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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, November 26, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit approval for MICHAEL RATCLIFFE UD OHI 106H  
47-069-00288-00-00

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

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

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: MICHAEL RATCLIFFE UD OH  
Farm Name: MICHAEL T. RATCLIFFE  
U.S. WELL NUMBER: 47-069-00288-00-00  
Horizontal 6A New Drill  
Date Issued: 11/26/2018

**PERMIT CONDITIONS 4706900288**

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.

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**CONDITIONS**

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

# PERMIT CONDITIONS 4706900288

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto: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 494512924 069-Ohio Liberty Bethany  
Operator ID County District Quadrangle

2) Operator's Well Number: Michael Ratcliffe UD OHI 106H Well Pad Name: Michael Ratcliffe OHI Pad

3) Farm Name/Surface Owner: Michael T. Ratcliffe Public Road Access: Long Run Road

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 *C-100 6-4-12*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation- Burket Down-Dip Well to the South, Target Top TVD- 6246', Target Base TVD- 6263', Anticipated Thickness- 17', Associated Pressure- 4071

8) Proposed Total Vertical Depth: 6254' at the toe (BHL deepest TVD)

9) Formation at Total Vertical Depth: Burket

10) Proposed Total Measured Depth: 14,847'

11) Proposed Horizontal Leg Length: 8358.50

12) Approximate Fresh Water Strata Depths: 401'

13) Method to Determine Fresh Water Depths: Nearby Water Well

14) Approximate Saltwater Depths: 728' salinity profile

15) Approximate Coal Seam Depths: 610'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible void 610'

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**

<b>TYPE</b>	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	665'	665'	623 sx/CTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	1995'	1995'	757 sx/CTS
Production	5 1/2"	New	HCP-110	20#	14,847'	14,847'	lead 690 ex Tall 2175 ex inside intermediate 
Tubing							
Liners							

*C. ALG-4.18*

<b>TYPE</b>	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	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	1.20/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/50% Excess
Tubing							
Liners							

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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Environmental Protection

WW-6B  
(10/14)

API NO. 47- 069 -  
OPERATOR WELL NO. Michael Ratcliffe UD OHI 106H  
Well Pad Name: Michael Ratcliffe OHI Pad

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

Drill and stimulate any potential zones between and including the Benson to Burket Shale. \*\*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' below void. (\*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts.)

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

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

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 13.48

22) Area to be disturbed for well pad only, less access road (acres): 8.60

23) Describe centralizer placement for each casing string:

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

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

See Attachment \*\*\*

25) Proposed borehole conditioning procedures:

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

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\*Note: Attach additional sheets as needed.

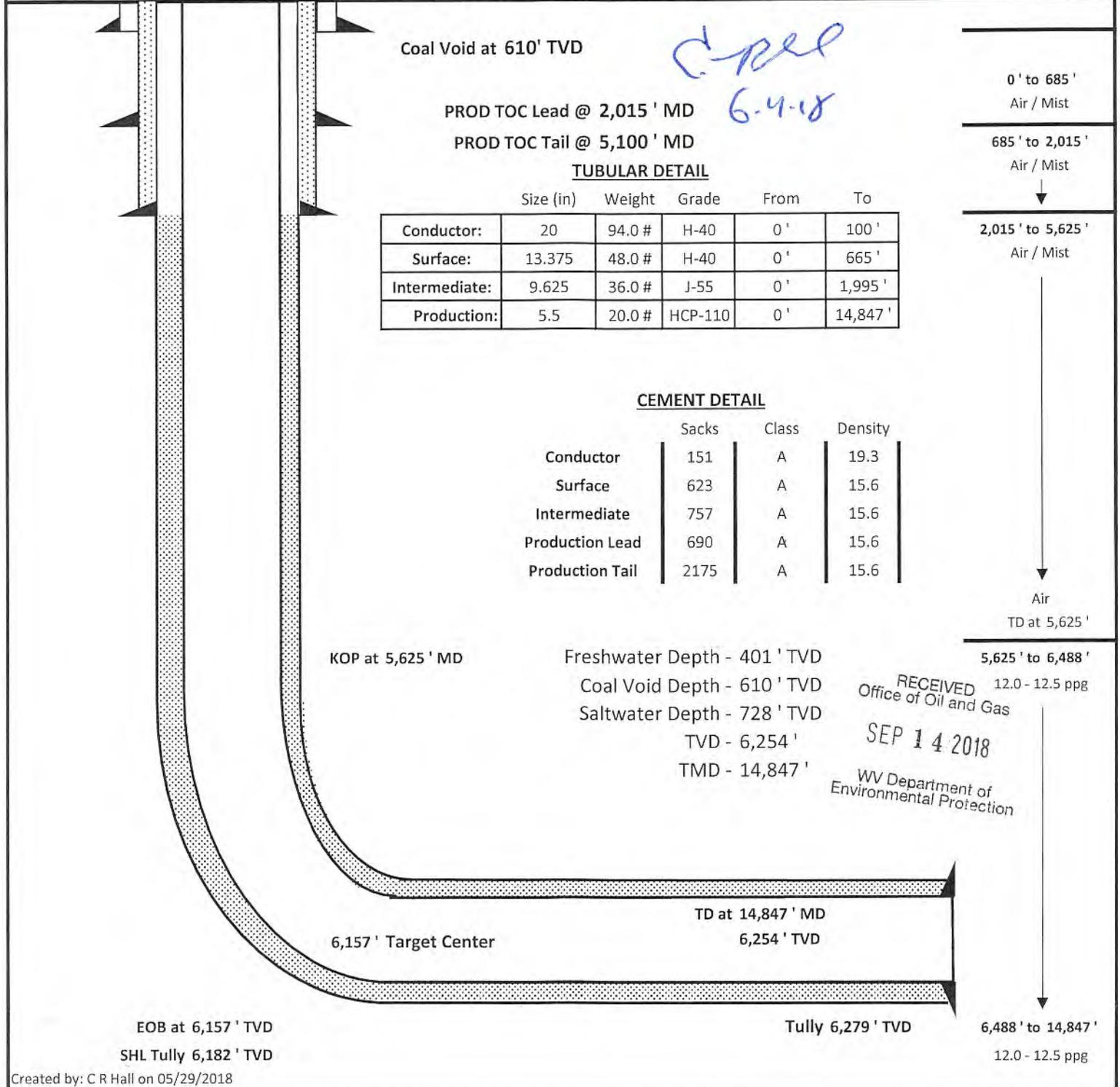
## Schlumberger Cement Additives

	Product Name	Product Use	Chemical Name	CAS Number
Surface	S001	accelerator	calcium chloride up to 3%	10043-52-4
Intermediate	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
			polypropylene glycol	25322-69-4
	D046	antifoam	fullers earth (attapulgate)	8031-18-3
			chrystalline silica	14808-60-7
	D201	retarder	metal oxide	proprietary
Production-Tail	D202	dispersant	sulphonated synthetic polymer	proprietary
			formaldehyde (impurity)	proprietary
			polypropylene glycol	25322-69-4
	D046	antifoam	fullers earth (attapulgate)	8031-18-3
	D167	fluid loss	aliphatic amide polymer	proprietary
			sodium polynaphthalene sulfonate	9008-63-3
	D065	dispersant	sodium sulfate	7757-82-6
			chrystalline silica	14808-60-7
	D201	retarder	metal oxide	proprietary
	D153	anti-settling	chrystalline silica	14808-60-7

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<b>Southwestern Energy Company</b>	<b>Proposed Drilling Program</b>
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Well: MICHAEL RATCLIFFE UD OHI 106 Field: PANHANDLE FIELD WET County: OHIO SHL: 40.1484 Latitude -80.5670 Longitude BHL: 40.1257 Latitude -80.5545 Longitude KB Elev: 1,307 ft MSL	Re-entry Rig: TBD Prospect: PANHANDLE State: WV GL Elev: 1,281 ft MSL
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WW-9  
(2/15)

