at intervals of not more than 90' during build, turn, or drop sections.

1.2.2 The directional drilling contractor will calculate the following before each BHA is run:

- a. Sufficient non-magnetic spacing is in place at both MWD and MMS positions to deliver < 1 degree azimuth error due to drill string interference.
- b. BHA SAG correction for MWD and MMS positions. If SAG corrections is ≥ 0.1 degree inclination it must be applied.

1.3 *Gyro Survey Requirements*

1.3.1 Gyro Multi-Shot (GMS) surveys shall be run in all surface and in intermediate casing strings for wells with S.F. < 2.0 on pad drilling projects.

1.3.2 Gyro Single Shot (GSS) shall be used in place of magnetic survey instruments in all cases where magnetic interference from nearby wells is experienced until separations from existing wells exceeds 30', or at any time when magnetic interference from other wells is suspected.

1.4 *Survey Quality Control and Reporting*

1.4.1 Deviation calculations shall be performed on the rig independently by the directional driller and the Drilling Representative using the minimum radius of curvature method. The calculations shall be performed using a company approved program. The directional drilling contractor is responsible for the accurate reporting of all wellbore positioning data. The directional drilling contractor will present the definitive surveys utilizing data from any of SWN's surveying contractors.

1.4.2 The quality of the surveys taken shall be checked independently by the directional driller using the surveying contractor's approved survey acceptance criteria. For Gyro surveys this required a review and approval of the Gyro contractor's QA sheet. For MWD

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surveys this requires a review of the QA data sheet and a comparison to any MMS surveys.

- 1.4.3 The SWN representative will check tie-in data before drilling out of each hole section. Projected surveys will never be used to tie-in subsequent surveys.
- 1.4.4 The Drilling Engineer and directional drilling contractor will ensure all directional drilling proposals include the correct tie-in data and clearly identify the projection to which the plan is tied. This projection will be replaced with a survey once drilling commences.
- 1.4.5 All definitive surveys will contain the following data:
 - a. Well Name
 - b. Rig Floor Elevation
 - c. Local Coordinates
 - d. Section Plane
 - e. Declination Applied
 - f. Grid Convergence Applied
 - g. Any other correction applied
 - h. UTM Model
 - i. Survey History – Depths and Dates
 - j. Survey Tool Errors

2. Well Planning Requirements

2.1 General Requirements

- 2.1.1 No two wellbores should be designed to be closer than 10' once drilling commences. In the event that two surface locations are closer than 10' apart then directional equipment will be required below conductor and greater than 10' of separation shall be achieved as soon as possible.
- 2.1.2 During evaluation of well planning scenarios under the guidance of this policy, a situation may arise where a planning classification conflict occurs. In these situations the drilling department has the responsibility for safe operations and is therefore the ultimate decision making authority on all well classifications.
- 2.1.3 The Directional Drilling Contractor and Drilling Engineer shall make all efforts to plan well to avoid classification conflicts.
- 2.1.4 During the well planning process, the Directional Drilling Contractor and the Drilling Engineer shall calculate a

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Separation Factor for all potential collision risk wells identified in the clearance scan.

- 2.1.5 All wells planned with a S.F. of less than 2.0 or at any point closer than 10' planned center to center separation will be reviewed with the Drilling Engineering Manager prior to pre-spud meetings.
- 2.1.6 After completion of location and prior to setting the conductor the land survey company will resurvey the stakes for each surface location and drive a steel stake in the ground identifying each individual well. An as-built will be created and circulated to the Drilling Engineer and Drilling Superintendent identifying each well and the appropriate X and Y locations.
- 2.1.7 The Drilling Superintendant will create a bubble plot of the location to indicate well location to compare to the As-Built Survey Plat.

2.2 Well Planning Process

- 2.2.1 A clearance scan shall be performed and validated for all well plans between the Drilling Engineer and Directional Contractor.
- 2.2.2 Every nearby well will be classified using the Planning Matrix (Appendix J).
- 2.2.3 Using the chosen well plan scenario and calculated Separation Factors, the potential collision risk will be categorized as one of these types:

4	Intolerable - Undrillable well.
3	Manageable Risk - High priority evaluation risk
2	Reasonable Risk - Evaluate and monitor
1	Negligible Risk - No further action required

- This compilation of scenarios was developed to address the majority of situations that could arise give the current types of well currently being drilled. In the future, if a different collision situation develops due to operational or area changes then this matrix will require modification (Appendix L).
- Well Category Definitions

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- a. Category 4 – Undrillable well
Wells classified into this category present an unacceptable risk to personnel and/or facilities. Wells classified as 4 must be re-planned to an acceptable risk category.
- b. Category 3 – Manageable Risk
Wells classified into this category are deemed drillable based on the presence of physical mitigation (barriers below collision point, improved directional control/monitoring, etc.). Wells classified in this category during planning operations must be approved by the Drilling Engineering Manager.
- c. Category 2 – Reasonable Risk
Well classified into this category are deemed drillable with lower risk of collision. All physical mitigation should be considered during planning.
- d. Category 1 – Negligible Risk
This category is used for wells that require no additional actions as they are currently planned.

3. Well Execution Requirements

3.1 General Requirements

- 3.1.1 The Drilling Representative shall have overall responsibility for the maintenance of safe operations when drilling in close proximity to other wells. The lead directional driller is responsible for the accurate reporting of the wellbore positioning and projection and calculation of bit position and uncertainty at the bit (Appendix A-I and L).

