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**west virginia** department of environmental protection

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

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

October 23, 2015

**WELL WORK PERMIT**  
**Rework/Horizontal 6A Well**

This permit, API Well Number: 47-5101326, issued to SWN PRODUCTION COMPANY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin  
Chief

Operator's Well No: 831493 BONNETTE MSH 3H  
Farm Name: BONNET, ROBERT & LINDA  
**API Well Number: 47-5101326**  
**Permit Type: Rework/Horizontal 6A Well**  
Date Issued: 10/23/2015

**Promoting a healthy environment.**

**10/23/2015**

## PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

### CONDITIONS

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1. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
2. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
3. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
4. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

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

1) Well Operator: SWN Production Co., LLC

<u>494512924</u>	<u>51-Marshall</u>	<u>5-Meade</u>	<u>681- Wileyville</u>
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Operator ID County District Quadrangle

2) Operator's Well Number: Bonnette MSH 3H Well Pad Name: Bonnette MSH Pad

3) Farm Name/Surface Owner: Robert and Linda Bonnette Public Road Access: Fish Creek

4) Elevation, current ground: 1457' Elevation, proposed post-construction: 1457'

5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other Re-frac

(b) If Gas Shallow  Deep \_\_\_\_\_  
Horizontal \_\_\_\_\_ 22 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- Marcellus, Target Top TVD- 7074', Target Base TVD- 8024', Anticipated Thickness- 50', Associated Pressure- 4739

8) Proposed Total Vertical Depth: 7095'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 12450'

11) Proposed Horizontal Leg Length: 4983'

12) Approximate Fresh Water Strata Depths: 395'

13) Method to Determine Fresh Water Depths: from log analysis and nearby water wells

14) Approximate Saltwater Depths: none

15) Approximate Coal Seam Depths: 375'

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

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

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

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft./CTS)
Conductor	20"	New	J-55	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	1220	1220	1375 sx/CTS
Coal	9 5/8"	New	J-55	40#	2752'	2752'	1263 sx/CTS
Intermediate	7"	New	P-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110	20#	12450'	12450'	3183 sx/100' inside intermediate
Tubing	2 3/8"	New	P-110	4.7#	Approx. 7467'	Approx. 7467'	
Liners							

*Handwritten signature and date: 10/14/15*

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	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			
Sizes:	5 1/2"			
Depths Set:				

WW-6B  
(10/14)

API NO. 47- 51 - \_\_\_\_\_  
OPERATOR WELL NO. Bonnette MSH 3H  
Well Pad Name: Bonnette MSH Pad

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

None. We will be temporarily isolating existing perforations in the horizontal section of the wellbore. The chemical used to isolate the perforations is degradable at subsurface conditions and will decay then flowback with time. New perforations will be created and stimulated in addition to those existing.

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 existing

22) Area to be disturbed for well pad only, less access road (acres): 11.6 existing

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.

EXISTING

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.

EXISTING

Received  
Office of Oil & Gas  
AUG 26 2015

\*Note: Attach additional sheets as needed.

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas  
Well Operator's Report of Well Work

DATE: 8-17-2012  
API #: 47-051-01326

Farm name: Bonnette 3H Operator Well No.: 831493

LOCATION: Elevation: 1,457' Quadrangle: Wileyville

District: Meade County: Marshall  
Latitude: 1,010' Feet South of 39 Deg. 45 Min. 00 Sec.  
Longitude 10,325' Feet West of 80 Deg. 42 Min. 30 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
P.O. Box 18496 Oklahoma City, OK 73154-0496	20"	100'	100'	145 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	1,220'	1,220'	1375 Cu. Ft.
Inspector: Bill Hendershot	9 5/8"	2,752'	2,752'	1263 Cu. Ft.
Date Permit Issued: 11-12-2009	5 1/2"	12,450'	12,450'	3183 Cu. Ft.
Date Well Work Commenced: 11-21-2011				
Date Well Work Completed: 5-18-2012				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 7,095'				
Total Measured Depth (ft): 12,450'				
Fresh Water Depth (ft.): 395'				
Salt Water Depth (ft.): None				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 375'				
Void(s) encountered (N/Y) Depth(s) N				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 7,673'-12,302'  
Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow 1,972\* MCF/d Final open flow 48 Bbl/d  
Time of open flow between initial and final tests 24 Hours \*Calculated  
Static rock Pressure 4,565\* psig (surface pressure) after \_\_\_\_\_ Hours

Second producing formation \_\_\_\_\_ Pay zone depth (ft) \_\_\_\_\_  
Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests \_\_\_\_\_ Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the 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.

Marlene Williams  
Signature

8-21-2012  
Date

10/23/2015

Were core samples taken? Yes \_\_\_\_\_ No X

Were cuttings caught during drilling? Yes X No \_\_\_\_\_

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list LWD GR from 6540-12450' MD.

**NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.**

Perforated Intervals, Fracturing, or Stimulating:

(See Attached)

Plug Back Details Including Plug Type and Depth(s):

<u>Formations Encountered:</u>	<u>Top Depth</u>	<u>Bottom Depth</u>
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(See Attached)

**PERFORATION RECORD ATTACHMENT**

Well Number and Name: 831493 Bonnette 3H


PERFORATION RECORD			STIMULATION RECORD							
Date	Interval Perforated		Date	Interval Treated		Fluid		Propping Agent		Average Injection
	From	To		Type	Amount	Type	Amount			
1/20/2012	11,920	12,302	5/13/2012	11,920	12,302	Slk wtr	7,838	Sand	474,940	67
5/13/2012	11,212	11,821	5/15/2012	11,212	11,821	Slk wtr	11,011	Sand	692,514	83
5/15/2012	10,504	11,119	5/15/2012	10,504	11,119	Slk wtr	12,318	Sand	692,620	85
5/15/2012	9,796	10,406	5/16/2012	9,796	10,406	Slk wtr	10,711	Sand	686,680	84
5/16/2012	9,089	9,698	5/16/2012	9,089	9,698	Slk wtr	10,985	Sand	692,920	85
5/16/2012	8,381	8,990	5/18/2012	8,381	8,990	Slk wtr	12,143	Sand	691,660	81
5/18/2012	7,673	8,282	5/19/2012	7,673	8,282	Slk wtr	12,454	Sand	707,240	76