API Number 47 - 069 -  
Operator's Well No. Michael Ratcliffe UD OHI 106H

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) Upper Ohio South Quadrangle Bethany

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: \_\_\_\_\_

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 34-105-22403, 34-059-24287, 34-119-28776, 34-167-23662, 34-155-23795, 34-121-23995, 34-155-21893 )
- 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 SOB from KOP to TD

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

Additives to be used in drilling medium? Attachment 3A

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? Meadowfill SWF- 1032, Short Creek SWF-1034, Carbon Limestone MSWL018781, Wetzel County 1021

Arden Landfill 10072, Apex Sanitary Landfill 06-08438, Brooke Co SWF-1073, Valley 100280

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

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

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

Company Official Signature Brittany Woody

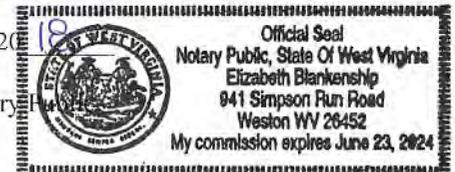
Company Official (Typed Name) Brittany Woody

Company Official Title Regulatory Analyst

Subscribed and sworn before me this 15 day of August, 2018

Elizabeth Blankenship

Notary



My commission expires 6/23/2024

Form WW-9

Operator's Well No. Michael Ratcliffe UD OHI 106H

SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 13.48 Prevegetation pH \_\_\_\_\_

Lime as determined by pH test min. 2 Tons/acre or to correct to pH 8.60

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

Attachment 3B

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: \_\_\_\_\_

*[Handwritten signature]* 6-4-18

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

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Title: Oil and Gas Inspector

Date: 6-4-18

Field Reviewed? (  ) Yes (  ) No

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## Attachment 3A

### Drilling Mediums

#### Surface/Coal(if present)/Freshwater Intervals:

Air

Freshwater (if needed based on conditions)

#### Intermediate/Coal (if present):

Air

Brine (In Gas Storage areas)

Organophilic Bentonite

#### Production Hole:

Air

Synthetic Oil (Base Fluid for mud system)

Barite

Calcium Chloride

Lime

Organophilic Bentonite

Primary and Secondary Emulsifiers

Gilsonite

Calcium Carbonate

Friction Reducers



# WVD Seeding Specification



To Order Seed contact Lyndsi Eddy Flippo office 570-996-4271 cell 501-269-5451 lyndsi\_eddy@swn.com (please allow 7 to 10 days for delivery)

NON-ORGANIC PROPERTIES		
Seed Mixture: ROW Mix	SWN Supplied	
Orchardgrass	40%	
Timothy	15%	
Annual Ryegrass	15%	
Brown Top Millet	5%	
Red Top	5%	
Medium Red Clover	5%	All legumes are innoculated at 5x normal rate
White Clover	5%	
Birdsfoot Trefoil	5%	
Rough Bluegrass	5%	
<p>Apply @ 100lbs per acre April 16th- Oct. 14th</p>		<p>Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat</p>

SOIL AMENDMENTS	
10-20-20 Fertilizer	*Apply @ 500lbs per Acre
Pelletized Lime	Apply @ 2 Tons per Acre
*unless otherwise dictated by soil test results	

**Seeding Calculation Information:**

1452' of 30' ROW/LOD is One Acre  
 871' of 50' ROW/LOD is One Acre  
 622' of 70' ROW/LOD is One Acre

**Synopsis:**

Every 622 linear feet in a 70' ROW/LOD, you should be using (2) 50lb bags of seed, (4) 50lb bags of fertilizer and (80) 50lb bags of Lime (2x seed in winter months + 50lb Winter Wheat/ac).

**Special Considerations:**

Landowner Special Considerations including CREP program participants require additional guidance that is not given here. Discuss these requirements with SWN supervisors at the beginning of the project to allow time for special seed delivery.

ORGANIC PROPERTIES	
Seed Mixture: SWN Production Organic Mix	SWN Supplied
Organic Timothy	50%
Organic Red or White Clover	50%
OR	
Organic Perennial Ryegrass	50%
Organic Red or White Clover	50%
<p>Apply @ 100lbs per acre April 16th- Oct. 14th</p>	
<p>Organic Fertilizer @ 200lbs per Acre</p>	
<p>Apply @ 200lbs per acre Oct. 15th- April 15th</p>	
<p>Pelletized Lime @ 2 Tons per Acre</p>	

WETLANDS (delineated as jurisdictional wetlands)	
Seed Mixture: Wetland Mix	SWN Supplied
VA Wild Ryegrass	20%
Annual Ryegrass	20%
Fowl Bluegrass	20%
Cosmos 'Sensation'	10%
Redtop	5%
Golden Tickseed	5%
Maryland Senna	5%
Showy Tickseed	5%
Fox Sedge	2.5%
Soft Rush	2.5%
Woolgrass	2.5%
Swamp Verbena	2.5%
<p>Apply @ 25lbs per acre April 16th- Oct. 14th</p>	
<p>Apply @ 50lbs per acre Oct. 15th- April 15th</p>	
<p>NO FERTILIZER OR LIME INSIDE WETLAND LIMITS</p>	

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## CLOSED LOOP SYSTEM

The closed loop system is designed to eliminate the use of reserve pits by providing a higher level of solids control processing and using steel pits for capture of drill cuttings. The cuttings are then processed to achieve landfill requirements before hauling to approved landfills. The liquids are processed to recycle into the active mud system or to transfer to onsite temporary storage as needed.

The closed loop system consists of several sets of a shale gas separator (often called a 'methana'), several banks of solids shakers, high speed centrifuges (1 or 2) used to process the fluid portion of the mud system to remove low gravity solids, low speed centrifuge used for barite recovery in high weight liquid drilling systems, a dewatering system (for air intervals and if freshwater mud systems are in use) used to further clean liquids by flocculation and additional mechanical separation, associated open top tanks for processing liquids and capturing solids for disposal, and transfer pumps to move fluids through the processes. There is an area adjacent to the cuttings tanks (Red Zone) where a track hole is utilized to recover the processed cuttings for loading into containers for hauloff. (See attached schematic of a generic closed loop system layout)

Below are discussions of the processes used when drilling the air interval or liquids interval.

## AIR DRILLING INTERVALS

During air drilling operations, flow from the rig will pass down the flowline to the Shale Gas Separator (sometimes called a methane) where gas and liquids/solids are separated. Gas is sent to the flare scrubber tank and is flared at the flare stack. Solids and fluids pass across a shaker system to separate solids from liquids. Solids pass into the cuttings tanks where they are captured for drying and hauloff to an approved landfill site. Liquids fall into a shaker tank and are collected by a centrifugal pump to be processed by the high speed centrifuge to further separate liquids and solids. Solids are then dumped into the cuttings tank for drying and hauloff. Liquids are further processed to remove additional low gravity solids before being reused or transferred to onsite storage.