3.2 Suspension of Drilling Operations

The following rules shall apply at all times when the calculated Separation Factor for the drilling well crosses either into a Category 4 classification or exceeds the Separation Factor specified in the wellplan.

- 3.1.1 When the classification of any collision risk well is Category 4 or the Separation Factor exceeds that specified in the wellplan, the Drilling Superintendent shall be informed and drilling shall immediately cease.
- 3.1.2 A plan of action shall be formulated after considering the following options:

- a. Re-survey the current well with a more accurate survey tool to reduce the radius of uncertainty and increase the projected S.F. to return the

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- well to Category 3 or that specified by the wellplan.
- b. Make a trip to allow use of a steering BHA to alter the well path and increase the projection of S.F. to Category 3 or that specified by the wellplan.
- c. Plug the well and side-track at a depth where the well can be safely re-drilled.

4. Drilling and Survey Procedure Guidelines

The following guidelines and procedures detail the typical responses to be enacted in the event of drilling with close proximity to existing wells.

3.1 General Guidelines for Drilling with Proximity to Other Wells

The following guidelines should be considered prior to commencement of drilling collision-critical hole sections. A collision-critical hole section shall be defined as any interval of the drilling well requiring a form of mitigation to either detect or avoid a collision (Appendix M).

- 4.1.1 Magnetic based surveying instruments shall not be used as the prime source of well location identification within 20' of any collision risk well. When magnetic interference is suspected, gyro surveys should be run. Once free of magnetic interference, gyro surveys are unnecessary.
- 4.1.2 When doubt exists as to the accuracy of magnetic based survey information, these shall be checked with a gyro based tool before drilling ahead.
- 4.1.3 Proximity calculations and projections shall be performed at regular intervals depending on the collision risk. A minimum frequency of twice daily is mandatory, however when drilling with a S.F. of less than 1.5, the frequency shall be increased to every stand drilled.

4.2 Drilling Procedure

- 4.2.1 Proximity calculations shall be routinely performed when drilling hole sections of Category 2 or Category 3 wells.
- 4.2.2 When well paths are identified as converging and the proximity scan indicates a S.F. of less than stated in the drilling plan, the following procedure shall be applied:
 - a. The last survey station shall be calculated, plotted, and agreed by the directional driller and Drilling Representative.

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- b. The last survey station shall be extrapolated to depth corresponding to the bit position after drilling the next single.
- c. An appropriate S.F. factor will be calculated using the projection of the next single.
- 4.2.3 Depending on the results of the proximity scan, the Drilling Representative shall enact the provisions of the policy per Section 3.4 if required.
- 4.2.4 Re-instatement of collision risk wells and stand down from the anti-collision procedures above shall only be performed when the S.F. is restored to the planned values for the depth or the current well is below the deepest collision issue.

4.3 *Tool Face Offset Procedure*

The On Site Supervisor may elect to utilize some or all of this procedure based on the confidence of third party personnel and criticality of drilling orientation (Appendix N).

- 4.1.1 If there are two directional drillers on location, both are to be on the drill floor when assembling the BHA.
- 4.1.2 Make up BHA and torque all connection's between the motor and MWD to recommended make up values.
- 4.1.3 Adjust motor AKO to needed bend and torque to recommended make up values.
- 4.1.4 Directional Driller will scribe motor/MWD as per Directional Companies guidelines.
- 4.1.5 MWD engineer imputes calculated value into MWD surface computer. Directional Driller will double check value was correctly placed in the computer.
- 4.1.6 The Directional Driller(s) and MWD operator should both be involved in measuring and calculating the tool face offset and double-checking each other while obtaining the correct value.

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**Appendix A – Field Specific Requirements for SIMOPS:
Drilling in addition to Completion &/or Production Operation(s)**

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		Fayetteville	Haynesville	Barnett	Marcellus	Eagle Ford
Common Well Spacing		Various	20'	15'	14'	20'
Under Substructure	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	No				
	Cage	Depends - If Warranted				
	Subsurface Mech Barrier	Yes - All Capable Wells				
	Surface Mech Barriers	Yes - All Wells				
	Remove WH	Depends - If Warranted				
	Collision Barriers	Depends - If Warranted				
	Completion Operation(s) Allowed	No - Not Possible				
	Other Considerations	Requires VP approval to circumvent policy				
Separation Factor < 2.0	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	Only wells (and affiliated pressurized equipment) that are located <u>outside</u> the rig fall radius, not required to have a Subsurface Mechanical Barrier per Anti-Collision requirements and <u>not adjacent</u> to Mob and Demob routes.				
	Cage	Yes - All Capable Wells located <u>inside</u> the rig fall radius				
	Subsurface Mech Barrier	Yes - All Capable Wells located <u>inside</u> the rig fall radius and those required by Anti-Collision requirements				
	Surface Mech Barriers	Yes - All Wells located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob routes				
	Remove WH	No				
	Collision Barriers	Yes - All Capable Wells and equipment located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob Routes				
	Completion Operation(s) Allowed	No				
	Other Considerations	Requires VP approval to circumvent policy				
Separation Factor > 2.0	SI for MIRU / RDMO	Yes - All Wells				
	Production Allowed	Only wells (and affiliated pressurized equipment) that are located <u>outside</u> the rig fall radius, not required to have a Subsurface Mechanical Barrier per Anti-Collision requirements and <u>not adjacent</u> to Mob and Demob routes.				
	Cage	Yes - All Capable Wells located <u>inside</u> the rig fall radius				
	Subsurface Mech Barrier	Yes - All Capable Wells located <u>inside</u> the rig fall radius and those required by Anti-Collision requirements				
	Surface Mech Barriers	Yes - All Wells located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob routes				
	Remove WH	No				
	Collision Barriers	Yes - All Capable Wells and equipment located <u>inside</u> the rig fall radius or <u>adjacent</u> to Mob and Demob Routes				
	Completion Operation(s) Allowed	No				
	Other Considerations	Requires DM approval to circumvent policy				
PIC		Drilling Representative				