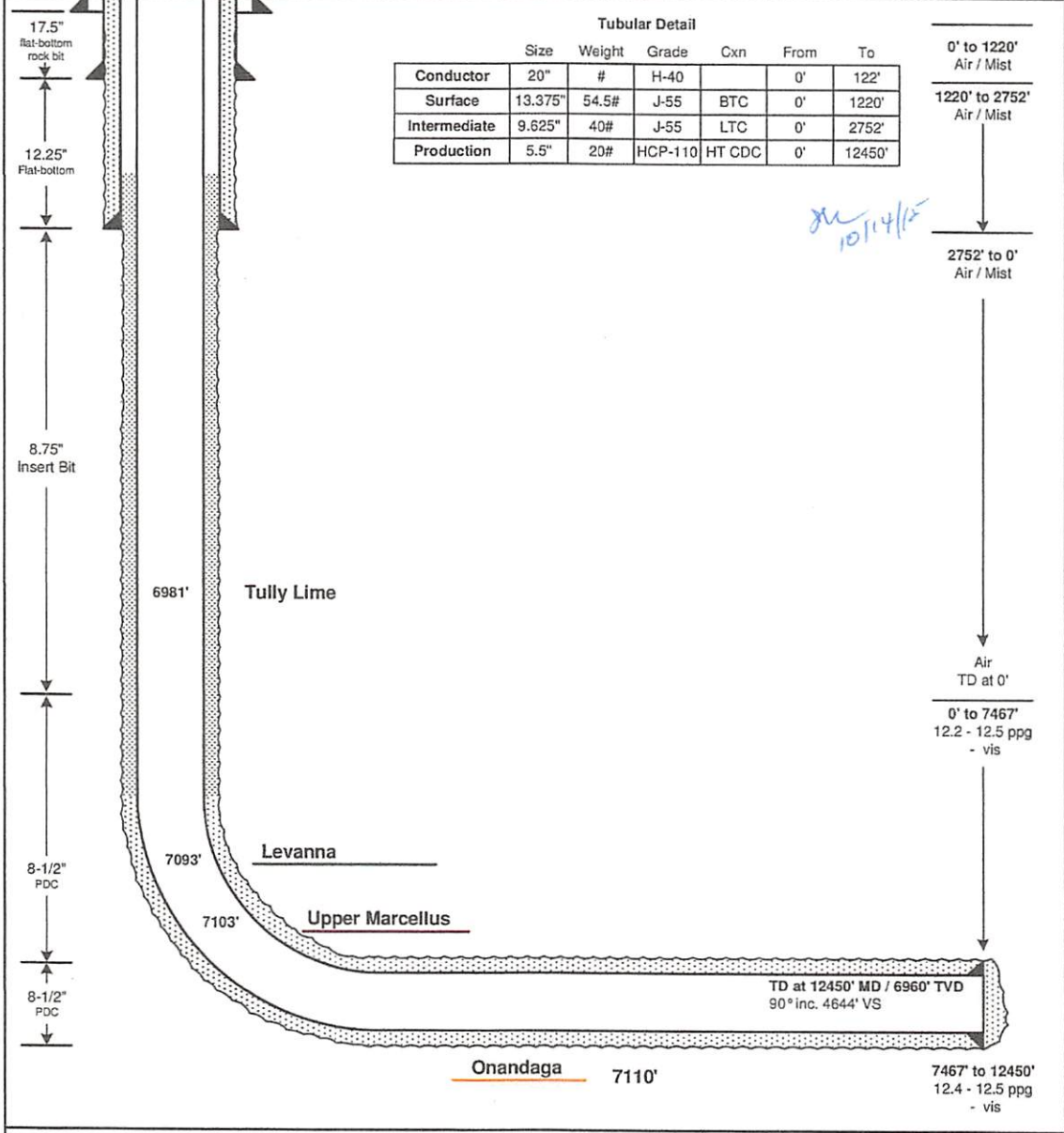


**LATERAL WELLBORE**

**Maximum TVD of wellbore: 7095 ft TVD @ 7467 ft MD**

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
Limestone/SS/Shale	0	0	1110	1110
Pittsburgh Coal	1110	1110	1120	1120
Limestone/Shale	1120	1120	2261	2261
Big Lime	2261	2261	2399	2399
Big Injun	2399	2399	2607	2607
Shale	2607	2607	7032	6943
Geneseo	7032	6943	7056	6960
Tully	7056	6960	7238	7057
Marcellus	7238	7057	12450	6959


Southwestern Energy Company		As Drilled WBD	
Well	: BONNETTE 3	Re-entry Rig	: Nomac 242
Field	: VICTORY FIELD	Prospect	: VICTORY
County	: MARSHALL	State	: WV
SHL	: 39.721528 Latitude -80.711755 Longitude		
BHL	: 39.73025783 Latitude -80.72582978 Longitude		
KB Elev	: 1473 ft MSL	KB	: 16 ft AGL
		GL Elev	: 1457 ft MSL