## LIQUIDS DRILLING (FRESHWATER, BRINE, SOBM)

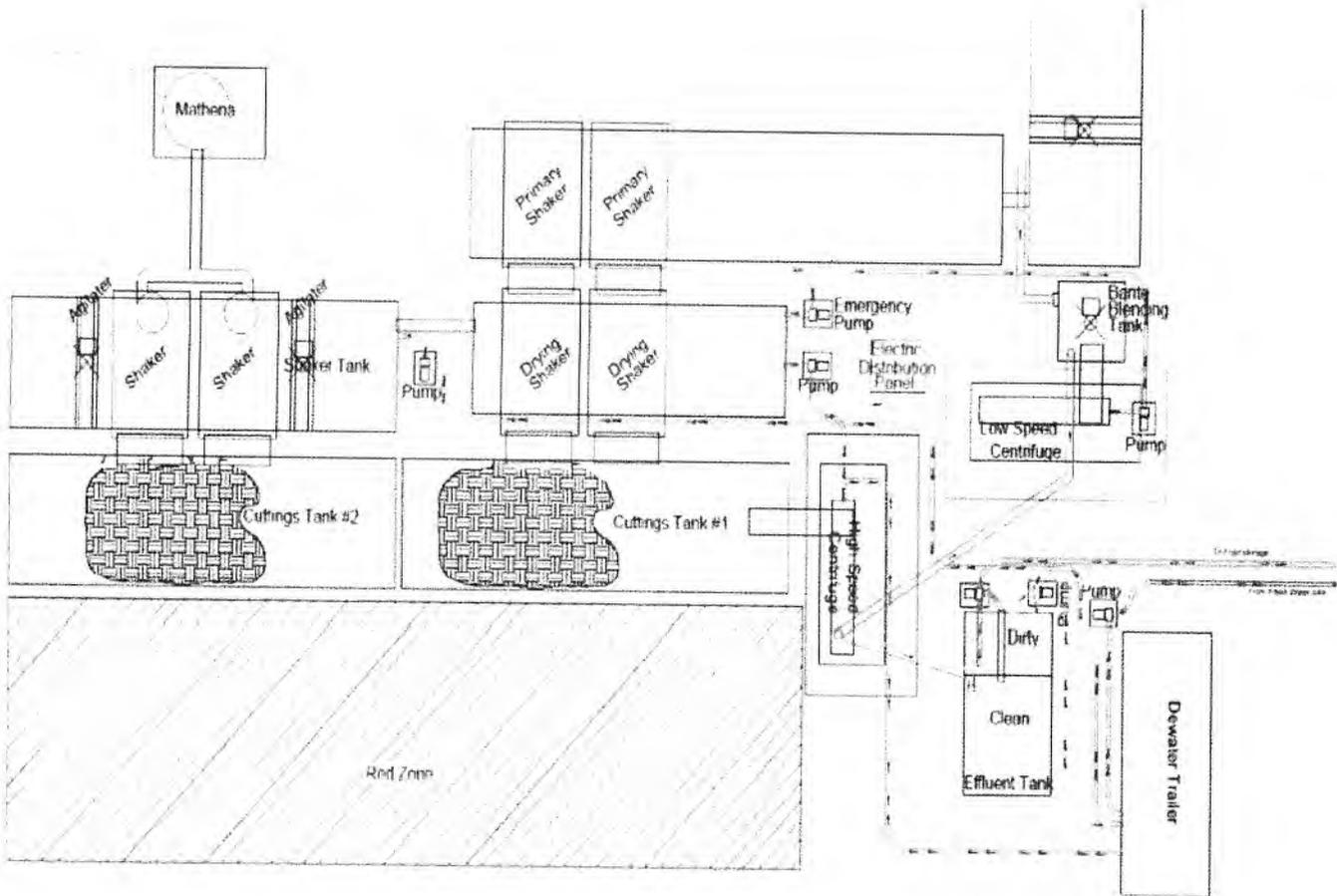
When drilling is converted to liquids drilling, the shale gas separator and associated shaker tank are bypassed, and the liquids system is processed over the primary and drying shaker systems. Cuttings drop into the cuttings tank for additional processing. Any recoverable associated liquids attached to the cutting are recovered out the tank and processed through the low gravity (high speed) and barite recovery centrifuges (low speed) to further remove low gravity solids and to recover barite for reuse in the mud systems.

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# Solids Control Layout



EXAMPLE SCHEMATIC FOR CLOSED LOOP SOLIDS CONTROL SYSTEM



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# MARCELLUS WELL DRILLING PROCEDURES AND WELL SITE SAFETY PLAN



SWN Production Company, LLC  
179 Innovation Drive  
Jane Lew, West Virginia 26378

**API NO. 47-XXX-XXXXX**  
**WELL NAME: Michael Ratcliffe UD OHI 106H**  
**Bethany QUAD**  
**Liberty DISTRICT**  
**Ohio COUNTY, WEST VIRGINIA**

Submitted by:

Brittany Woody Brittany Woody Date: 5/24/2018

Title: Regulatory Analyst SWN Production Co., LLC

Approved by:

[Signature] Date: 6-4-18

Title: Oil & Gas Inspector

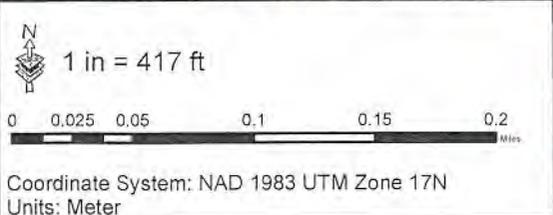
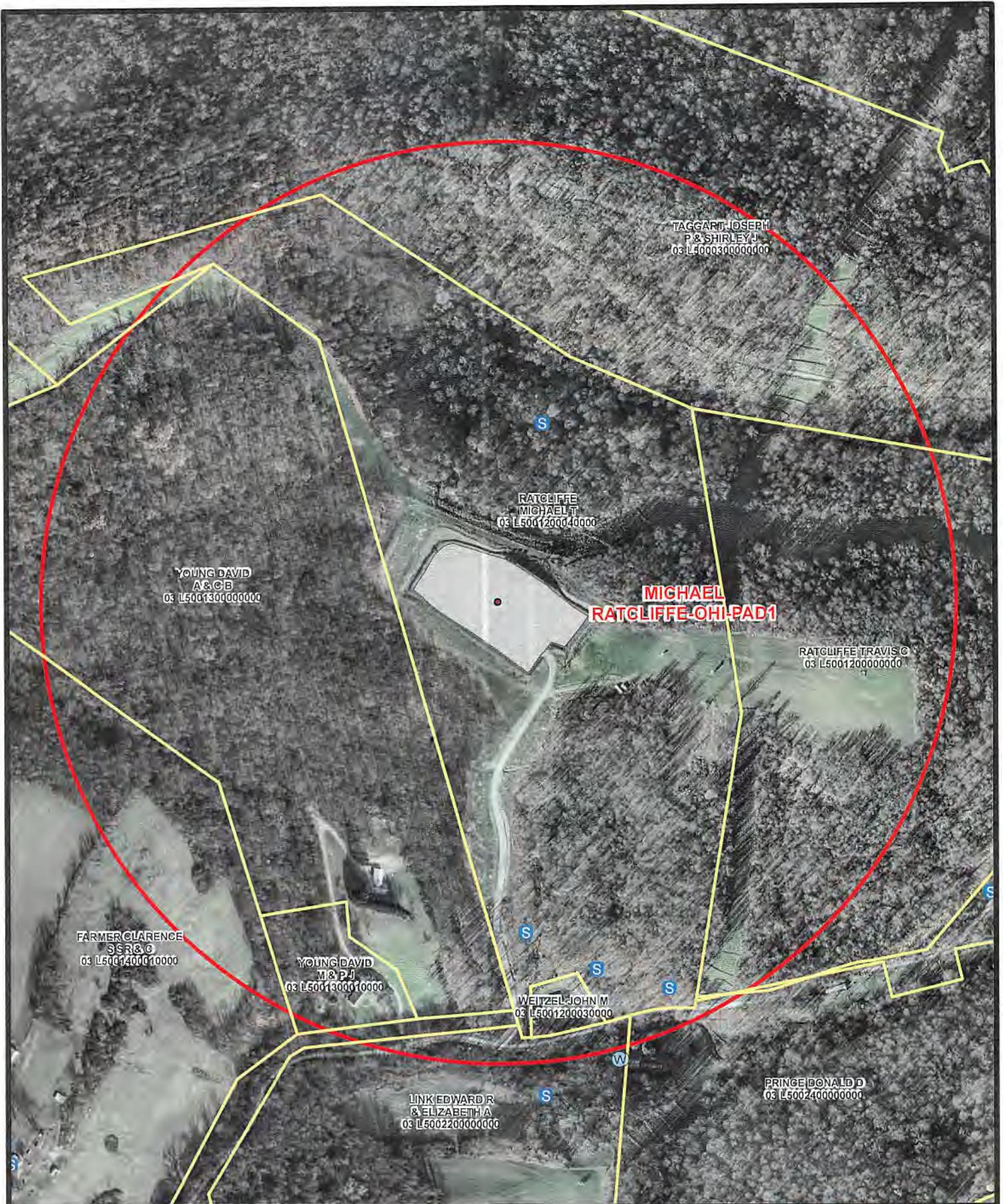
Approved by:

\_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

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- S Spring
  - W Water Well
  - Pond
  - 1500' Buffer
- Coordinates: 40.148369, -80.566778

Water Purveyor Map  
Well Pad: Michael Ratcliffe  
County: OH

**swn**  $\frac{R^2}{A} \rightarrow V^+$   
Southwestern Energy\*

Date: 8/7/2018 | Author: willisb

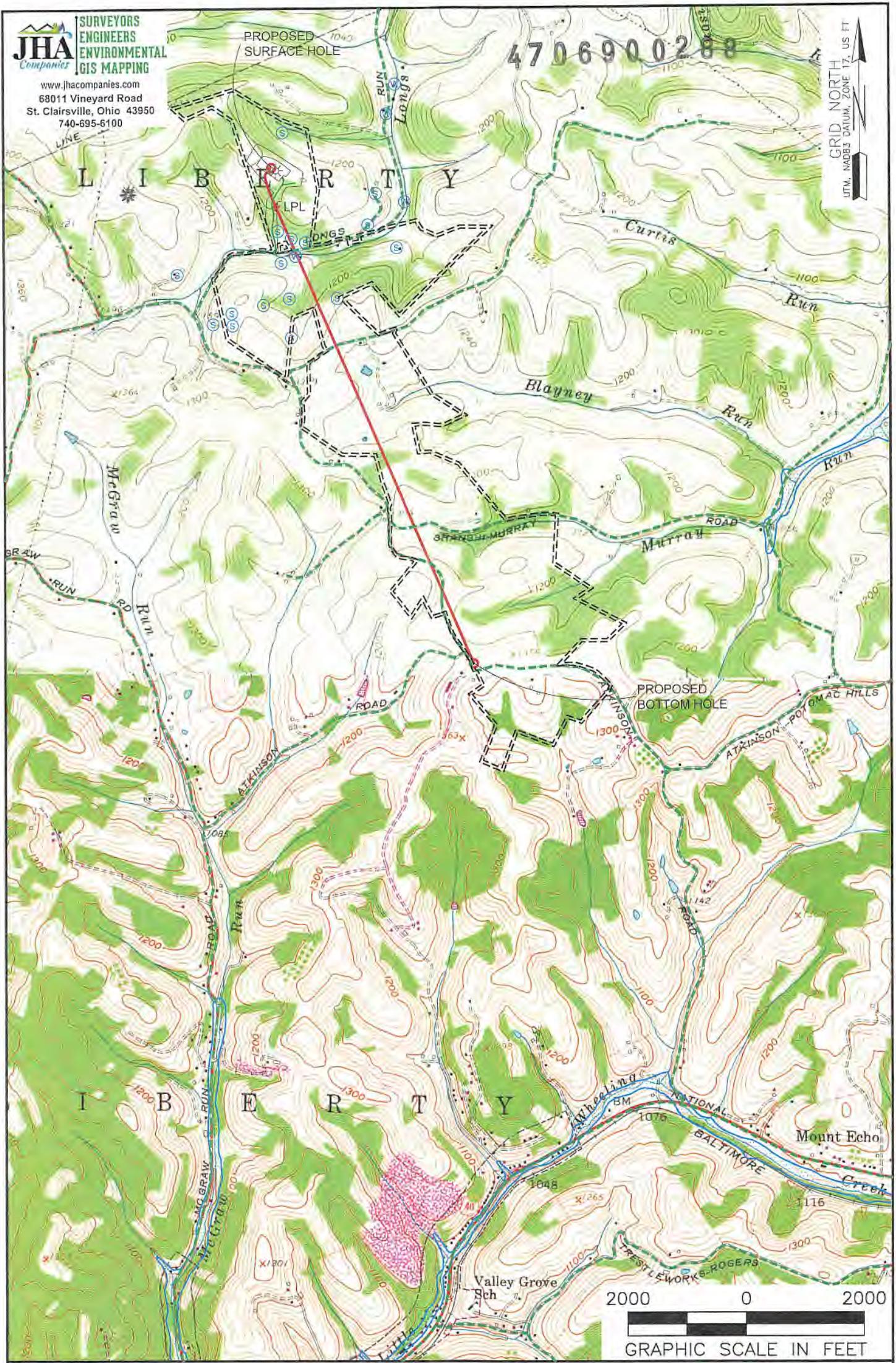
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GRID NORTH  
UTM, NAD83 DATUM, ZONE 17, US FT



**NOTES ON SURVEY**

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

**LEGEND:**

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

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Office of Oil and Gas  
WELL OPERATOR:  
SWN PRODUCTION COMPANY, LLC  
ADDRESS:  
P.O. BOX 1300 JANE LEW, WV 26378  
SURFACE OWNER:  
MICHAEL T. RATCLIFFE

WELL (FARM) NAME:  
MICHAEL RATCLIFFE UD OHI  
COUNTY - CODE  
OHIO - 069  
USGS 7 1/2 QUADRANGLE MAP NAME  
BETHANY, WV

WELL #  
106H  
SERIAL #  
XXXX  
DISTRICT;  
LIBERTY

LATITUDE: 40°10'00" SURFACE HOLE | 7087'

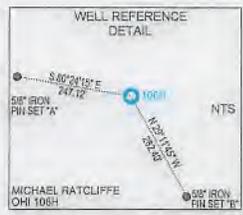
LATITUDE: 40°10'00" BOTTOM HOLE | 3590'

**JHA Companies**  
**SURVEYORS ENGINEERS ENVIRONMENTAL GIS MAPPING**  
 www.jhacompanies.com  
 68011 Vineyard Road  
 St. Clairsville, Ohio 43950  
 740-695-6100

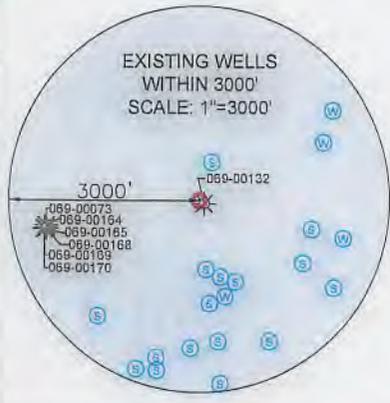
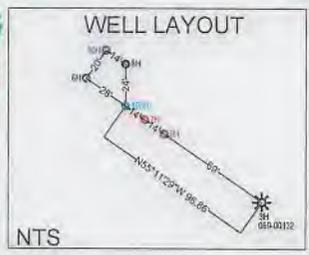
**NOTES ON SURVEY**

- COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.