Appendix B – Field Specific Requirements for SIMOPS:
More than one Completion and/or Production Operation(s)

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		Fayetteville	Haynesville	Barnett	Marcellus	Eagle Ford
Common Well Spacing		Various	20'	15'	14'	20'
Stimulation	SI for MIRU / RDMO	Yes - All Wells				
	Cage	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collision Barrier	Yes, Mob & Demob Routes				
	Production Allowed	Yes, if wells <u>are not</u> adjacent to Mob & Demob Routes and / or within Potential Impact Area of Heavy Lifts. Must consider if wells could be impacted by stimulation				
Workover Rig and Coiled Tubing	SI for MIRU / RDMO	Yes - All Wells				
	Cage	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collision Barrier	Depends - Yes, Mob & Demob Routes when numerous vehicles and/or significant amounts of transported equipment will be involved				
	Production Allowed	Yes, if wells are outside the rig fall radius, <u>are not</u> adjacent to Mob & Demob Routes or within Potential Impact Area of Heavy Lifts.				
Slickline and Wireline	SI for MIRU / RDMO	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Cage	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Subsurface Mech Barrier	No				
	Surface Mech Barriers	Yes, if wells are Capable and within Potential Impact Area of Heavy Lifts				
	Remove WH	No				
	Collision Barrier	No				
	Production Allowed	Yes, if wells <u>are not</u> within Potential Impact Area of Heavy Lifts				
PIC - When Completions Department is involved		Completion Representative				
PIC - Otherwise		Production Representative				

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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 Southwestern Production Company, L.L.C., Operator
Mark Hickman OHI 9H
Ohio County, West Virginia

#	TMP	SURFACE OWNER	DEEDED ACREAGE	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
						Great Lakes Energy Chesapeake Appalachia L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	15.5%	9/686 808/434 822/732 883/192 888/61
1	06-T14-38	Cecil L. Hickman, Lawrence Grant Hickman, John Mark Hickman and Carol Sue Hickman	35.9425	1-324238-001	Cecil L. Hickman			
						Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	18%	815/647 815/647 Amended 820/732 Amended 825/176 885/284 888/121
1	06-T14-38	Cecil L. Hickman, Lawrence Grant Hickman, John Mark Hickman and Carol Sue Hickman	107.8275	1-345205-001	Lawrence Grant Hickman, John Mark Hickman and Carol Sue Hickman			
						Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	18%	810/498 816/46 883/180 888/706
2	06-T14-41.1	Lonnie Church and Theda A. Church	6.876	1-3140547-000	Lonnie Church and Theda A. Church			
						Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	18%	821/92 884/337
3	06-T14-53	Michael J. Fynmore and Alicia A. Fynmore a/k/a Alicia A. Coad	4.72	47-000368-000	Michael J. Fynmore and Alicia A. Fynmore a/k/a Alicia A. Coad			
						Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	18%	822/358 885/105
4	06-T14-53.1	Shane I. Parker and Danielle F. Parker	1	47-000456-000	Dale J. Parsons			
						Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	18%	814/495 825/169 883/243 888/81
5	06-T14-57.1	Robert L. Saffle and Sara K. Wetzel-Saffle	1	1-329171-000	Ronald J. Dilorenzo and Roberta P. Dilorenzo			
						Chesapeake Appalachia, L.L.C. Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties SWN Production Company SWN Exchange Titleholders LLC	18%	817/766 826/74 Amended 828/673 884/337 888/306
6	06-T14-41.3	Daniel R. Oliver and Rebecca L. Oliver	2.368	47-00361-000	Daniel R. Oliver and Rebecca L. Oliver			
						Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C.	18%	840/183 851/601 885/380
7	06-T14-41.2	David Glenn Beaver and Judy Ann Beaver	2.632	47-002187-000	David Glenn Beaver and Judy Ann Beaver			

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 Mark Hickman OH# 9H
 Ohio County, West Virginia