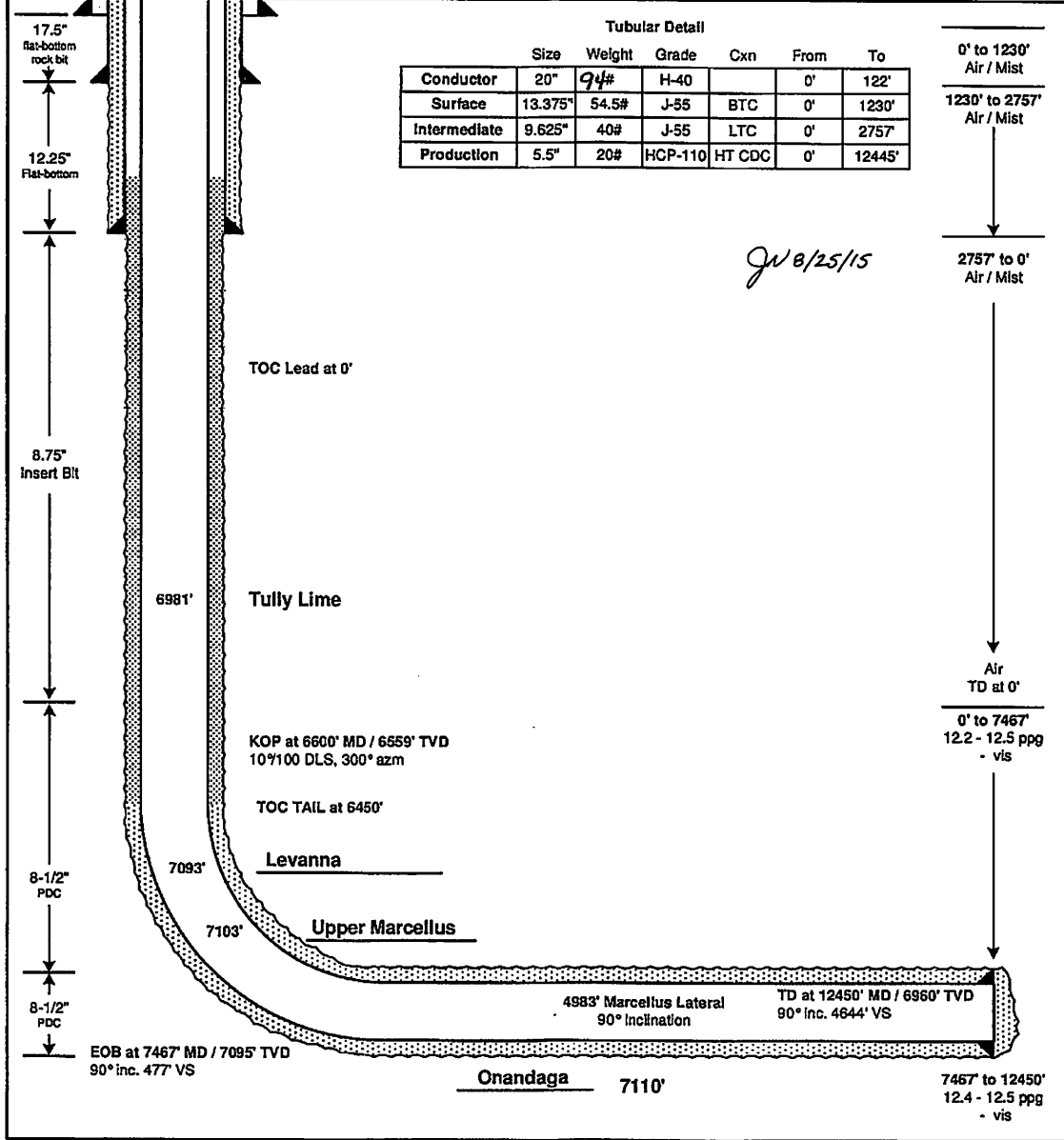


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NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plot are referenced to Reentry Rig RKB.

4705101326

Southwestern Energy Company		As Drilled WBD			
Well	: BONNETTE 3H	Re-entry Rig	: Nomic 242		
Field	: VICTORY FIELD	Prospect	: VICTORY		
County	: MARSHALL	State	: WV		
SHL	: 39.721528 Latitude -80.711755 Longitude				
BHL	: 39.73025783 Latitude -80.72582978 Longitude				
KB Elev	: 1473 ft MSL	KB	: 16 ft AGL	GL Elev	: 1457 ft MSL




Data source: K:\EandPWVD\Team Data\Drilling\Wells\Bonnette Pad\BONNETTE 3H\Drilling Program\Master SWN Well Input Sheet v E-0-1.xlsm

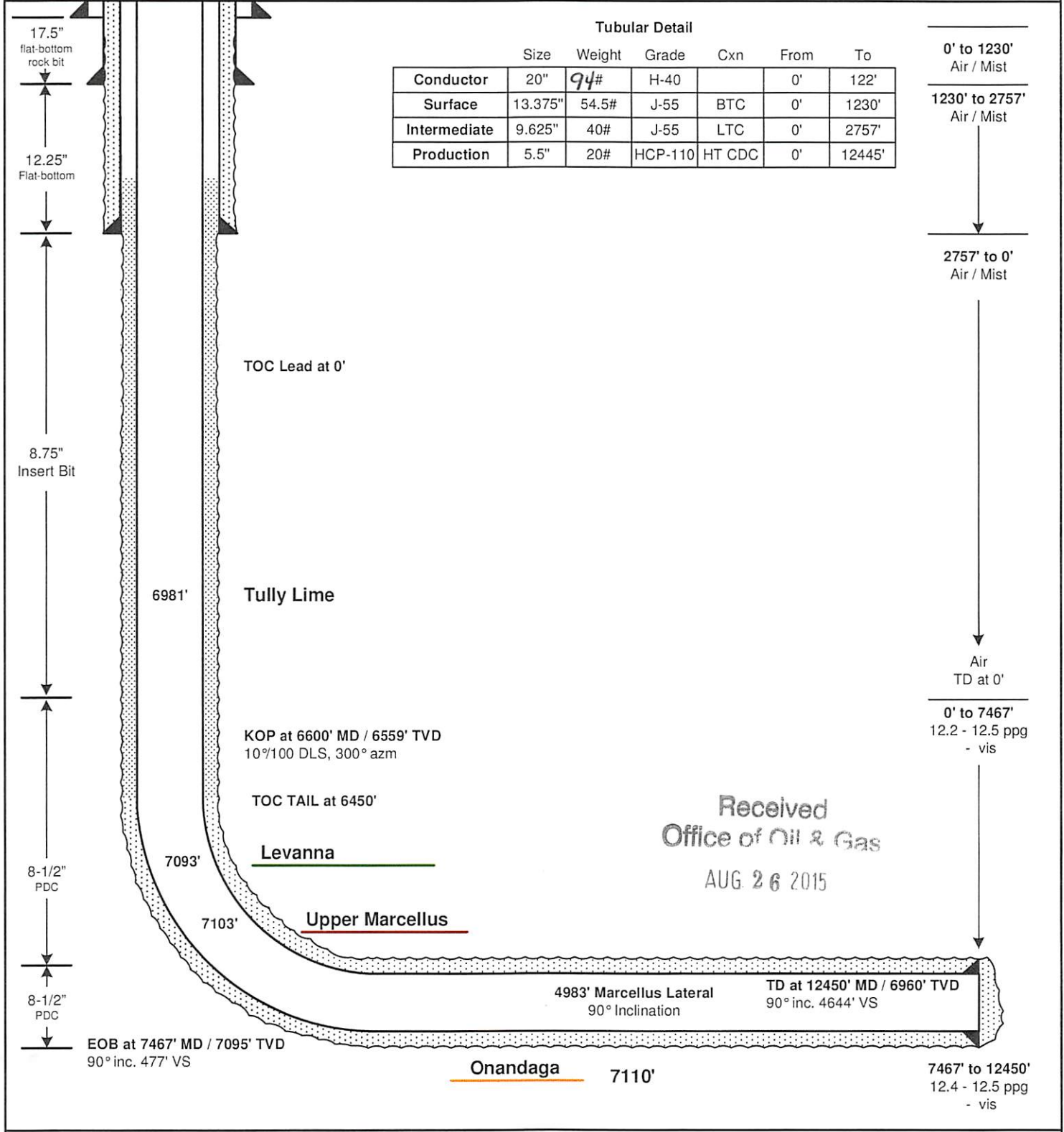
NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plot are referenced to Reentry Rig RKB.

