



west virginia department of environmental protection

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

PERMIT MODIFICATION APPROVAL

October 08, 2015

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 773914954

Re: Permit Modification Approval for API Number 5101845, Well #: B & W EDGE MSH 5H

Modified Lateral Direction

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

 Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

Promoting a healthy environment.

SI-01845



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

August 11, 2015

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

RE: B & W Edge MSH 5H & 205H

Dear Ms. Laura:

Enclosed please find a revised WW-B, wbs, plat and WW-6A1 for the above captioned wells. We would like to swap the slot positions on the 5H & 205H. These wells are situated on the B & W Edge's property, Marshall County, West Virginia.

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

Thank you.

Sincerely,

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

A handwritten red logo consisting of the letters "R", "A", and "V" in a stylized, cursive font. The "R" and "A" are stacked vertically, and the "V" is to the right of the "A". There are small arrows pointing from the "R" and "A" towards the "V".

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

WW-68
(10/14)

API NO. 47- 51-01845 MOD
OPERATOR WELL NO. B & W Edge MSH 01
Well Pad Name: B & W Edge MSH Pad

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

- 1) Well Operator: SWN Production Co., LLC 494512824 51-Marshall 6- Sand 647- Wheeling
Operator ID County District Quadrangle
- 2) Operator's Well Number: B & W Edge MSH 5H Well Pad Name: B & W Edge MSH Pad
- 3) Farm Name/Surface Owner: William F. Jr. & Barbara Edge Public Road Access: Walnut Grove Road
- 4) Elevation, current ground: 1276' Elevation, proposed post-construction: 1253'
- 5) Well Type (a) Gas Oil Underground Storage
Other _____
(b) If Gas Shallow Deep
Horizontal
- 6) Existing Pad: Yes or No No *JW 8/5/15*
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 6285', Target Base TVD- 6389', Anticipated Thickness- 64', Associated Pressure- 4160
- 8) Proposed Total Vertical Depth: 6299'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 14,982'
- 11) Proposed Horizontal Leg Length: 8,712' *8143'*
- 12) Approximate Fresh Water Strata Depths: 300'
- 13) Method to Determine Fresh Water Depths: from nearby water wells
- 14) Approximate Saltwater Depths: 880'
- 15) Approximate Coal Seam Depths: 742'
- 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: Shoemaker
Depth: 669'
Seam: Pittsburgh Seam
Owner: Shoemaker

WW-68
(10/14)

API NO. 47-51-01845 MOD
 OPERATOR WELL NO. B & W Edge MCH 01
 Well Pad Name: B & W Edge MCH Pad

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft./CTS)
Conductor	20"	New	H-40	94#	125'	125'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	400'	400'	388 sq/CTS
Coal	9 5/8"	New	J-55	46#	2200'	2200'	828 sq/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	14,982'	14,982'	As Needed/As Needed
Tubing	2 3/8"	New	P-110	4.7#	Approx. 6867'	Approx. 6867'	
Liners							

JW 8/5/15

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	1.18/60% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.18/60% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1788	Class A	1.18/60% 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-6A1
(5/13)

Operator's Well No. BW Edge 6H

**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 confirming contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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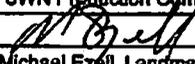
SEE EXHIBIT "A"

**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: Michael Ezell, Landman

RETTEW

RETTEW Associates, Inc.
27 Travata Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rattlew@rattlew.com
Website: www.rattlew.com

LINE	DESCRIPTION	DISTANCE	DESCRIPTION	MONUMENT
L1	N02°36'42"W	185'	SHL TO REF. PIN	IRON PIN
L2	N80°27'36"W	218'	SHL TO REF. PIN	IRON PIN
L3	N48°29'18"W	193'	SHL TO LANDMARK	POST
L4	N03°27'13"E	1,630'	SHL TO LANDMARK	REBAR
L5	N19°55'48"E	807'	SHL TO LP	
L6	N24°25'17"W	8,143'	LP TO BHL	

Latitude: 40°02'30"