GRID NORTH  
 UTM, NAD83 DATUM, ZONE 17, US FT  
 LONGITUDE: -80°32'30" BOTTOM HOLE  
 LONGITUDE: -80°32'30" SURFACE HOLE | 14942'



LINE	BEARING	DISTANCE
L1	N64°22'15"W	857.94'
L2	N02°55'59"W	1434.34'



**SURFACE HOLE LOCATION (SHL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4444321.17  
 EASTING: 536880.54

**LANDING POINT (LPL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4444119.64  
 EASTING: 536908.58

**BOTTOM HOLE LOCATION (BHL):**  
 UTM (NAD83, ZONE 17, METERS):  
 NORTHING: 4441799.81  
 EASTING: 537959.45



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
 P.S. 2041

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)

MICHAEL RATCLIFFE UD  
 OPERATOR'S WELL #: OHI 106H  
 API WELL #: 47 069 00288  
 STATE COUNTY PERMIT

WELL TYPE: OIL  WASTE DISPOSAL  PRODUCTION  DEEP  GAS  LIQUID INJECTION  STORAGE  SHALLOW   
 WATERSHED: OHIO UPPER SOUTH ELEVATION: 1,281.4'  
 DISTRICT: LIBERTY COUNTY: OHIO QUADRANGLE: BETHANY, WV  
 SURFACE OWNER: MICHAEL T. RATCLIFFE ACREAGE: ±55.835  
 OIL & GAS ROYALTY OWNER: MICHAEL T. RATCLIFFE ACREAGE: ±55.835  
 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: BURKET ESTIMATED DEPTH: 6,254' TVD 14,847.4' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY  
 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:  
 ○ PROPOSED SURFACE HOLE / BOTTOM HOLE  
 ✱ EXISTING / PRODUCING WELLHEAD  
 LPL ✱ LANDING POINT LOCATION  
 (W) EXISTING WATER WELL  
 (S) EXISTING SPRING  
 — SURVEYED BOUNDARY  
 ===== LEASE BOUNDARY  
 — PROPOSED PATH

REVISIONS:  
 DATE: 08-15-2018  
 DRAWN BY: D. REED  
 SCALE: 1" = 2000'  
 DRAWING NO: 2017-637  
 WELL LOCATION PLAT

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS		
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL
1	MICHAEL T. RATCLIFFE (S/R)	03-L5-12.4
TRACT	SURFACE OWNER	TAX PARCEL
2	EDWARD R. & ELIZABETH A. LINK	03-L5-22
3	DONALD D. PRINCE	03-L5-24
4	JASON & RACHEL MILLER	03-L5-23.3
5	WALTER W. KNOLLINGER, JR. & MONA DEE KNOLLINGER	03-L5-23.4
6	BERNARD T. & MARJORIE A. RAAB	03-L8-7
7	ROBERT C. JONES	03-L8-11
8	R. RICHARD & LYNNETTE LOUISE BLOOMFIELD	03-L8-12.10
9	DANIEL PAUL TUSTIN, JR.	03-L8-12.11
10	DANIEL PAUL TUSTIN, JR.	03-L8-12.9

ADJOINING OWNERS TABLE		
TRACT	SURFACE OWNER	TAX PARCEL
A	JOSEPH P. & SHIRLEY J. TAGGART	03-L5-3
B	TRAVIS C. RATCLIFFE	03-L5-12
C	JOSEPH G. PRINCE	03-L5-25
D	TRAVIS CHRISTOPHER RATCLIFFE	03-L5-12.1
E	JOSEPH G. PRINCE & DONALD D. PRINCE	03-L5-11.2
F	DONALD F. & J.L. DOLENCE	03-L5-11
G	GEORGE F. SMITH	03-L5-27
H	SUSAN NORTHWOOD SMITH & RICHARD ALAN SMITH	03-L5-23.1
I	DALE R. & JACKIE A. RITCHEA	03-L5-23.2
J	DONALD L. & DEBORAH JO WADDELL	03-L5-23.6
K	DONALD L. & DEBORAH JO WADDELL	03-L5-23
L	DONALD L. & D.J. WADDELL	03-L8-39
M	PETER, JR. & D.J. COTTAGE (THE COTTAGE FAMILY REV TRUST)	03-L8-8
N	NEAL P. BROWN	03-L8-9.6
O	SCOTT A. & JILL L. DILLE	03-L8-9.3
P	GEORGE E., III & M.A. PORTER	03-L8-9.5
Q	ROBERT F. & N.C. REASS	03-L9-1
R	JODY LEE SHILLING	03-L8-10
S	RANDY J. CREIGHTON	03-L8-11.2
T	PAUL A. MAIN	03-L8-10.1
U	RICHARD C. & K.J. WHEAT	03-L8-10.2
V	DAVID E. DAVIS, JR.	03-L8-35
W	ROBERT C. JONES	03-L8-11.1
X	ROBERT A. SHILLING, SR.	03-L8-33.9
Y	JOSEPH T. KLUG	03-L8-34.1
Z	ROBERT A. SHILLING, SR.	03-L8-33
AA	THOMAS P. & TERESA HUDRLIK	03-L8-12.12
AB	BILL RAILING	03-L8-12.8
AC	VICKI L. & DANIEL P. TUSTIN	03-L8-12.6
AD	BILL RAILING	03-L8-12.7
AE	TUNNEL RIDGE, LLC	03-L8-12.3
AF	BARNETT E. & LAURIE L. BECK	03-L8-12.5
AG	KATHY J. HUNTER	03-L8-6
AH	A.R. & Z.I. NIXON	03-L8-5
AI	JENNIFER G. BURROWS	03-L8-4.1
AJ	PAUL DAVID & DAWN M. DOYLE	03-L8-4
AK	RICHARD C. LINK (LIFE ESTATE: ROBERT W., JR. & D.M. LINK)	03-L5-22.6
AL	DAVID A. WADDELL	03-L5-23.5
AM	EDWARD & ELIZABETH LINK	03-L5-23.7
AN	RICHARD C. LINK	03-L5-22.1
AO	EDWARD R. & ELIZABETH A. LINK	03-L5-22.5
AP	EDWARD R. & ELIZABETH A. LINK	03-L5-22.2
AQ	EDWARD ROBERT & ELIZABETH ANN LINK	03-L5-21.1
AR	CLARENCE S., SR. & C. FARMER	03-L5-14.1
AS	DAVID M. & P.J. YOUNG	03-L5-13.1
AT	MICHAEL T. RATCLIFFE	03-L5-12.3
AU	CASEY P. & DEVAN M. YOUNG	03-L5-13
AV	MARK & ANNELIESE KAUFMAN	03-L5-1.1

REVISIONS:	COMPANY:		 	
	OPERATOR'S	MICHAEL RATCLIFFE UD		DATE: 08-15-2018
	WELL #:	OHI 106H		DRAWN BY: D. REED
	DISTRICT:	COUNTY:	STATE:	SCALE: N/A
	LIBERTY	OHIO	WV	DRAWING NO: 2017-637
				WELL LOCATION PLAT

WW-6A1  
(5/13)

Operator's Well No. Michael Ratcliffe UD OHI 106H

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

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

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

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

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

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

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

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

Well Operator: SWN Production Company, LLC.