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Office of Oil & Gas

AUG 26 2015

10/23/2015

Southwestern Energy Company		As Drilled WBD			
Well	: BONNETTE 3H	Re-entry Rig	: Nomac 242		
Field	: VICTORY FIELD	Prospect	: VICTORY		
County	: MARSHALL	State	: WV		
SHL	: 39.721528 Latitude -80.711755 Longitude				
BHL	: 39.73025783 Latitude -80.72582978 Longitude				
KB Elev	: 1473 ft MSL			KB	: 16 ft AGL



Data source: K:\EandP\WVD\Team Data\Drilling\Wells\Bonnette Pad\BONNETTE 3H\Drilling Program\Master SWN Well Input Sheet v E-0-1.dwg 10/23/2015

NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plot are referenced to Reentry Rig RKB.

WW-9  
(9/13)

API Number 47 - 51 - \_\_\_\_\_  
Operator's Well No. Bonnette MSH 3H

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 494512924

Watershed (HUC 10) Whetstone Creek Quadrangle 681- Wileyville

Elevation 1429.6' County 51-Marshall District 5- Meade

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 and salt saturate mud

-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/WW0109517/CID28726, Carbon Limestone 28726/CID28726

Arden Landfill 10072, American 02-12954, Country Wide 38390/CID38390, Pine 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 \_\_\_\_\_

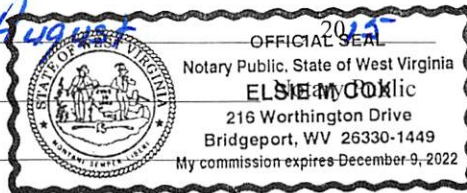
Company Official (Typed Name) Dee Southall

Company Official Title Regulatory Supervisor

Subscribed and sworn before me this 11th day of August

Elsie M. Cox

My commission expires 12-9-2022



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10/23/2015

Form WW-9

Operator's Well No. Bonnette MSH 3H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 18.4 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
White Grove	15
Red Top	15
Orchard Grass	20

Seed Type	lbs/acre
White Grove	15
Red Top	15
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: *Jan Wilson*

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Title: Oil and Gas Inspector

Date: 8/19/15

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Office of Oil & Gas

Field Reviewed?  Yes

No

AUG 26 2015

05101326

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

SWN Production Co., LLC

47 - 051 - 01326 RW  
Well name: Bonnette MSH 3H  
Wileyville, Quad  
Meade, District  
Marshall County, West Virginia

Submitted by:

7/15/2015

Danielle Southall

Date:

Title Regulatory Supervisor

SWN Production Co., LLC

Approved by:

Date:

8/19/15

Title: Oil + Gas Inspector

Approved by:

Date:

Title:

SWN Production Co., LLC – Confidential

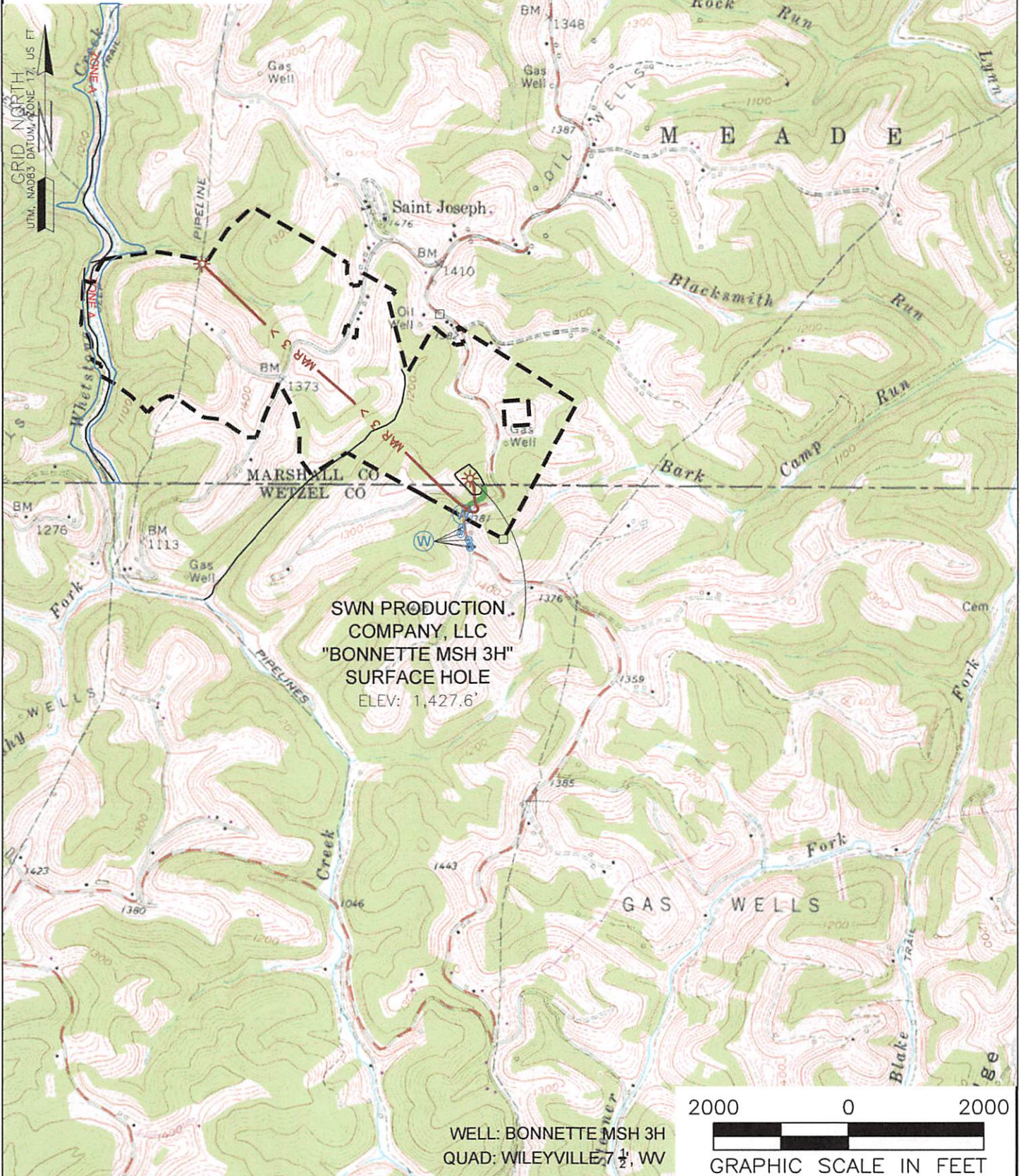
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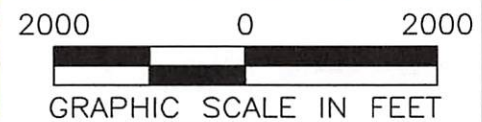
10/23/2015