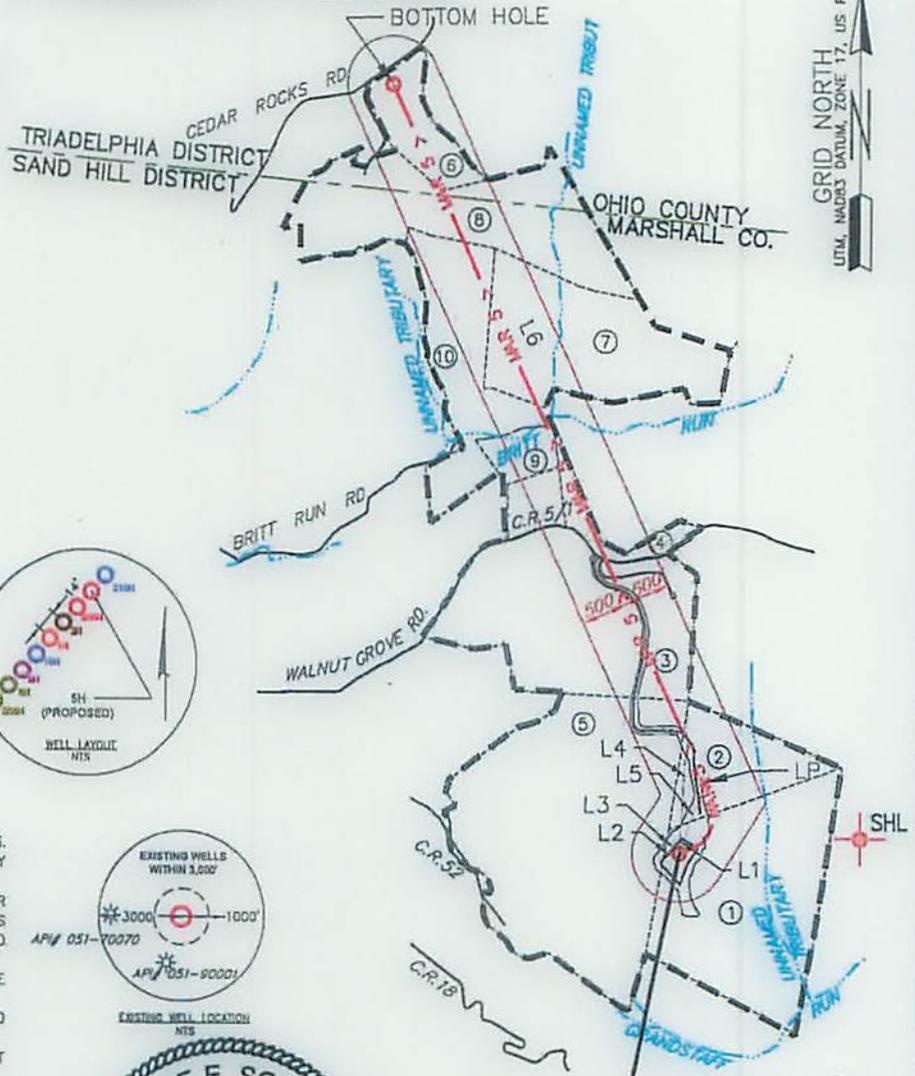
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	EDGE, WILLIAM F. JR. & BARBARA (S)/FLETCHER, JOSEPHINE (R)	12-9-8	87.8±
2	EDGE, WILLIAM F. JR. & BARBARA (S)/FLETCHER, JOSEPHINE (R)	12-9-8.1	28.0±
3	SCHLEINKE, RAY A. & ANDREA K. (S/R)	12-1-18	93.8±
4	WILLER, VOLET S. (S/R)	12-1-18.3	8.0±
5	FALKNER, DEBRA R. & EDITH (S/R)	12-1-19	112.6±
6	CAPPORE, MARINO A. & KAREN (S/R)	6-117-15	22.3±
7	COFFIELD, MICHAEL L. & TADIC S. (S/R)	12-1-13	71.6±
8	HAYVAL, WALTER LEON & OLGA LOUISE (S/R)	12-1-10.1	47.8±
9	BARILONICH, STEPHEN (S/R)	12-1-18.4	7.5±
10	BARILONICH, STEPHEN (S/R)	12-1-11	48.5±

Longitude: 80°37'30"
12,772'

2000 0 2000

GRAPHIC SCALE IN FEET

SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.006607°	
LONGITUDE: -80.627443°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,529,357.404'	
EASTING: 1,744,741.680'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,428,556.993'	
EASTING: 531,798.327'	
"LANDING POINT" LOCATION (LPL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.008687°	
LONGITUDE: -80.626449°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,530,116.030'	
EASTING: 1,745,016.790'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,428,788.224'	
EASTING: 531,882.181'	
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.029085°	
LONGITUDE: -80.638365°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,537,530.010'	
EASTING: 1,741,650.030'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,431,048.009'	
EASTING: 530,855.991'	



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

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



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. 2313

COMPANY: **SWN** Production Company, LLC

(F) 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	BW EDGE MSH
	PROVEN SURVEY SOURCE OF GRADE GPS ELEVATION: (NAVD 88, US FT)	OPERATOR'S WELL #: 5H
	API WELL #: 47 051	STATE COUNTY PERMIT

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1265.6 (1,254 DESIGN)

DISTRICT: SAND HILL COUNTY: MARSHALL QUADRANGLE: WHEELING, WV-OHIO

SURFACE OWNER: EDGE, WILLIAM F. JR. & BARBARA ACREAGE: 87.8 ±

OIL & GAS ROYALTY OWNER: FLETCHER, JOSEPHINE ACREAGE: 115.8 ±

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

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,359' TVD 14,983' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:	REVISIONS:	DATE:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE		08-07-2015
● EXISTING / PRODUCING WELLHEAD	--- LEASE BOUNDARY	
○ ABANDONED WELL	--- 500' DHP BUFFER	
○ PLUGGED & ABANDONED WELL	--- MAR 5 --- MARCELLUS DHP	
△ CUT CONDUCTOR	--- ABANDONED PATH	
		DRAWN BY: B. HERMAN
		SCALE: 1" = 2000'
		DRAWING NO: 078569005
		WELL LOCATION PLAT

Exhibit "A"