By: \_\_\_\_\_

Its: \_\_\_\_\_

Landman

4706900288

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Office of Oil and Gas  
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**Exhibit "A"**

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, Operator  
**Michael Ratcliffe UD OHI 106H**  
 Ohio County, West Virginia

#	TAX ID	LESSOR	LESSEE	ROYALTY	BK/PG
1	03-L5-12.4	Michael T. Ratcliffe	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	15%	795/622 885/272
2	03-L5-22	Edward Robert Link and Elizabeth A. Link as Joint Tenants with Right of Survivorship	Range Resources - Appalachia, LLC Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	15%	851/536 808/455 883/539
3	03-L5-24	Beth D. McCammon	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	826/758 885/656
3	03-L5-24	Linda Ann Porter and Thomas E. Porter	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	826/391 885/656
3	03-L5-24	Robert Eugene Main and Loretta Jean Main	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	826/753 885/656
3	03-L5-24	Martha Elizabeth Strohecker	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	826/763 885/656
3	03-L5-24	D. Pauline Archer	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	827/643 885/656
3	03-L5-24	Wilda M. Moore	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	827/638 885/656
3	03-L5-24	William R. Krumme	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	831/479 885/656
3	03-L5-24	Ethel Lynn Denges a/k/a Ethel Lynn Krumme and Robert A. Denges	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	831/501 885/656
3	03-L5-24	C. Lucille Obermann	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	827/633 885/656

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**Michael Ratcliffe UD OHI 106H**  
Ohio County, West Virginia

#	TAX ID	LESSOR	LESSEE	ROYALTY	BK/PG
3	03-L5-24	Jennifer Pogue	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	828/315 885/668
3	03-L5-24	Dena Pogue	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	832/51 885/668
3	03-L5-24	Marlene Lambert and Edward Lambert	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	832/46 885/668
3	03-L5-24	Joann Chegan	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	832/74 885/668
3	03-L5-24	William B. Pogue and Mary L. Pogue	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	832/27 885/668
3	03-L5-24	Sharon Grace Porter	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	833/304 885/668
3	03-L5-24	Sandra W. Weckesser a/k/a Sandra K. Weaver and Timothy C. Weckesser	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	833/605 885/668
3	03-L5-24	Linda McLendon and Larry McLendon	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	835/45 885/668
3	03-L5-24	Gwen Leistner and Michael Leistner	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	828/269 885/668
3	03-L5-24	Gail Spence and Ronald Spence	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	828/301 885/668
3	03-L5-24	Gene Masteller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	826/768 885/668
3	03-L5-24	James I. Masteller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	835/160 885/668

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**Exhibit "A"**

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, Operator  
**Michael Ratcliffe UD OHI 106H**  
Ohio County, West Virginia

#	TAX ID	LESSOR	LESSEE	ROYALTY	BK/PG
3	03-L5-24	John E. Masteller	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	835/154 885/668
3	03-L5-24	Gary Farrar and Rebecca Farrar	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	828/320 885/668
3	03-L5-24	Beverly D. Hertig	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	837/190 885/668
3	03-L5-24	Patricia Kirkbride	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	838/720 885/668
3	03-L5-24	The Estate of Charles Montgomery Eberhardt by and through Monica J. Franklin, Executrix	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	20%	840/578 885/668
3	03-L5-24	William Reed	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	840/645 885/668
3	03-L5-24	Tamara R. Kerr	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	841/715 885/668
3	03-L5-24	Billie Sprowls	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	846/105 885/668
3	03-L5-24	Jason E. Martin	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	869/117 883/778
3	03-L5-24	Jessica L. Grabenhorst f/k/a Jessica L. Byrd	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	869/439 883/778
3	03-L5-24	Jeremy Owen Byrd	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	869/445 883/778
3	03-L5-24	Susan D. DiGiandomenico a/k/a Susan DiGiandomen	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	873/144 883/766

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Environmental Protection

**Exhibit "A"**

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, Operator  
Michael Ratcliffe UD OHI 106H  
Ohio County, West Virginia

#	TAX ID	LESSOR	LESSEE	ROYALTY	BK/PG
3	03-L5-24	James Robert Johnson	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	874/257 885/548
3	03-L5-24	Ian L. Montgomery	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	873/175 885/536
3	03-L5-24	Eleanor B. Riggs	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	860/149 883/766
3	03-L5-24	Robert W. Wardle	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	860/144 883/766
3	03-L5-24	Nadine Montgomery McDowell	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	862/107 883/766
3	03-L5-24	Heather H. Montgomery	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	877/594 895/498
4	03-L5-23.3	Jason Miller and Rachel Miller, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.5%	792/346 885/260
5	03-L5-23.4	Walter W. Knollinger, Jr. and Mona Dee Knollinger, his wife	Great Lakes Energy Partners, L.L.C. Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.5%	778/773 808/391 883/515
6	03-L8-7	Bernard T. Raab and Marjorie A. Raab, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	18%	869/461 883/778
7	03-L8-11	CNX Gas Company, LLC	SWN Production Company, LLC	18%	947/651
8	03-L8-12.10	R. Richard Bloomfield and Lynette Louise Bloomfield, husband and wife	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	14%	863/163 883/766
9	03-L8-12.11	Daniel Paul Tustin, Jr, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.5%	792/229 885/248

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**Exhibit "A"**

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC, Operator  
**Michael Ratcliffe UD OHI 106H**  
Ohio County, West Virginia

#	TAX ID	LESSOR	LESSEE	ROYALTY	BK/PG
10	03-L8-12.9	Daniel Paul Tustin, Jr, a single man	Chesapeake Appalachia, L.L.C. SWN Production Company, LLC	12.5%	792/229 885/248



SWN Production Company, LLC  
179 Innovation Drive  
Jane Lew, WV 26378  
Tel: 304 884 1610  
Fax: 304 471 2497  
www.swn.com

September 11, 2018

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

**RE:** SWN's proposed New Well: Michael Ratcliffe UD OHI 106H in Ohio County, West Virginia, Drilling under Long Run Road, G C & P Road, & Shanghai & Murray Road & Atkinson Crossing.

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 Long Run Road, G C & P Road, & Shanghai & Murray Road & Atkinson Crossing. 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,

A handwritten signature in black ink, appearing to read "B. Wilson".

Bradley Wilson  
Landman  
SWN Production Company, LLC  
PO Box 12359  
Spring, TX 77391-2359

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A red logo consisting of the letters "R/A" stacked vertically, with an arrow pointing from "R/A" to "V+", where the plus sign is a superscript.

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



WW-6A  
(8-13)

API NO. 47-1066 **4706900288**  
OPERATOR WELL NO. Michael Ratcliffe UD OHI 106H  
Well Pad Name: Michael Ratcliffe OHI Pad

**Notice is hereby given by:**

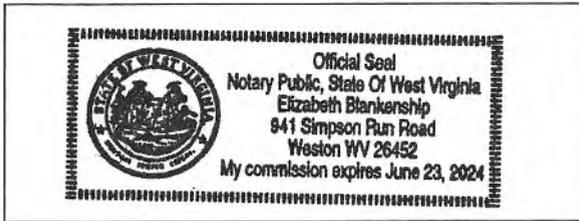
Well Operator: SWN Production Co., LLC  
Telephone: 304-884-1614  
Email: Brittany\_Woody@swn.com

*Brittany Woody*

Address: P.O. Box 1300  
Jane Lew, WV 26378  
Facsimile: 304-884-1690

**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).



Subscribed and sworn before me this 15 day of Aug. 2018.  
*Elizabeth Blankenship* Notary Public  
My Commission Expires 6/23/2024

WW-6A  
(9-13)

API NO. 47- 069 -  
OPERATOR WELL NO. Michael Ratcliffe UD OHI 106H  
Well Pad Name: Michael Ratcliffe OHI Pad

**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:** 9/12/18 **Date Permit Application Filed:** 9/12/18

**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: Michael T. Ratcliffe  
Address: 1069 G C & P Road  
Wheeling, WV 26003

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

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: Tunnel Ridge  
Address: 2596 Battle Run Road  
Triadelphia, WV 26059

COAL OPERATOR  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

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

Name: See Attachment #1  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

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

\*Please attach additional forms if necessary

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WV Department of  
Environmental Protection

**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. 47-069 -  
OPERATOR WELL NO. Michael Ratcliffe UD OHI 106H  
Well Pad Name: Michael Ratcliffe OHI 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

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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SEP 4 2013  
WV Department of Environmental Protection