05101326

JACKSON SURVEYING  
 INC.  
 P.O. Box 1460  
 677 W. Main St.  
 Clarksburg, WV 26302  
 304-623-5851



SWN PRODUCTION COMPANY, LLC  
 "BONNETTE MSH 3H"  
 SURFACE HOLE  
 ELEV: 1,427.6'



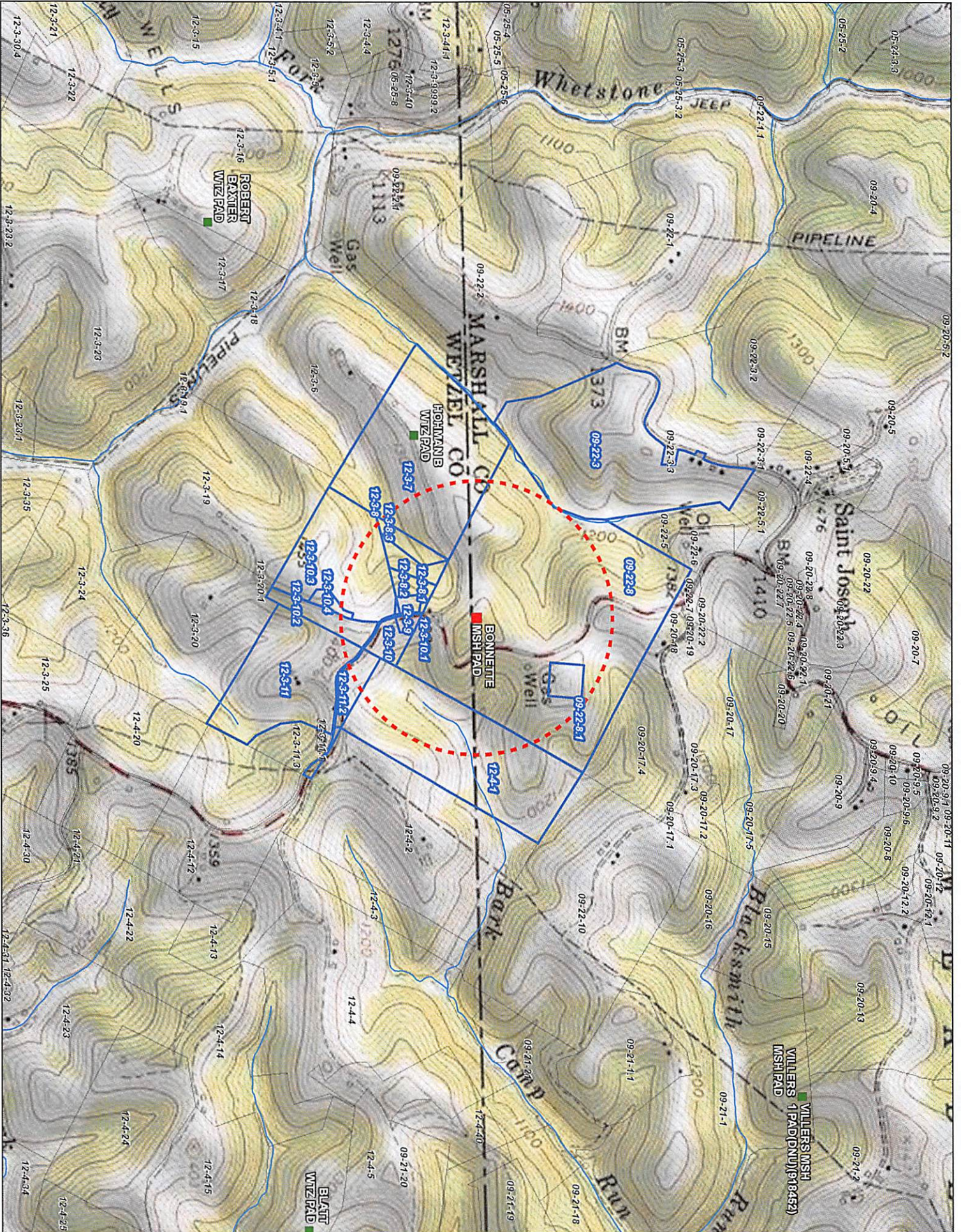
WELL: BONNETTE MSH 3H  
 QUAD: WILEYVILLE 7 1/2, WV

<b>NAME AND DISTANCE TO THE NEAREST STREAM:</b> WHETSTONE CREEK IS LOCATED ±0.76 MILES SW OF THE CENTER OF THE DRILL PAD.		<b>STREAM CROSSING COORDINATES (NAD 83):</b> NO NEW CROSSINGS.		<b>COMPANY:</b> 	
<b>WELL RESTRICTIONS:</b> 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: 535 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LAGER THAN 2500 SQ FT: >625 FEET		<b>FEMA FLOOD INFORMATION:</b> BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF MARSHALL COUNTY, WEST VIRGINIA; MAP NUMBER 54051C0230 E; EFFECTIVE DATE: SEPTEMBER 25 2009. NO FEMA INFORMATION AVAILABLE FOR WETZEL COUNTY.		<b>OPERATOR'S</b> BONNETTE MSH <b>WELL #:</b> 3H <b>LOCATION:</b> MEADE DISTRICT, MARSHALL COUNTY, WEST VIRGINIA <b>SURFACE HOLE LOCATION:</b> GEOGRAPHIC (NAD83): LATITUDE: 39.721526' LONGITUDE: -80.711755' <b>BOTTOM HOLE LOCATION:</b> GEOGRAPHIC (NAD83): LATITUDE: 39.730251' LONGITUDE: -80.725827'	
<b>LEGEND:</b> 		<b>REVISIONS:</b>		<b>DATE:</b> 06-18-2015 <b>DRAWN BY:</b> N. MANO <b>SCALE:</b> 1" = 2000' <b>DRAWING NO:</b> <b>TOPOGRAPHIC MAP</b>	

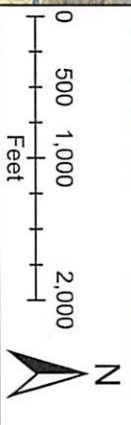
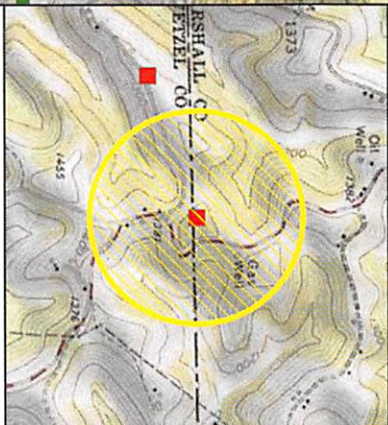
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- CHK Site of Interest
- ~ Streams
- ▭ Parcels With Water Sources (1500' of Source)
- ▭ Other Parcels
- ▭ 1,500' Buffer Around Wells