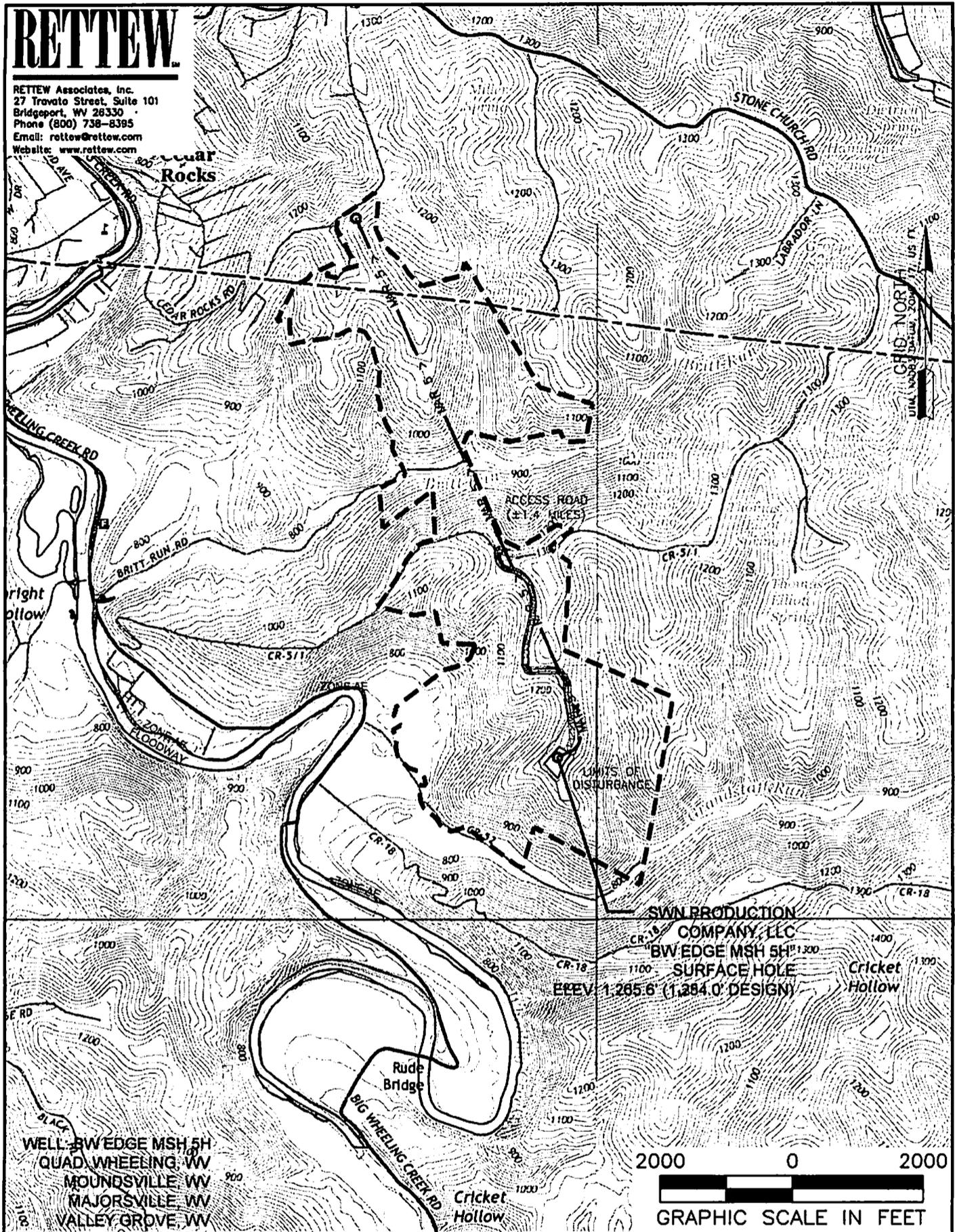
Attached hereto and made part of the State of West Virginia Oil and Gas Permit Form WW-6A1 by SWN Production Company, LLC, Operator
 B&W Edge MSH 5H
 Marshall & Ohio Counties, West Virginia

Tract#	Tax Parcel	Lease Number	Lessor	Lessee	Royalty	BK/Pg
1)	12-9-8	1-385106-000	Josephine Fletcher	NPAR L.L.C.	20%	707/584
			NPAR L.L.C.	Chevron		756/332
			Chevron USA, Inc.	Chesapeake Appalachia L.L.C.		30/532
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
2)	12-9-8.1	1-385106-000	Josephine Fletcher	NPAR L.L.C.	20%	707/584
			NPAR L.L.C.	Chevron		756/332
			Chevron USA, Inc.	Chesapeake Appalachia L.L.C.		30/532
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
3)	12-1-18	1-312549-000	Mark A. Schellhase and Andrea K. Schellhase	Chesapeake Appalachia L.L.C.	18%	721/468
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
4)	12-1-18.3	1-385139-000	Violet S. Miller	Tri Energy Holdings L.L.C.	16%	699/11
			Tri Energy Holdings L.L.C.	NPAR L.L.C.		24/180
			NPAR L.L.C.	Chevron USA, Inc.		756/332
			Chevron	Chesapeake Appalachia L.L.C.		30/532
5)	12-1-19	1-385118-000	Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.	12.50%	33/110
			Gwain R. Folmar and Edith Folmar	Tri Energy Inc.		656/637
			Tri Energy Inc.	AB Resources L.L.C.		19/623
			AB Resources L.L.C.	Chevron USA, Inc.		756/397
6)	6-T17-15	1-325796-000	Chevron USA, Inc.	Chesapeake Appalachia L.L.C.	18%	30/532
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
			Raymond A. Cappone and Karen Cappone	Chesapeake Appalachia L.L.C.		812/584
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		883/228
7)	12-1-13	1-297037-000	Michael L. Coffield and Tylene R. Coffield	Chesapeake Appalachia L.L.C.	18.75%	700/211
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
8)	12-1-10.1	1-286493-000	Walter Lewis Hartman and Gloria Louise Hartman	Chesapeake Appalachia L.L.C.	12.50%	688/622
			Chesapeake Appalachia L.L.C.	SWN Production Company L.L.C.		33/110
9)	12-1-18.4	15-030515	Stephen M. Bartolovich	SWN Production Company L.L.C.	18%	867/429
10)	12-1-11	15-030515	Stephen M. Bartolovich	SWN Production Company L.L.C.	18%	867/429