8	06-T19-20	Patrick L. Riddle and Christina A. Riddle	5	1-314065-000	Patrick L. Riddle and Christine A. Riddle	Chesapeake Appalachia, L.L.C. SWN Production Company, L.L.C.	18%	810/494 883/180
9	06-T19-18	David L. Gittings and Jennifer A. Gittings	5	47-0000107-000	David L. Gittings and Jennifer A. Gittings	Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties SWN Production Company, L.L.C.	18%	858/320 870/757 884/289
10	06-T14-65	Mark F. Lichwa and Kathleen Lichwa	21.087	1-265438-000	Mark F. Lichwa and Kathleen Lichwa	Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	12.5%	790/735 796/334 885/500 888/666
11	06-T19-8.2	Mark F. Lichwa and Kathleen Lichwa	4.242	1-265438-000	Mark F. Lichwa and Kathleen Lichwa	Chesapeake Appalachia, L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	12.5%	790/735 796/334 885/500 888/666
12	06-T19-8.1	Mark F. Lichwa and Kathleen Lichwa	19.6427	1-265438-000	Mark F. Lichwa and Kathleen Lichwa	Fortuna Energy Range Resources L.L.C. Chesapeake Appalachia L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	12.5%	770/474 786/410 808/500 822/737 883/204 888/71
13	06-T19-8	Vaughn Stricklin and Kathryn Sticklin	42.87	1-324731-000	Vaughn Stricklin and Kathryn Sticklin	Great Lakes Energy Chesapeake Appalachia L.L.C. Statoil Hydro USA Onshore Properties Inc. SWN Production Company, L.L.C. SWN Exchange Titleholders, L.L.C.	12.5%	777/91 808/556 822/708 883/192 888/61
14	06-T19-9	Casey Stein, Tammy Stein, Jacob Stein and Audrey Heldt	101.555	1-324177-000	Herbert Sharp and Alice A. Sharp			

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Mark Hickman OHI 9H
Ohio County, West Virginia

					Great Lakes Energy	12.5%	777/91
					Chesapeake Appalachia L.L.C.		808/556
					Statoil Hydro USA Onshore Properties Inc.		822/708
					SWN Production Company, L.L.C.		883/192
					SWN Exchange Titleholders, L.L.C.		888/61
15	06-T19-9.1	Audrey Heldreth and Loren Heldreth	2.155	1-324177-000	Herbert Sharp and Alice A. Sharp		
					Chesapeake Appalachia, L.L.C.	18%	795/571
					Statoil Hydro USA Onshore Properties Inc.		802/124
					SWN Production Company, L.L.C.		885/524
					SWN Exchange Titleholders, L.L.C.		888/686
16	06-T20-3.2	Marjorie Griffin	34.045	1-272774-000	Donald E. and Marjorie S. Griffin		

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SWN

Southwestern Energy®

PO Box 1300
Jane Lew, WV 26378
PHONE: (832) 796-1610

October 13, 2015

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

RE: SWN's proposed Mark Hickman U OHI 9H in Ohio County, West Virginia, Drilling under Mustang Lane, Woodlawn Farm Road, and Oklahoma 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 Mustang Lane, Woodlawn Farm Road, and Oklahoma 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,



Robert Walter
Senior Landman
SWN Production Company, LLC
PO Box 1300
Jane Lew, WV 26378



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The Right People doing the Right Things,
wisely investing the cash flow from
our underlying Assets, will create Value+
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**Horizontal Natural Gas Well Work Permit
Application Notice By Publication**

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(e), prior to filing an application for a permit for a horizontal well the applicant shall publish in the county in which the well is located or is proposed to be located a Class II legal advertisement.

Paper: The Intelligencer

1500 Main Street
Wheeling, WV 26003-0100

Public Notice Date: October 8, 2015 & October 15, 2015

The following applicant intends to apply for a horizontal natural gas well work permit which disturbs three acres or more of surface excluding pipelines, gathering lines and roads or utilizes more than two hundred ten thousand gallons of water in any thirty day period.

Applicant: SWN Production Company, LLC

Well Number: Mark Hickman UP OHI 9H

Address: P.O. Box 6070
Charleston, WV 25362

Business Conducted: Natural gas production.

Location:

State: West Virginia
County: Ohio
District: Triadelphia
Quadrangle: Valley Grove
UTM NAD83 Northing: 4432256.954
UTM NAD83 Easting: 538602.553
Watershed: Wheeling Creek

Any interested person may submit written comments or request a copy of the proposed permit application by emailing dep.oogcomments@wv.gov, sending a letter to Permit Review, Office of Oil and Gas, 601 57th Street, SE, Charleston, WV 25304, or calling 304-926-0450. Emailed or written comments must reference the county, well number, and operator and be received by November 14, 2015

Copies of the proposed permit application may be reviewed at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Full copies or scans of the proposed permit application will cost \$15.00, whether mailed or obtained at DEP headquarters.

For information related to horizontal drilling, and all horizontal well applications filed in this state, visit:
www.dep.wv.gov/oil-and-gas/pages/default.aspx

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ADNo: 234764 Customer Number: L01796
 Customer Name: Company: SOUTHWESTERN ENERGY
 Address: PO BOX 1300 ATTN: BRITTANY WOODY
 City/St/Zip: JANE LEW ,WV 26378
 Phone: (304) 884-1613 Solicitor: LE
 Category: 10 Class: 1000 Rate: L-0 Start: 10-8-2015 Stop: 10-15-2015
 Lines: 102 Inches: 9.92 Words: 298

Credit Card: Expire:
 Order Number:
 Cost: 94.55 Extra Charges: 2.00 Adjustments: .00
 Payments: .00 Discount: .00
 Balance: 96.55

Horizontal Natural Gas
 Well Work Permit
 Application Notice By
 Publication

Notice is hereby given:
 Pursuant to West Virginia
 Code Section 22-6A-10(e)
 prior to filing an applica-
 tion for a permit for a hor-
 izontal well the applicant
 shall publish in the county
 in which the well is locat-
 ed or is proposed to be lo-
 cated a Class II legal ad-
 vertisement.