**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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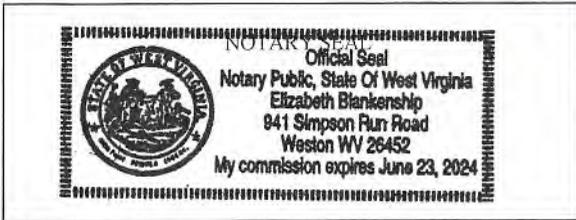
**Certification of Notice is hereby given:**

THEREFORE, I Brittany Woody, 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: Brittany Woody  
Its: Regulatory Analyst  
Telephone: 304-884-1610

*Brittany Woody*

Address: P.O. Box 1300  
Jane Lew, WV 26378  
Facsimile: 304-884-1690  
Email: Brittany\_Woody@swn.com



Subscribed and sworn before me this 15 day of Aug 2018.  
[Signature] Notary Public  
My Commission Expires 6/23/2024

**Oil and Gas Privacy Notice:**

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

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PARCEL_ID	OWNER	ADDRESS	CITY_STATE ZIP	WATER SOURCE
03 L5001200040000	RATCLIFFE MICHAEL T	RR 1 BOX 303B	WHEELING WV 26003	4

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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:** 05/31/2018      **Date Permit Application Filed:** 9/12/18

**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: Michael T. Ratcliffe  
Address: 1069 G C and P Rd  
Wheeling, WV 26003

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>536,881</u>
County:	<u>Ohio</u>	UTM NAD 83 Northing:	<u>4,444,321</u>
District:	<u>Liberty</u>	Public Road Access:	<u>Longs Run Road</u>
Quadrangle:	<u>Bethany &amp; Valley Grove</u>	Generally used farm name:	<u>Michael Ratcliffe OHI</u>
Watershed:	<u>Upper Ohio South</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, 179 Innovation Drive  
Jane Lew, WV 26378  
Telephone: 304-439-1532  
Email: Randy\_Orsburn@swn.com  
Facsimile: 304-884-1691

Authorized Representative: Randy Orsburn  
Address: PO Box 1300, 179 Innovation Drive  
Jane Lew, WV 26378  
Telephone: 304-439-1532  
Email: Randy\_Orsburn@swn.com  
Facsimile: 304-884-1691

**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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Environmental Protection

WW-6A5  
(1/12)

Operator Well No. Michael Ratcliffe OHI 106H

**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:** 05/31/2018      **Date Permit Application Filed:** 9/17/18

**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: Michael T. Ratcliffe

Address: 1069 G C & P Rd.

Wheeling, WV 26003

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>536,881</u>
County:	<u>Ohio</u>		Northing:	<u>4,444,321</u>
District:	<u>Liberty</u>	Public Road Access:	<u>Longs Run Road</u>	
Quadrangle:	<u>Bethany &amp; Valley Grove</u>	Generally used farm name:	<u>Michael Ratcliffe OHI</u>	
Watershed:	<u>Upper Ohio South</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: 304-439-1532

Email: Randy\_Orsburn@swn.com

Address: PO Box 1300, 179 Innovation Drive

Jane Lew, WV 26378

Facsimile: 304-884-1691

**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).



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

Thomas J. Smith, P. E.  
Secretary of Transportation/  
Commissioner of Highways

May 24, 2018

Jill M. Newman  
Deputy Commissioner

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 Michael Ratcliffe Pad, Ohio County  
Michael Ratcliffe UD OHI 106H

Dear Mr. Martin,

The West Virginia Division of Highways has transferred Permit #06-2011-0598 for the subject site to Southwestern Energy for access to the State Road for the well site located off of Ohio County Route 53/1 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,

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

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

Cc: Dee Southall  
Southwestern Energy  
CH, OM, D-6  
File

Product Name	Product Use	Chemical Name	CAS Number
EC6734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1
		Nonylphenol Ethoxylate	Proprietary
Bactron K-139 (Champion Technologies)	Biocide	Glutaraldehyde	111-30-8
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
		Ethanol	64-17-5
Bactron K-219 (Champion Technologies)	Biocide	Methanol	67-56-1
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
EC6486A (Nalco Champion)	Scale Inhibitor	Amine Triphosphate	Proprietary
		Ethylene Glycol	107-21-1
WFRA-2000 (U.S. Well Services)	Anionic Friction Reducer	Hydrotreated light distillate (petroleum)	64742-47-8
		Propenoic acid, polymer with propenamide	9003-06 9
AI-303 (U.S. Well Services)	Mixture	Ethylene glycol	107-21 1
		Cinnamaldehyde	104-55 2
		Butyl cellosolve	111-76 2
		Formic acid	64-18 6
		Polyether	Proprietary
		Acetophenone, thiourea, formaldehyde polymer	68527-49 1
AP ONE (U.S. Well Services)	Breaker	Ammonium persulfate	7727-54-0
OPTI-FLEX (U.S. Well Services)	Viscosifying Agent	Distillates, petroleum, hydrotreated light	64742-47-8
Econo-CI200 (SWN Well Services)	Corrosion Inhibitor	Methanol	67-56-1
		Oxyalkylated fatty acid	68951-67-7
		Fatty acids	61790-12-3
		Modified thiourea polymer	68527-49-1
		Water	7732-18-5
		Hydrochloric acid	7647-01-0
		Potassium acetate	127-08-2
		Formaldehyde	50-00-0
Ecopol-FEAC (SWN Well Services)	Iron Control	Acetic Acid	64-19-7
		Citric Acid	77-92-9
		Water	7732-18-5
HCL (SWN Well Services)	Hydrochloric Acid	Hydrochloric Acid	7647-01-0
		Water	7732-18-5
FLOJET DRP 1130X (SWN Well Services)	Friction Reducer	Proprietary	Proprietary
FLOJET DR900 LPP (SWN Well Services)	Friction Reducer	Distillates (petroleum) hydrotreated light	64674-47-8
		Ethylene Glycol	107-21-1
		Alcohols, C12-16, Exoxylated propoxylated	68213-24-1
		Fatty Alcohols ethoxylated	Proprietary
		Water	7732-18-5
FR-76 (Halliburton)	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Inorganic Salt	Proprietary
HAI-150E (Halliburton)	Corrosion Inhibitor	No hazardous substance	N/A
FDP-S1176-15 (Halliburton)	Friction Reducer	Polyacrylate	Proprietary
		Hydrotreated light petroleum distillate	64742-47-8
LP-65 MC (Halliburton)	Scale Inhibitor	Organic phosphonate	Proprietary
		Ammonium Chloride	12125-02-9
CarboNRT	Tracer	Ceramic Proppant	66402-68-4

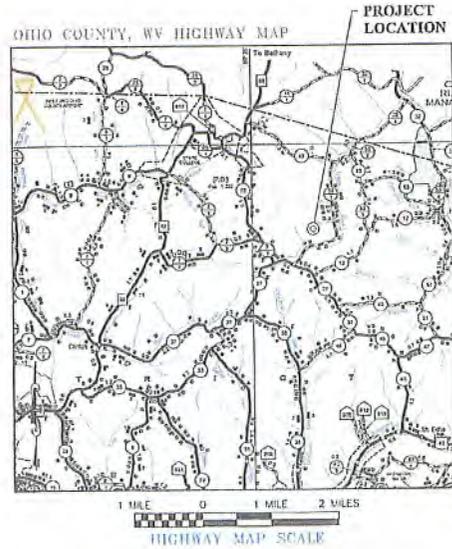
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 USER: brett - mcsweeney



# SWN PRODUCTION COMPANY, LLC

## AS-BUILT PLANS FOR THE MICHAEL RATCLIFFE PAD "A"

### LIBERTY DISTRICT, OHIO COUNTY, WV

#### MAY 2017

**swn**  
Production Company™  
SWN PRODUCTION COMPANY, LLC  
179 Innovation Drive  
Jane Lew, WV 26378  
(304) 884-1610

**SHEET INDEX**

SHEET	DESCRIPTION
1	TITLE SHEET
2-3	EVACUATION PLAN AND PREVAILING WIND
4	AS-BUILT OVERVIEW
5-7	AS-BUILT ACCESS ROAD PLAN & PROFILE
8	AS-BUILT WELL PAD PLAN
9	AS-BUILT WELL PAD PROFILE & SECTIONS
10	RECLAMATION PLAN
11	GENERAL NOTES
12-14	DETAILS

**PROJECT COORDINATES**

**AS-BUILT ACCESS ROAD BEGINNING**  
 NAD83-N Latitude = N 40.144516°  
 NAD83-N Longitude = W 80.566830°  
 UTM 83-17 Northing = 14579653.1484 ft.  
 UTM 83-17 Easting = 1761470.4070 ft.