SI-01845 MOP

RETTEW

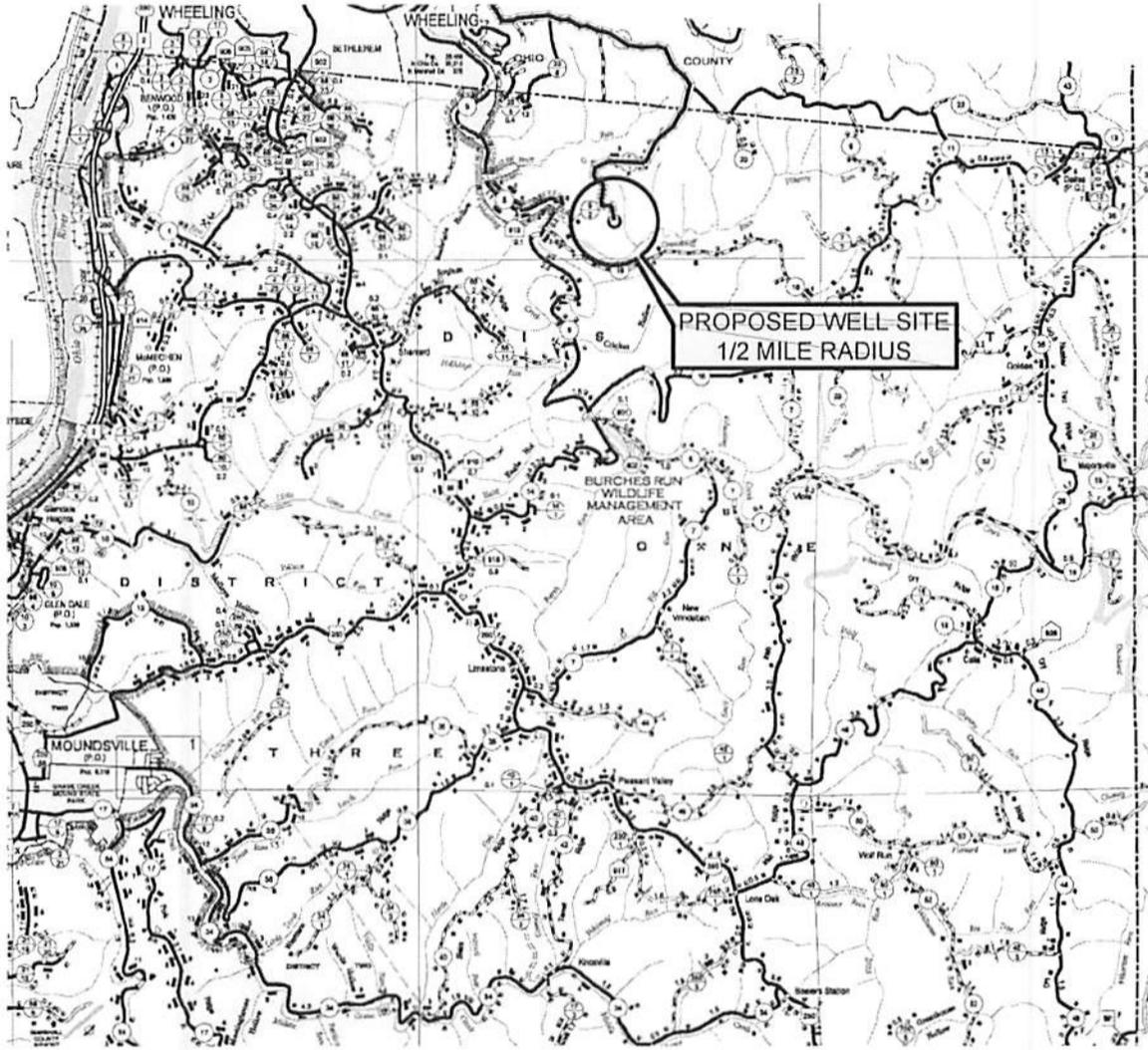
RETTEW Associates, Inc.
 27 Travato Street, Suite 101
 Bridgeport, WV 26330
 Phone (800) 738-8395
 Email: rettelow@rettew.com
 Website: www.rettew.com



NAME AND DISTANCE TO THE NEAREST STREAM: UNNAMED TRIBUTARY TO GRANDSTAFF RUN IS LOCATED 10.17 MILES SE OF THE CENTER OF THE DRILL PAD		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: SWN Production Company LLC			
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET				OPERATOR'S WELL #: BW EDGE MSH 5H		LOCATION: SAND HILL DISTRICT, MARSHALL COUNTY, WEST VIRGINIA	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM UNINCORPORATED AREA OF MARSHALL COUNTY, WEST VIRGINIA; MAP NUMBER 54051C0019E, EFFECTIVE DATE SEPTEMBER 25, 2009.				SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.006607 LONGITUDE: -80.627443		BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.029085 LONGITUDE: -80.638365	
LEGEND: ○ PROPOSED SURFACE HOLE / BOTTOM HOLE ☆ EXISTING / PRODUCING WELLHEAD ✕ ABANDONED WELL ✕ PLUGGED & ABANDONED WELL △ CUT CONDUCTOR		(S) EXISTING SPRING (W) EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD		REVISIONS:		DATE: 08-07-2015	
				DRAWN BY: B. HERMAN		SCALE: 1" = 2000'	
				DRAWING NO: 078569005		TOPOGRAPHIC MAP	