Paper: The Intelligencer
 1500 Main Street
 Wheeling, WV
 26003-0100

Public Notice Date:
 October 8, 2015 & Oc-
 tober 15, 2015

The following applicant in-
 tends to apply for a hor-
 izontal natural gas well
 work permit which disturbs
 three acres or more
 of surface excluding pipe-
 lines, gathering lines and
 roads or utilizes more
 than two hundred ten
 thousand gallons of water
 in any thirty day period.

Applicant:
 SWN Production Com-
 pany, LLC
Well Number:
 Mark Hickman UP OHI
 9H Address: P.O. Box
 6070
 Charleston, WV 25362
Business Conducted:
 Natural gas production.
Location:
 State: West Virginia
 County: Ohio
 District: Triadelphia
 Quadrangle: Valley Grove
 UTM NAD83 Northing:
 4432256.954
 UTM NAD83 Easting:
 538602.553
 Watershed: Wheeling
 Creek

Any interested person
 may submit written com-
 ments or request a copy
 of the proposed permit
 application by emailing:
 dep.oogcomments@
 wv.gov
 sending a letter to Permit
 Review, Office of Oil and
 Gas, 601 57th Street, SE,
 Charleston, WV 25304, or

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calling 304-926-0450. Emailed or written comments must reference the county, well number, and operator and be received by November 14, 2015

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For information related to horizontal drilling, and all horizontal well applications filed in this state,

visit: www.dep.wv.gov/oil-and-gas/pages/default.aspx

Int. Oct. 8, 15, 2015

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

Date of Notice Certification: 10/21/15

API No. 47- 69 -
Operator's Well No. Mark Hickman UP OHI 9H
Well Pad Name: Mark Hickman OHI Pad

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>WV</u>	UTM NAD 83 Easting: <u>538602</u>
County: <u>Ohio</u>	Northing: <u>4432256</u>
District: <u>Tridelphia</u>	Public Road Access: <u>Dallas Pike</u>
Quadrangle: <u>Valley Grove</u>	Generally used farm name: <u>Mark Hickman OHI pad</u>
Watershed: <u>Wheeling Creek</u>	

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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Required Attachments:

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

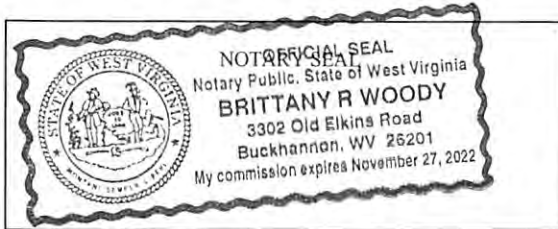
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Certification of Notice is hereby given:

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

Well Operator: SWN Production Co., LLC
By: Dee Southall
Its: Regulatory Supervisor
Telephone: 304-884-1610

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: 304-471-2479
Email: Dee_Southall@swn.com



Subscribed and sworn before me this 12th day of October 2015
Brittany R Woody Notary Public
My Commission Expires 11/27/20

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 10/21/15 **Date Permit Application Filed:** 10/21/15

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

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

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: Carol Sue Criswell
 Address: 1213 Wildlife Road
Valley Grove, WV 26060
 Name: Cecil Hickman
 Address: 5280 Golden Fern Lane
Columbus, OH 43228

COAL OWNER OR LESSEE
 Name: Alliance Resources GP, LLC %Christine St. John
 Address: 2596 Battle Run Road
Triadelphia WV 26059

COAL OPERATOR
 Name: _____
 Address: _____

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

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

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

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

*Please attach additional forms if necessary

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$



Coal

Alliance Resources GP, LLC
%Christine St. John
2596 Battle Run Road
Triadelphia, WV 26059



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7014 2120 0000 7175 9585

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

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

Date of Notice: _____ **Date Permit Application Filed:** _____

Notice of:

- PERMIT FOR ANY WELL WORK CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

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

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: John Mark Hickman
Address: 101 Grandma's Lane
Tridelfhia, WV 26059

Name: Lawrence Grant Hickman
Address: 136 Grandma's Lane
Tridelfhia, WV 26059

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

Name: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: _____
Address: _____

COAL OPERATOR

Name: _____
Address: _____

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

Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Restricted Delivery Fee (Endorsement Required)	



Lawrence Grant Hickman
136 Grandma's Lane
Triadelphia, WV 26059 ✓

7014 2120 0000 7175 9576

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Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	



Carol Sue Criswell
1213 Wildlife Road
Valley Grove, WV 26060 ✓

Surface

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Postage	\$
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Restricted Delivery Fee (Endorsement Required)	



Cecil Hickman
5280 Golden Fern Lane
Columbus, OH 43228 ✓

Surface

7014 2120 0000 7175 9547

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Total Postage & Fees	\$



John Mark Hickman
101 Grandma's Lane
Triadelphia, WV 26059 ✓

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Mark Hickman OHI Pad - Water Purveyors w/in 1500'

Landowner	Address
Blanch Rybeck (3)	347 Arts Way Triadelphia, WV 26059 ✓
Mark Hickman	101 Grandmas Lane Triadelphia, WV 26059 ✓
Bill Orum (2)	169 Wildlife Road Triadelphia, WV 26059 ✓
Frank Klimaszewski	191 Wildlife Road Triadelphia, WV 26059 ✓

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Restricted Delivery Fee (Endorsement Required)	



Frank Klimaszweski
191 Wildlife Road
Triadelphia, WV 26059

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Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OFFICIAL USE