**DISTURBANCE SUMMARY**

Disturbance Location	Total Disturbance (Acres)
Access Road	4.88
Well Pad	8.60
<b>Total Disturbance</b>	<b>13.48</b>

**AS-BUILT CENTER OF WELL PAD**  
 NAD83-N Latitude = N 40.148319°  
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**MICHAEL RATCLIFFE PAD "A"**

EXISTING WELL 3H: AP# 47-069-00132  
 PERMIT APPLICATION 5H: AP# 47-069-00135  
 PERMIT APPLICATION 8H: AP# 47-069-00103



*N. Bell 6-4-18*  
*D. Bell 8-10-17*

**NOTES**

- PORTIONS OF THE ORIGINAL AS-BUILT SURVEY OF THIS SITE PROVIDED BY BOORD, BENCECK & ASSOCIATES, INC (BBA) TO CHESAPEAKE APPALACHIA, LLC IN OCTOBER 2012 HAVE BEEN INCORPORATED INTO THESE PLANS. THE BBA AS-BUILT SURVEY WAS PROVIDED TO THRASHER BY SWN PRODUCTION COMPANY, LLC IN MAY 2017 AND INCLUDED CONTOURS, ROAD EDGES, WELL HEAD LOCATIONS, EROSION AND SEDIMENT CONTROLS, ETC.
- EXISTING ROAD EDGES, WELL PAD EDGE, GAS PRODUCTION EQUIPMENT, ABOVE GROUND PIPING, STORM WATER FEATURES, ETC. WERE VERIFIED AND AS-BUILT BY THRASHER MAY 2017.
- THE COORDINATE SYSTEM USED FOR THIS PROJECT IS UTM WITH NAD83 DATUM, ZONE 17, US FOOT; CENTRAL MERIDIAN 81W.



REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION

**ONE CALL UTILITY SYSTEM CONTACT INFO**



CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.

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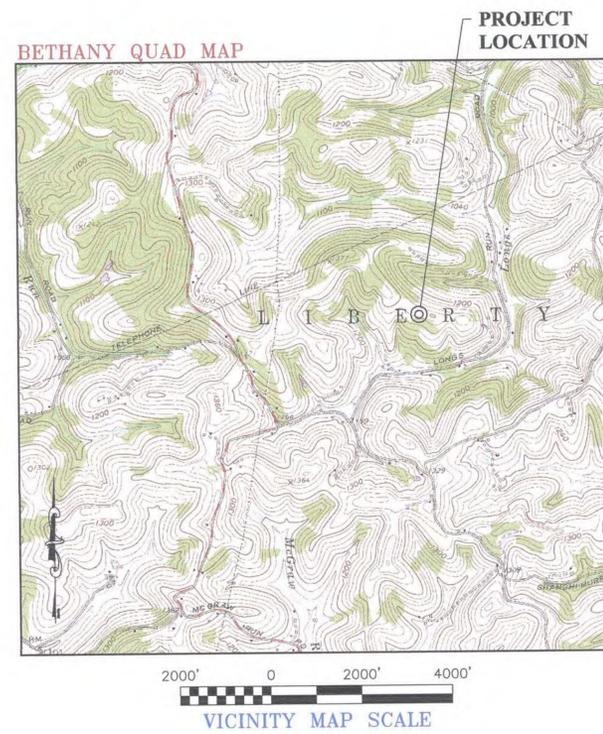
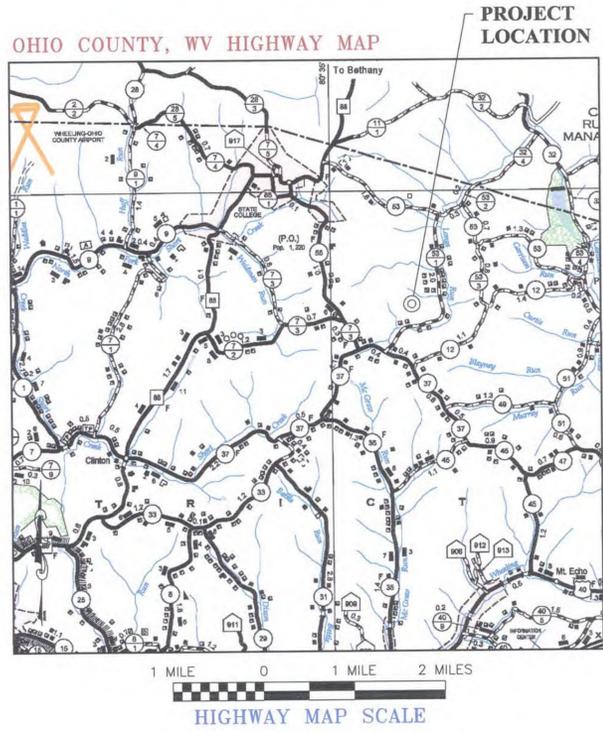
THE THRASHER GROUP, LLC  
 600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330  
 PHONE (304) 624-4108 • FAX (304) 624-7831

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 USER: brad r. messinger



# SWN PRODUCTION COMPANY, LLC

## AS-BUILT PLANS FOR THE MICHAEL RATCLIFFE PAD "A"

### LIBERTY DISTRICT, OHIO COUNTY, WV

## MAY 2017

SWN

Production Company™

SWN PRODUCTION COMPANY, LLC  
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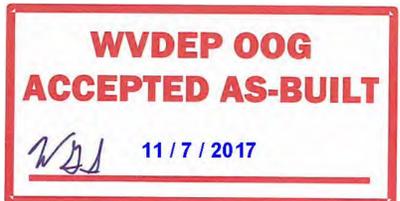
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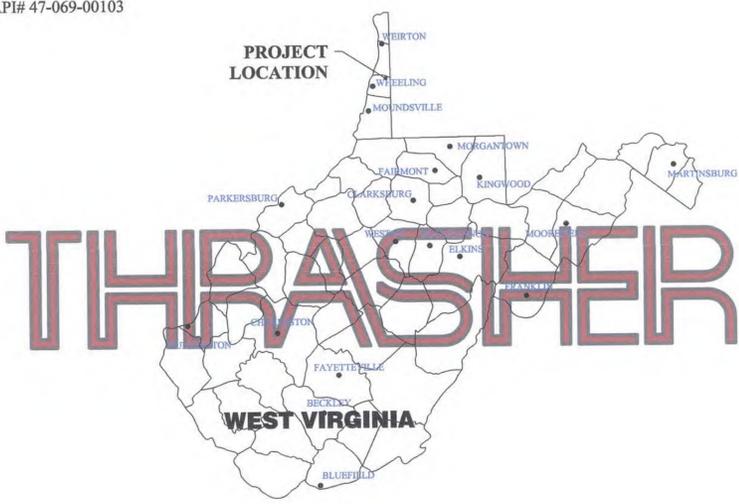
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THRASHER

THE THRASHER GROUP, INC.  
 600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330  
 PHONE (304) 624-4108 • FAX (304) 624-7831