RETTEW Associates, Inc.
 27 Travato Street, Suite 101
 Bridgeport, WV 26330
 Phone (800) 738-8395
 Email: rettew@rettew.com
 Website: www.rettew.com

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



ACCESS ROAD COORDINATES (NAD 83):
 LEAVE PUBLIC ROAD LAT: 40.015294° / LONG: -80.630588°
 ENTER WELL SITE LAT: 40.007108° / LONG: -80.627303°



GENERAL HIGHWAY MAP
MARSHALL COUNTY
 WEST VIRGINIA

PREPARED BY
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION

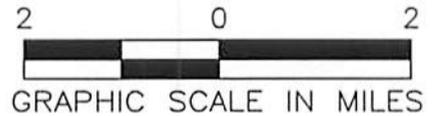
IN COOPERATION WITH
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



GENERAL HIGHWAY MAP
OHIO COUNTY
 WEST VIRGINIA

PREPARED BY
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION

IN COOPERATION WITH
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



DRIVING DIRECTIONS:

DRIVING DIRECTIONS:
 FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79 (EXIT 105) IN JANE LEW, WEST VIRGINIA:
 GO NORTH ON I-79 FOR +/- 88.0 MILES AND TAKE EXIT 34 TO MERGE ONTO I-70/I-79 TOWARD
 WASHINGTON, PA. CONTINUE +/- 4.1 MILES (WEST) AND KEEP LEFT AT THE FORK IN THE INTERSTATE
 AND CONTINUE ON TO I-70 (WEST) FOR +/- 26.3 MILES. TAKE EXIT 5 FOR US 40 TOWARD ELM GROVE /
 TRIADDELPHIA FOR +/- 0.2 MILES TO THE BOTTOM OF THE RAMP. TURN LEFT ONTO US 40 (WEST)
 NATIONAL ROAD (SIGNS FOR ELM GROVE / BETHLEHEM) AND CONTINUE +/- 0.3 MILES. TURN LEFT
 ONTO KRUGER STREET (SOUTH) AND CONTINUE +/- 0.1 MILES. TURN LEFT ONTO LOUNEZ AVENUE
 (EAST) AND CONTINUE +/- 0.1 MILES. CONTINUE ONTO STONE CHURCH ROAD AND GO +/- 0.1 MILES.
 KEEP RIGHT AT THE FORK TO STAY ON STONE CHURCH ROAD AND CONTINUE +/- 3.1 MILES. TURN
 RIGHT (SOUTHWEST) ONTO WALNUT GROVE ROAD. CONTINUE +/- 1.7 MILES ON COUNTY ROAD 5/1 TO
 THE EXISTING SWN PRODUCTION COMPANY, LLC "BW EDGE" ACCESS ROAD ON THE LEFT. CONTINUE
 +/- 0.7 MILES (SOUTH) ON THE ACCESS ROAD TO THE "BW EDGE" WELL PAD SITE.

DRIVING PRECAUTIONS: NONE
 DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:
 ±2.66 MILES NW FROM ELM GROVE, WEST VIRGINIA 26003

LEGEND:	
○	PROPOSED SURFACE HOLE / BOTTOM HOLE
⊙	EXISTING / PRODUCING WELLHEAD
⊘	ABANDONED WELL
⊙	PLUGGED & ABANDONED WELL
△	CUT CONDUCTOR
—	DRIVING DIRECTION ROUTE

COMPANY: **SWN** Production Company, LLC **SWN** ^{RT}/_A V+°
 Production Company, LLC Production Company™

OPERATOR'S: **BW EDGE MSH**
 WELL #: **5H**

LOCATION: **SAND HILL DISTRICT,
 MARSHALL COUNTY, WEST VIRGINIA**

SURFACE HOLE LOCATION:
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.006607°
 LONGITUDE: -80.627443°

BOTTOM HOLE LOCATION:
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.029085°
 LONGITUDE: -80.638365°

REVISIONS: DATE: 08-07-2015

DRAWN BY: B. HERMAN
 SCALE: 1" = 2 MILES
 DRAWING NO: 078569005
 DRIVING DIRECTION MAP

RETTEW

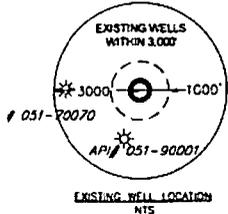
RETTEW Associates, Inc.
27 Travato Street, Suite 101
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Email: rettetw@rettetw.com
Web site: www.rettetw.com

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

LINE	DESCRIPTION	DISTANCE	DESCRIPTION	MONUMENT
L1	N02°36'42"W	185'	SHL TO REF. PIN	IRON PIN
L2	N80°27'36"W	218'	SHL TO REF. PIN	IRON PIN
L3	N48°29'18"W	193'	SHL TO LANDMARK	POST
L4	N03°27'13"E	1,630'	SHL TO LANDMARK	REBAR
L5	N19°55'48"E	807'	SHL TO LP	
L6	N24°25'17"W	8,143'	LP TO BHL	