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$



Bill Orum
169 Wildlife Road
Triadelphia, WV 26059

7014 2120 0000 7175 9530

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Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

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Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$



Blanch Rybeck
347 Arts Way
Triadelphia, WV 26059

7014 2120 0000 7175 9554

Water

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02/17/2017

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2015, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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Environmental Protection**

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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Office of Oil and Gas

OCT 23 2015

WV Department of
Environmental Protection
02/17/2017

WW-6A
(8-13)

API NO. 47- 69 -
OPERATOR WELL NO. Mark Hickman UP OHI 9H
Well Pad Name: Mark Hickman OHI Pad

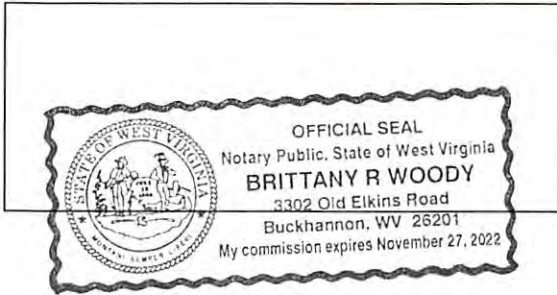
Notice is hereby given by:

Well Operator: SWN Production Co., LLC
Telephone: 832-796-1610
Email: Dee_Southall@swn.com

Address: P.O. Box 1300
Jane Lew, WV 26378
Facsimile: 304-471-2479

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 12th day of October 2015
Brittany R Woody Notary Public
My Commission Expires 11/27/22

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OCT 23 2015

WV Department of
Environmental Protection

02/17/2017

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108



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OCT 23 2015



NAME AND DISTANCE TO THE NEAREST STREAM: UNT 1 OF GILLESPIE RUN IS LOCATED ±0.22 MILES SE OF THE CENTER OF THE DRILL PAD.		STREAM CROSSING COORDINATES (NAD 83): A. LAT: 40.036656° / LONG: -80.545849° B. LAT: 40.028046° / LONG: -80.540531° C. LAT: 40.02444° / LONG: -80.538304°		COMPANY: SWN Production Company, LLC			
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET				OPERATOR'S MARK HICKMAN UP OHI WELL #: 9H		LOCATION: TRIADELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF OHIO COUNTY, WEST VIRGINIA; MAP NUMBER 54069C00950; EFFECTIVE DATE: JULY 17, 2006.				SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.039658° LONGITUDE: -80.547505°		02/17/2017	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ✖ EXISTING / PRODUCING WELLHEAD ✖ ABANDONED WELL ✖ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR				○ EXISTING SPRING ○ EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.021892° LONGITUDE: -80.536727°	
REVISIONS:				DATE: 10-05-2015		DRAWN BY: E. LYTLE SCALE: 1" = 2000' DRAWING NO: 050-5494 TOPOGRAPHIC MAP	

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

HAND DELIVERY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Cecil Hickman
Address: 5280 Golden Fern Lane
Columbus, OH 43228

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 538,602.553
County: Ohio Northing: 4,432,256.954
District: Triadelphia Public Road Access: _____
Quadrangle: Valley Grove Generally used farm name: _____
Watershed: Wheeling Creek

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

RECEIVED
Office of Oil and Gas

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1615
Email: Steve_Perkins@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall **OCT 23 2015**
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1614
Email: Danielle_Southall@swn.com
Facsimile: _____

WV Department of
Environmental Protection

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Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

OCT
5
2015
Postmark
Here

Sent To
 Cecil Hickman
 Street, Apt. No.,
 or PO Box No. 5280 Golden Fern Lane
 City, State, ZIP+4 Columbus, OH 43228

PS Form 3800, August 2005 See Reverse for Instructions

RECEIVED
Office of Oil and Gas

OCT 23 2015

WV Department of
Environmental Protection

02/17/2017

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

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Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

HAND DELIVERY **CERTIFIED MAIL RETURN RECEIPT REQUESTED**

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Notice is hereby provided to the SURFACE OWNER(s):

Name: Carol Sue Criswell
Address: 1213 Wildlife Rd.
Valley Grove, WV 26060

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 538,602.553
County: Ohio Northing: 4,432,256.954
District: Triadelphia Public Road Access: _____
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Watershed: Wheeling Creek

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Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1615
Email: Steve_Perkins@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1614
Email: Danielle_Southall@swn.com
Facsimile: _____

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Office of Oil and Gas
OCT 23 2015

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OFFICIAL USE

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

Postmark
Here
OCT 23 2015

Sent To
 Street & Apt. No.,
 or PO Box No.
 City, State, ZIP+4

Carol Sue Criswell
 1213 Wildlife Rd.
 Valley Grove, WV 26060

PS Form 3800, July 2011 See Reverse for Instructions

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OCT 23 2015

WV Department of
Environmental Protection

02/17/2017

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

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Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

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Notice is hereby provided to the SURFACE OWNER(s):

Name: John Mark Hickman
Address: 101 Grandma's Lane
Triadelphia, WV 26059

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 538,602.553
County: Ohio Northing: 4,432,256.954
District: Triadelphia Public Road Access: _____
Quadrangle: Valley Grove Generally used farm name: _____
Watershed: Wheeling Creek

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Notice is hereby given by:

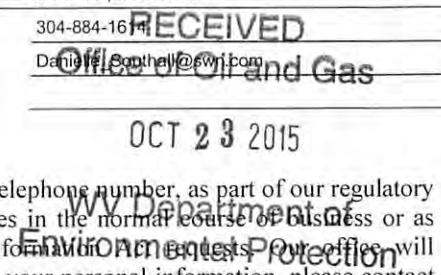
Well Operator: SWN Production Company, LLC
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1615
Email: Steve_Perkins@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1614
Email: Danielle.Southall@swn.com
Facsimile: _____

OCT 23 2015

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

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Sent To
 Street, Apt. No.,
 or PO Box No. John Mark Hickman
 101 Grandma's Lane
 City, State, ZIP+4 Triadelphia, WV 26059

PS Form 3800, August 2006 See Reverse for Instructions

RECEIVED
 Office of Oil and Gas
 OCT 23 2015
 WV Department of
 Environmental Protection

02/17/2017

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

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Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

HAND DELIVERY **CERTIFIED MAIL RETURN RECEIPT REQUESTED**

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Lawrence Grant Hickman
Address: 136 Grandma's Lane
Triadelphia, WV 26059

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 538,602.553
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District: Triadelphia Public Road Access: _____
Quadrangle: Valley Grove Generally used farm name: _____
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Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1615
Email: Steve_Perkins@swn.com
Facsimile: _____

Authorized Representative: Danielle Southall
Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Telephone: 304-884-1614
Email: Danielle_Southall@swn.com
Facsimile: _____

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Office of Oil and Gas

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WV Department of
Environmental Protection

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Total Postage & Fees	\$

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Sent To
 Street, Apt. No.,
 or PO Box No. Lawrence Grant Hickman
 136 Grandma's Lane
 City, State, ZIP+4 Triadelphia, WV 26059

PS Form 3800, August 2006

See Reverse for Instructions

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 WV Department of
 Environmental Protection

02/17/2017

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

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

Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

- CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: <u>Carol Sue Criswell</u>	Name: _____
Address: <u>1213 Wildlife Rd.</u>	Address: _____
<u>Valley Grove, WV 26060</u>	_____

Notice is hereby given:

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>538,602.553</u>
County: <u>Ohio</u>		Northing: <u>4,432,256.954</u>
District: <u>Triadelphia</u>	Public Road Access: _____	
Quadrangle: <u>Valley Grove</u>	Generally used farm name: _____	
Watershed: <u>Wheeling Creek</u>		

This Notice Shall Include:

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

Well Operator: <u>SWN Production Company, LLC</u>	Address: <u>PO Box 1300, 179 Innovation Drive</u>
Telephone: <u>304-884-1614</u>	<u>Jane Lew, WV 26378</u>
Email: <u>Danielle_Southall@swn.com</u>	Facsimile: <u>304-472-4225</u>

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Office of Oil and Gas
OCT 23 2015

WV Department of
Environmental Protection

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Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

Postmark
Here

OCT 23 2015

Sent To

Street & Apt. No.,
or PO Box No.

City, State, ZIP+4

Carol Sue Criswell
1213 Wildlife Rd.
Valley Grove, WV 26060

PS Form 3800, July 2011

See Reverse for Instructions

RECEIVED
Office of Oil and Gas
OCT 23 2015
WV Department of
Environmental Protection

02/17/2017

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

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

Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

- | | |
|----------------------------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> CERTIFIED MAIL | <input type="checkbox"/> HAND |
| RETURN RECEIPT REQUESTED | DELIVERY |

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

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(at the address listed in the records of the sheriff at the time of notice):

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Address: 5280 Golden Fern Lane
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County: <u>Ohio</u>		Northing: <u>4,432,256.954</u>
District: <u>Triadelphia</u>	Public Road Access: _____	
Quadrangle: <u>Valley Grove</u>	Generally used farm name: _____	
Watershed: <u>Wheeling Creek</u>		

This Notice Shall Include:

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

Well Operator: SWN Production Company, LLC
Telephone: 304-884-1614
Email: Danielle_Southall@swn.com

Address: PO Box 1300, 179 Innovation Drive
Jane Lew, WV 26378
Facsimile: 304-472-4225

Oil and Gas Privacy Notice:

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

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 Cecil Hickman
 Street, Apt. No.,
 or PO Box No. 5280 Golden Fern Lane
 City, State, ZIP+4 Columbus, OH 43228

PS Form 3800, August 2006 See Reverse for Instructions

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

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

Date of Notice: 10/05/2015 **Date Permit Application Filed:** 10/21/15

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: <u>John Mark Hickman</u>	Name: _____
Address: <u>101 Grandma's Lane</u>	Address: _____
<u>Triadelphia, WV 26059</u>	

Notice is hereby given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>538,602.553</u>
County:	<u>Ohio</u>		Northing:	<u>4,432,256.954</u>
District:	<u>Triadelphia</u>	Public Road Access:	_____	
Quadrangle:	<u>Valley Grove</u>	Generally used farm name:	_____	
Watershed:	<u>Wheeling Creek</u>			

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Well Operator: <u>SWN Production Company, LLC</u>	Address: <u>PO Box 1300, 179 Innovation Drive</u>
Telephone: <u>304-884-1614</u>	<u>Jane Lew, WV 26378</u>
Email: <u>Danielle_Southall@swn.com</u>	Facsimile: <u>304-472-4225</u>

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Total Postage & Fees	\$

OCT 5 2015
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Sent To
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City, State, ZIP+4 Triadelphia, WV 26059

PS Form 3800, August 2006 See Reverse for Instructions

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

Name: <u>Lawrence Grant Hickman</u>	Name: _____
Address: <u>136 Grandma's Lane</u> <u>Triadelphia, WV 26059</u>	Address: _____

Notice is hereby given:

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

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County: <u>Ohio</u>		Northing: <u>4,432,256.954</u>	
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City, State, ZIP+4 Triadelphia, WV 26059

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

June 30, 2015

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

Subject: DOH Permit for the Mark Hickman Pad, Ohio County
Mark Hickman U OHI 9H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2011-0109 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Ohio County Route 43 SLS.