**WV Water Purveyor Map**  
**BONNETTE MSH PAD - (907984)**

**MARSHALL COUNTY, WV**  
 Lat: 39.72144 / Long: -80.71203

Date: 9/12/2014  
 Projection: WGS 1984 UTM Zone 17N  
 Scale: 1 inch = 1,000 feet  
 Author: Frank Frieri, Sr. GIS Analyst

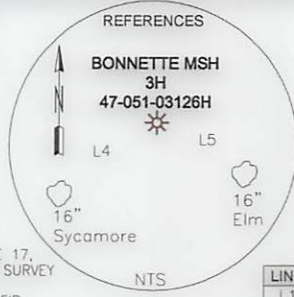
Received 10/23/2015  
 Office of Oil & Gas

986'

Latitude: 39°45'00" N

Longitude: -80°42'30" W

**JACKSON SURVEYING INC.**  
 P.O. Box 1460  
 677 W. Main St.  
 Clarksburg, WV 26302  
 304-623-5851



**NOTES ON SURVEY**

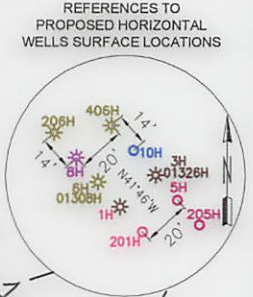
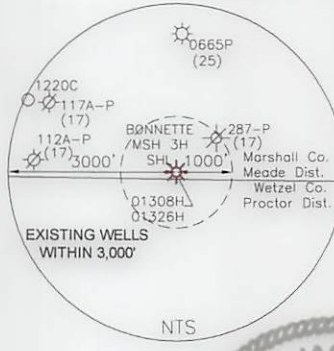
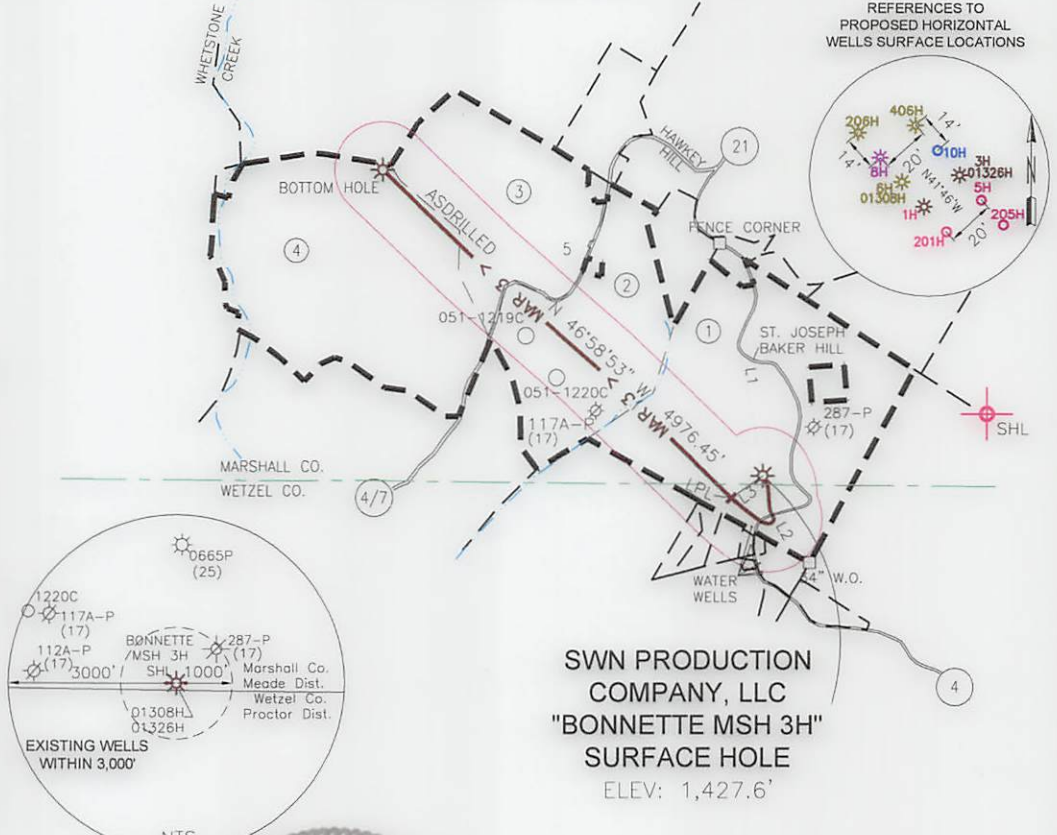
- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- A DWELLINGS IS LOCATED S17°24'W 535' FROM THE 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.
- ALL WELLS 500' OF THE HORIZONTAL LEG ARE SHOWN ON THIS PLAT BASED UPON INFORMATION TAKEN FROM DEP MAPPING, WELL PLATS AND AERIAL PHOTOS.

LINE	BEARING	DISTANCE	DESCRIPTION
L1	N 10°36'21" W	2460.14'	SHL TO CNR FP
L2	S 28°29'32" E	1021.26'	SHL TO 34" W.O.
L3	S 54°54'11" W	400.78'	SHL TO LPL
L4	S 50°38'46" W	381.69'	SHL TO 16" SYC.
L5	S 59°05'16" E	312.66'	SHL TO 16" ELM

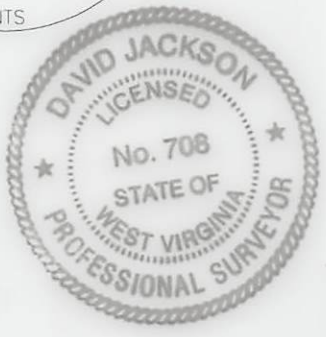
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	ROBERT WILLIAM BONNETTE ET UX (S)/ ANDREW STEIN (R)	9-22-08	126.53
2	HILARY G. & MARK H. MILLER (S)/ N.G. & MARY E. MILLER (R)	9-22-03	63.73
3	JULIAN N. MILLER ET AL (S)/ N.G. & MARY E. MILLER (R)	9-22-03.2	75.00
4	MARK O. COSTLEY TRUSTEE (S)/CHARLES L. & AGNES G. KERNAN (R)	9-22-01	124.57



SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	
LATITUDE:	39.721526°
LONGITUDE:	-80.711755°
UTM (NAD83, ZONE 17, FEET):	
NORTHING:	14,425,462.412
EASTING:	1,721,466.854
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,396,889.737
EASTING:	524,704.147
"LANDING POINT" LOCATION (LPL):	
GEOGRAPHIC (NAD83):	
LATITUDE:	39.720896°
LONGITUDE:	-80.712924°
UTM (NAD83, ZONE 17, FEET):	
NORTHING:	14,425,231.978
EASTING:	1,721,138.940
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,396,819.501
EASTING:	524,604.198
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	
LATITUDE:	39.730251°
LONGITUDE:	-80.725827°
UTM (NAD83, ZONE 17, FEET):	
NORTHING:	14,428,627.089
EASTING:	1,717,500.503
UTM (NAD83, ZONE 17, METERS):	
NORTHING:	4,397,854.332
EASTING:	523,495.200



**SWN PRODUCTION COMPANY, LLC**  
**"BONNETTE MSH 3H"**  
 SURFACE HOLE  
 ELEV: 1,427.6'



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

P.S. 708 *David Jackson*

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

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	<b>BONNETTE MSH</b> OPERATOR'S WELL #: 3H API WELL #: 47 051 01326H
	STATE COUNTY PERMIT	STATE COUNTY PERMIT

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

WATERSHED: WHETSTONE CREEK OF UPPER OHIO RIVER 2 ELEVATION: 1,427.6'

DISTRICT: MEADE COUNTY: MARSHALL QUADRANGLE: WILEYVILLE 7 1/2'

SURFACE OWNER: ROBERT WILLIAM BONNETTE ET UX ACREAGE: 126.53 AC.

OIL & GAS ROYALTY OWNER: ANDREW STEIN ACREAGE: 126.53 AC.

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

CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) ASDRILLED / *Free* 10/23/2015

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 7,095' TVD 12,450' 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

<b>LEGEND:</b> ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ☼ EXISTING / PRODUCING WELLHEAD ⊗ ABANDONED WELL ⊗ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR	<b>REVISIONS:</b> --- LEASE BOUNDARY --- 500' DHP BUFFER --- MAR 3 > --- MARCELLUS DHP --- ABANDONED PATH	DATE: 06-18-2015 DRAWN BY: N. MANO SCALE: 1" = 2000' DRAWING NO: WELL LOCATION PLAT
---	---	---

05101326  
Bonnette 3H

WW-6A1  
(5/13)

Operator's Well No.

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

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

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

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

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

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

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

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

Well Operator: SWN Production Company, LLC.  
 By: *T. J. Hin*  
 Its: SENIOR LANDMAN - WEST VIRGINIA DIVISION

Page 1 of \_\_\_\_

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#	TMP	LEASE #	LESSOR	LESSEE	ROYALTY	BK/PG
1	09-22-08	1-254855-000	Andrew Stein, widower	The Manufacturer's Light and Heat Company	12.50%	272/265
			The Manufacturer's Light and Heat Company	Columbia Gas Transmission Corporation		422/204
			Columbia Gas Transmission Corporation	Chesapeake Appalachia, L.L.C.		662/332
			Chesapeake Appalachia, L.L.C.	SWN Production Company, L.L.C.		33/110
2	09-22-03	1-254843-000	N. G. Miller and Mary E. Miller, his wife	The Manufacturer's Light and Heat Company	12.50%	353/240
			The Manufacturer's Light and Heat Company	Columbia Gas Transmission Corporation		422/204
			Columbia Gas Transmission Corporation	Chesapeake Appalachia, L.L.C.		662/332
			Chesapeake Appalachia, L.L.C.	SWN Production Company, L.L.C.		33/110
3	09-22-3.2	1-254843-000	N. G. Miller and Mary E. Miller, his wife	The Manufacturer's Light and Heat Company	12.50%	353/240
			The Manufacturer's Light and Heat Company	Columbia Gas Transmission Corporation		422/204
			Columbia Gas Transmission Corporation	Chesapeake Appalachia, L.L.C.		662/332
			Chesapeake Appalachia, L.L.C.	SWN Production Company, L.L.C.		33/110
4	09-22-01	1-273241-000	Charles L. Kernan and Agnes G. Kernan, his wife	Chesapeake Appalachia, L.L.C.	12.50%	680/371
			Chesapeake Appalachia, L.L.C.	SWN Production Company, L.L.C.		33/110

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05101326

**SWN**  
Production Company™

SWN Production Company, LLC  
P O Box 12359  
Spring, Texas 77391-2359  
www.swn.com

July 31, 2015

Ms. Laura Cooper  
WV DEP Office of Oil & Gas  
601 57<sup>th</sup> St., SE  
Charleston, WV 25304

RE: SWN's proposed refrac of the Bonnette MSH 3H in Marshall County, West Virginia, Drilling under Hawkey Hill Road and St. Joseph Baker Hill Road

Dear Ms. Cooper:

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 Hawkey Hill Road and St. Joseph Baker Hill 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 and should you have any questions please feel free to contact the undersigned at (832) 796-6259 or by email at [thill@swn.com](mailto:thill@swn.com).

Sincerely,



Travis Hill  
Senior Landman  
SWN Production Company, LLC

10000 Energy Drive  
Spring, TX 77389-4954



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

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

Date of Notice Certification: \_\_\_\_\_

API No. 47- 51 - \_\_\_\_\_  
Operator's Well No. Bonnette MSH 3H  
Well Pad Name: Bonnette MSH 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>524699.7</u>
County: <u>51-Marshall</u>	Northing: <u>4396885.9</u>
District: <u>5- Meade</u>	Public Road Access: <u>Fish Creek</u>
Quadrangle: <u>681- Wileyville</u>	Generally used farm name: <u>Bonnette</u>
Watershed: <u>Whetstone 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.