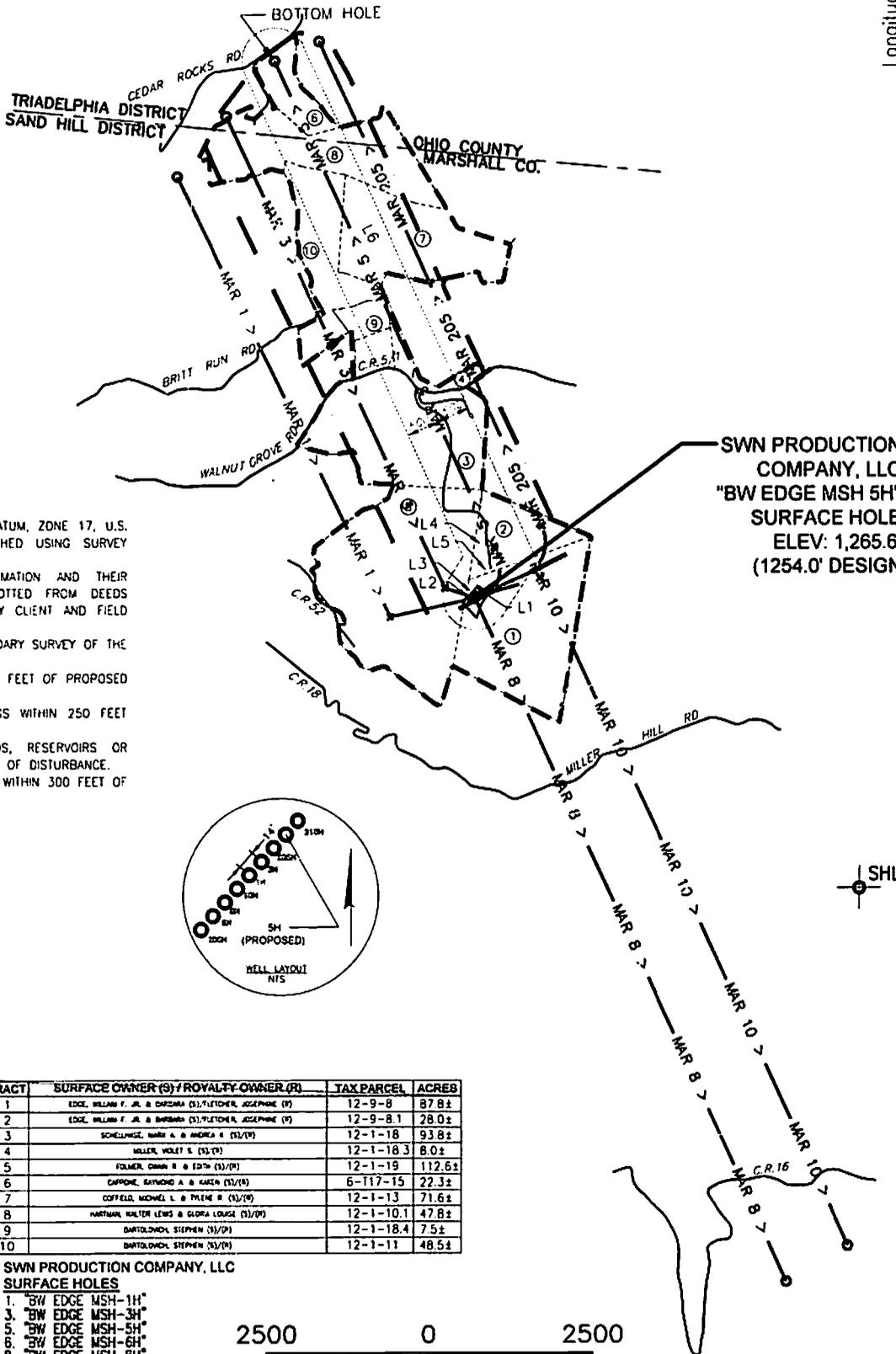
Latitude: 40°02'30"

Longitude: 80°37'30"



NOTES ON SURVEY

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



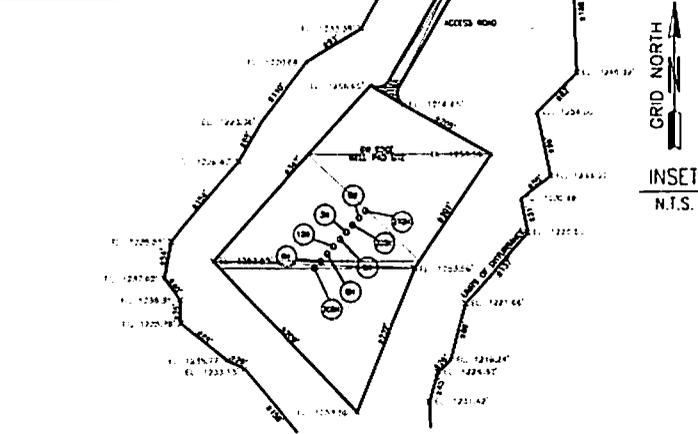
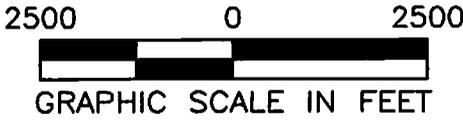
SWN PRODUCTION COMPANY, LLC
"BW EDGE MSH 5H"
SURFACE HOLE
ELEV: 1,265.6'
(1254.0' DESIGN)