The operator has signed an OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office Oil & Gas Coordinator

Cc: Brittany Woody
Southwestern Energy
CH, OM, D-6
File

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
BAKER HUGHES	ALPHA 1427	Biocide	Didecyl Dimethyl Ammonium Chloride	007173-51-1
			Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compound	068424-85-1
			Water	007732-18-5
	BF-7L	Buffer	Potassium Carbonate	000584-08-7
	ClayCare	Clay Stabilizer	Choline Chloride	000067-48-1
			Water	007732-18-5
	Enzyme G-I	Breaker	No Hazardous Components	NONE
	ENZYME G-NE	Breaker	No Hazardous Components	NONE
	FRW-18	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8
	GW-3LDF	Gel	Petroleum Distillate Blend	N/A-014
			Polysaccharide Blend	N/A-021
	SCALETROL 720	Scale Inhibitor	Diethylene Glycol	000111-46-6
Ethylene Glycol			000107-21-1	
XLW-32	Crosslinker	Boric Acid	010043-35-3	
		Methanol (Methyl Alcohol)	000067-56-1	
FRAC TECH SERVICES	APB01 (AMMONIUM PERSUFATE BREAKER)	Breaker	Ammonium Persulfate	007727-54-0
	B05 (LOW PH BUFFER)	Buffer	Acetic acid	000064-19-7
	BXL03 Borate XL Delayed High Temp	Crosslinker	No Hazardous Components	NONE
	FRW-200	Friction Reducer	No Hazardous Components	NONE
	HVG01 (TURQUOISE-1 BULK)	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8
	KCLS-4	Clay Stabilizer	No Hazardous Components	NONE
	LTB-1	Breaker	Ammonium Persulfate	N/A

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
NALCO ONESOURCE	EC6110A	Biocide	Ethanol	000064-17-5
			Glutaraldehyde (Pentanediol)	000111-30-8
			Quaternary Ammonium Compounds	N/A-063
	EC6629A	Biocide	No Hazardous Components	NONE
WEATHERFORD	WBK-133 OXIDIZER	Breaker	Ammonium Persulfate	007727-54-0
	WBK-134	Breaker	Ammonium Persulfate	007727-54-0
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7
	WCS-631LC	Clay Stabilizer	Proprietary Non Hazardous Salt	N/A-229
			Water	007732-18-5
	WFR-55LA	Friction Reducer	No Hazardous Components	NONE
	WGA-15L	Gel	Petroleum Distillate Hydrotreated Light	064742-47-8
	WPB-584-L	Buffer	Potassium Carbonate	000584-08-7
			Potassium Hydroxide	001310-58-3
	WXL-101LE	Corsslinker	No Hazardous Components	NONE
	WXL-101LM	Crosslinker	Petroleum Distillate Hydrotreated Light	064742-47-8
	WXL-105L	Crosslinker	Water	007732-18-5
			Ethylene Glycol	000107-21-1
Boric Acid			010043-35-3	
Ethanolamine			000141-43-5	
SCHLUMBERGER	B244 Green-Cide 25G	Biocide	Glutaraldehyde	111-30-8
	L071 Temporary Clay Stabilizer	Clay Stabilizer	Cholinium Chloride	67-48-1
	Breaker J218	Breaker	Diammonium Peroxidisulphate	7727-54-0
	EB-Clean* J475 Breaker		Diammonium Peroxidisulphate	7727-54-0
	Friction Reducer B315	Friction Reducer	Distillates (petroleum) Hydrotreated Light Aliphatic Alcohol Glycol Ether	64742-47-8
	Friction Reducer J609		Ammonium Sulfate	7783-20-2
Supplier Name	Product Name	Product Use	Chemical Name	CAS Number

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SCHLUMBERGER	Water Gelling Agent J580	Gel	Carbohydrate Polymer	Proprietary
	Scale Inhibitor B317	Scale Inhibitor	Trisodium ortho phosphate Ethane-1, 2-diol	7601-54-9 107-21-1
	Borate Crosslinker J532	Crosslinker	Aliphatic polyol Sodium tetraborate decahydrate	Proprietary 1303- 96-4
	Crosslinker J610		Aliphatic polyol Potassium hydroxide	Proprietary 1310- 58-3

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02/17/2017

OPERATOR: SWN Production Co., LLC WELL NO: Mark Hickman UP OHI 9H

PAD NAME: Mark Hickman OHI Pad

REVIEWED BY: _____ SIGNATURE: _____

WELL RESTRICTIONS CHECKLIST

HORIZONTAL 6A WELL

Pad Built 6/23/11

Well Restrictions

- At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR
 DEP Waiver and Permit Conditions
- At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR
 DEP Waiver and Permit Conditions
- At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR
 DEP Waiver and Permit Conditions
- At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions
- At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions
- At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions

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