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:  *PLEASE CHECK ALL THAT APPLY  <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED  <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED  <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  <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)  <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION  <input checked="" type="checkbox"/> 5. PUBLIC NOTICE  <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<b>OOG OFFICE USE ONLY</b>  <input type="checkbox"/> RECEIVED/ NOT REQUIRED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED/ NOT REQUIRED   <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED
--	--	--

**Required Attachments:**

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

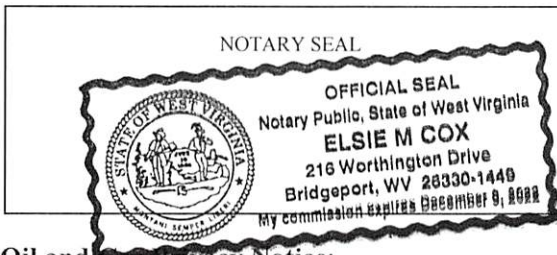
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**Office of Oil & Gas**  
AUG 20 2015

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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:	<u>SWN Production Co., LLC</u>	Address:	<u>P.O. Box 12359</u>
By:	<u>Dee Southall</u>		<u>Spring, TX 77391-4954</u>
Its:	<u>Regulatory Supervisor</u>	Facsimile:	<u>92816182780@fax.com</u>
Telephone:	<u>832-796-1614</u>	Email:	<u>Dee_Southall@swn.com</u>



Subscribed and sworn before me this 11<sup>th</sup> day of August 2015  
Elsie M. Cox Notary Public  
 My Commission Expires 12-9-2022

**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](mailto: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:** \_\_\_\_\_ **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: Robert & Linda Bonnette  
 Address: 8 Amy Anna Drive  
Moundsville, WV 26074  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
 Name: Consolidated Coal Company %Leatherwood  
 Address: 1000 Consol Energy Drive  
Canonsburg, PA 15317  
 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 Attachment #1  
 Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_

**Received**  
**Office of Oil & Gas**  
 AUG 26 2015

\*Please attach additional forms if necessary



05 10 13 26

Date	Pad No.	Pad Name	Full Parcel ID	Owner	Owner Address	Owner City	Owner State	Owner Zip	Owner Phone No.	Assumed/known Water Source Present (Y/N)?
9/12/2014	907984	BONNETTE MSH PAD	09-22-8	BONNETTE ROBERT WILLIAM ET UX	109 AMY ANNA DR	MOUNDSVILLE	WV	26041		Y
9/12/2014	907984	BONNETTE MSH PAD	09-22-8.1	COUNTY COMMISSION OF MARSHALL	PO BOX 459	MOUNDSVILLE	WV	26041		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-10.3	FERRELL DOROTHY E	RR1 BOX 168	PROCTOR	WV	26055		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-10.4	FERRELL JOHN W	RR 1 BOX 168F	PROCTOR	WV	26055		Y
9/12/2014	907984	BONNETTE MSH PAD	12-4-1	FOX PAUL & CYNTHIA	RT 1 BOX 163	PROCTOR	WV	26055	304.455.3817	Y
9/12/2014	907984	BONNETTE MSH PAD	12-5-1	MILLER HILARY G & MARK H	RR 1 BOX 109	PROCTOR	WV	26055		Y
9/12/2014	907984	BONNETTE MSH PAD	09-22-3	MILLER HILARY G & MARK H	4537 ST JOSEPH RD	PROCTOR	WV	26055		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-10.2	MILLER JOHN MICHAEL ETAL	137 HUDSON HILLS ROAD	PITTSBORO	NC	27312		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-7	RIES HENRY W	10 MEADOW DR	WHEELING	WV	26003		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-11	YOHO DENVER F	RT 1 BOX 164 A	PROCTOR	WV	26055		Y
9/12/2014	907984	BONNETTE MSH PAD	12-3-11.2	ZOMBOTTI DELORES	RR1 BOX 167	PROCTOR	WV	26055		Y

Received  
Office of Oil & Gas

AUG. 26 2015

10/23/2015

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act, Section 404, permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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API NO. 405101326  
OPERATOR WELL NO. Bonnette MSH 3H  
Well Pad Name: Bonnette MSH Pad

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 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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

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**Time Limits and Methods for Filing Comments.**

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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WW-6A  
(8-13)

05101326  
API NO. 47-51  
OPERATOR WELL NO. Bonnette MSH 3H  
Well Pad Name: Bonnette MSH Pad

**Notice is hereby given by:**

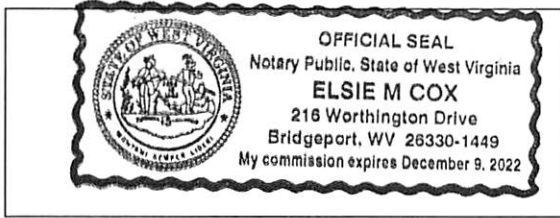
Well Operator: SWN Production Co., LLC  
Telephone: 832-796-1000  
Email: Dee\_Southall@swn.com



Address: P.O. Box 12359  
Spring, TX 77391-4954  
Facsimile: 92816182780@fax.com

**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](mailto:deprivacyofficer@wv.gov).



Subscribed and sworn before me this 11<sup>th</sup> day of August 2015  
Elsie M. Cox Notary Public  
My Commission Expires 12-9-2022

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**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:** 08/17/2015 **Date Permit Application Filed:** \_\_\_\_\_

**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: Robert William Bonnette ET UX  
Address: 109 Amy Anna Dr.  
Moundsville, WV 26041

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:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>524,704.147</u>
County:	<u>Marshall</u>		Northing:	<u>4,396,889.737</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Baker Hill</u>	
Quadrangle:	<u>Wileyville 7 1/2'</u>	Generally used farm name:	_____	
Watershed:	<u>Whetstone Creek of Upper Ohio River 2</u>			

**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: SWN Production Company, LLC  
Address: PO Box 1300  
Jane Lew, WV 26378  
Telephone: 304-884-1611  
Email: Micah\_Feather@SWN.com  
Facsimile: \_\_\_\_\_

Authorized Representative: Dee Southall  
Address: PO Box 1300  
Jane Lew, WV 26378  
Telephone: 304-884-1614  
Email: Dee\_Southall@SWN.com  
Facsimile: \_\_\_\_\_

**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](mailto:depprivacyofficer@wv.gov).

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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:** 08/17/2015      **Date Permit Application Filed:** \_\_\_\_\_

**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: Robert William Bonnette ET UX  
Address: 109 Amy Anna Dr.  
Moundsville, WV 26041

Name: \_\_\_\_\_  
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:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>524,704.147</u>
County:	<u>Marshall</u>		Northing:	<u>4,396,889.737</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Baker Hill</u>	
Quadrangle:	<u>Wileyville 7 1/2'</u>	Generally used farm name:	_____	
Watershed:	<u>Whetstone Creek of Upper Ohio River 2</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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: SWN Production Company, LLC  
Telephone: 304-884-1614  
Email: Dee\_Southall@SWN.com

Address: PO Box 1300, 179 Innovation Drive  
Jane Lew, WV 26378  
Facsimile: \_\_\_\_\_

**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](mailto:depprivacyofficer@wv.gov).

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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

August 12, 2015

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

Subject: DOH Permit for the Bonnette Pad Well Sites, Marshall County

Bonnette MSH 3H

Bonnette MSH 6H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2011-0105 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Wetzel County Route 4 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  
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
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	Crosslinker	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 Proprietary
	Friction Reducer J609		Ammonium Sulfate	7783-20-2

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Supplier Name	Product Name	Product Use	Chemical Name	CAS Number
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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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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