SURFACE HOLE LOCATION (SHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.006607°	
LONGITUDE: -80.627443°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,529,357.404'	
EASTING: 1,744,741.680'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,428,556.993'	
EASTING: 531,798.327'	
LANDING POINT LOCATION (LPL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.008687°	
LONGITUDE: -80.626449°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,530,116.030'	
EASTING: 1,745,016.790'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,428,788.224	
EASTING: 531,882.181	
BOTTOM HOLE LOCATION (BHL):	
GEOGRAPHIC (NAD83):	
LATITUDE: 40.029085°	
LONGITUDE: -80.638365°	
UTM (NAD83, ZONE 17, FEET):	
NORTHING: 14,537,530.010'	
EASTING: 1,741,650.030'	
UTM (NAD83, ZONE 17, METERS):	
NORTHING: 4,431,048.009	
EASTING: 530,855.991	

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	EDGE, WILLIAM F. JR. & DARZANA (S); FLETCHER, JOSEPHINE (R)	12-9-8	87.8±
2	EDGE, WILLIAM F. JR. & DARZANA (S); FLETCHER, JOSEPHINE (R)	12-9-8-1	28.0±
3	SCHILLINGER, NARRI A. & ANDREA B. (S/R)	12-1-18	93.8±
4	MILLER, WILET E. (S/R)	12-1-18-3	8.0±
5	FOLMER, OMBRI B. & EDITH (S/R)	12-1-19	112.6±
6	COFFINE, RAYMOND A. & KATHA (S/R)	6-117-15	22.3±
7	COFFIELD, MICHAEL L. & PHYLLIS B. (S/R)	12-1-13	71.6±
8	HARTMAN, WALTER LEWIS & OLGA LOUISE (S/R)	12-1-10-1	47.8±
9	DARTLOVICH, STEPHEN (S/R)	12-1-18-4	7.5±
10	DARTLOVICH, STEPHEN (S/R)	12-1-11	48.5±

SWN PRODUCTION COMPANY, LLC
SURFACE HOLES

1.	"BW EDGE MSH-11H"
3.	"BW EDGE MSH-3H"
5.	"BW EDGE MSH-5H"
6.	"BW EDGE MSH-6H"
8.	"BW EDGE MSH-8H"
10.	"BW EDGE MSH-10H"
205.	"BW EDGE MSH-205H"
206.	"BW EDGE MSH-206H"
210.	"BW EDGE MSH-210H"



COMPANY:	SWN Production Company LLC	SWN [®] Production Company [™]
OPERATOR'S	BW EDGE MSH	
WELL #:	5H	
LOCATION:	SAND HILL DISTRICT, MARSHALL COUNTY, WEST VIRGINIA	
SURFACE HOLE LOCATION:		
GEOGRAPHIC (NAD83):		
LATITUDE: 40.006607°		
LONGITUDE: -80.627443°		
BOTTOM HOLE LOCATION:		
GEOGRAPHIC (NAD83):		
LATITUDE: 40.029085°		
LONGITUDE: -80.638365°		
REVISIONS:	DATE: 08-07-2015	
DRAWN BY: B. HERMAN		
SCALE: 1" = 2000'		
DRAWING NO: 078569005		
INTERNAL WELL PLAT		

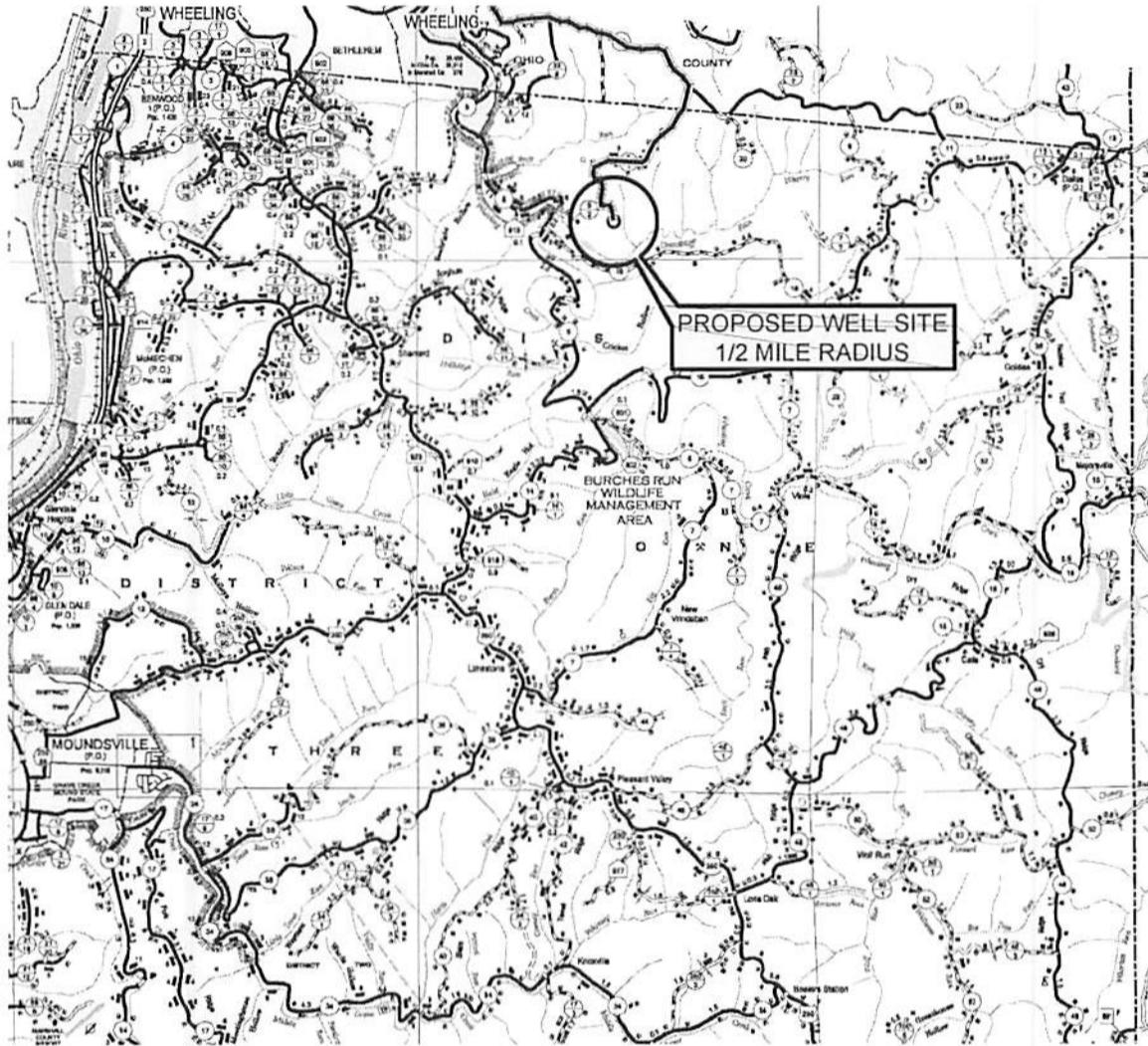
NOTE: ANY UTILITIES OR IMPROVEMENTS SHOWN ON THIS PLAT ARE FROM REASONABLE VISUAL OBSERVATIONS. NO UTILITY COMPANIES WERE CONTACTED FOR UTILITY LINE LOCATIONS.

LEGEND:

○	PROPOSED SURFACE HOLE / BOTTOM HOLE	—	DRILLING UNIT
✱	EXISTING / PRODUCING WELLHEAD	- - -	LEASE BOUNDARY
✱	ABANDONED WELL	- - -	500' DHP BUFFER
✱	PLUGGED & ABANDONED WELL	- MAR 5 > -	MARCELLUS DHP
△	CUT CONDUCTOR	- - -	ABANDONED PATH

RETTEW Associates, Inc.
 27 Travato Street, Suite 101
 Bridgeport, WV 26330
 Phone (800) 738-8395
 Email: rettetw@rettetw.com
 Website: www.rettetw.com

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



ACCESS ROAD COORDINATES (NAD 83):
 LEAVE PUBLIC ROAD LAT: 40.015294' / LONG: -80.630588'
 ENTER WELL SITE LAT: 40.007108' / LONG: -80.627303'



GENERAL HIGHWAY MAP
MARSHALL COUNTY
 WEST VIRGINIA

PREPARED BY
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION

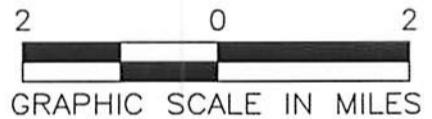
IN COOPERATION WITH
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



GENERAL HIGHWAY MAP
OHIO COUNTY
 WEST VIRGINIA

PREPARED BY
 WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 PLANNING DIVISION

IN COOPERATION WITH
 U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION



DRIVING DIRECTIONS:

DRIVING DIRECTIONS:
 FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79 (EXIT 105) IN JANE LEW, WEST VIRGINIA:
 GO NORTH ON I-79 FOR +/- 88.0 MILES AND TAKE EXIT 34 TO MERGE ONTO I-70/I-79 TOWARD
 WASHINGTON, PA. CONTINUE +/- 4.1 MILES (WEST) AND KEEP LEFT AT THE FORK IN THE INTERSTATE
 AND CONTINUE ON TO I-70 (WEST) FOR +/- 26.3 MILES. TAKE EXIT 5 FOR US 40 TOWARD ELM GROVE /
 TRIADPHILIA FOR +/- 0.2 MILES TO THE BOTTOM OF THE RAMP. TURN LEFT ONTO US 40 (WEST)
 NATIONAL ROAD (SIGNS FOR ELM GROVE / BETHLEHEM) AND CONTINUE +/- 0.3 MILES. TURN LEFT
 ONTO KRUGER STREET (SOUTH) AND CONTINUE +/- 0.1 MILES. TURN LEFT ONTO LOUNEZ AVENUE
 (EAST) AND CONTINUE +/- 0.1 MILES. CONTINUE ONTO STONE CHURCH ROAD AND GO +/- 0.1 MILES.
 KEEP RIGHT AT THE FORK TO STAY ON STONE CHURCH ROAD AND CONTINUE +/- 3.1 MILES. TURN
 RIGHT (SOUTHWEST) ONTO WALNUT GROVE ROAD. CONTINUE +/- 1.7 MILES ON COUNTY ROAD 5/1 TO
 THE EXISTING SWN PRODUCTION COMPANY, LLC "BW EDGE" ACCESS ROAD ON THE LEFT. CONTINUE
 +/- 0.7 MILES (SOUTH) ON THE ACCESS ROAD TO THE "BW EDGE" WELL PAD SITE.

DRIVING PRECAUTIONS: NONE
 DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:
 ±2.66 MILES NW FROM ELM GROVE, WEST VIRGINIA 26003

LEGEND:

○	PROPOSED SURFACE HOLE / BOTTOM HOLE	—	DRIVING DIRECTION ROUTE
⊙	EXISTING / PRODUCING WELLHEAD		
⊘	ABANDONED WELL		
⊙	PLUGGED & ABANDONED WELL		
△	CUT CONDUCTOR		

COMPANY: **SWN** Production Company, LLC **SWN** ^{R₂}/_A V⁺ Production Company™

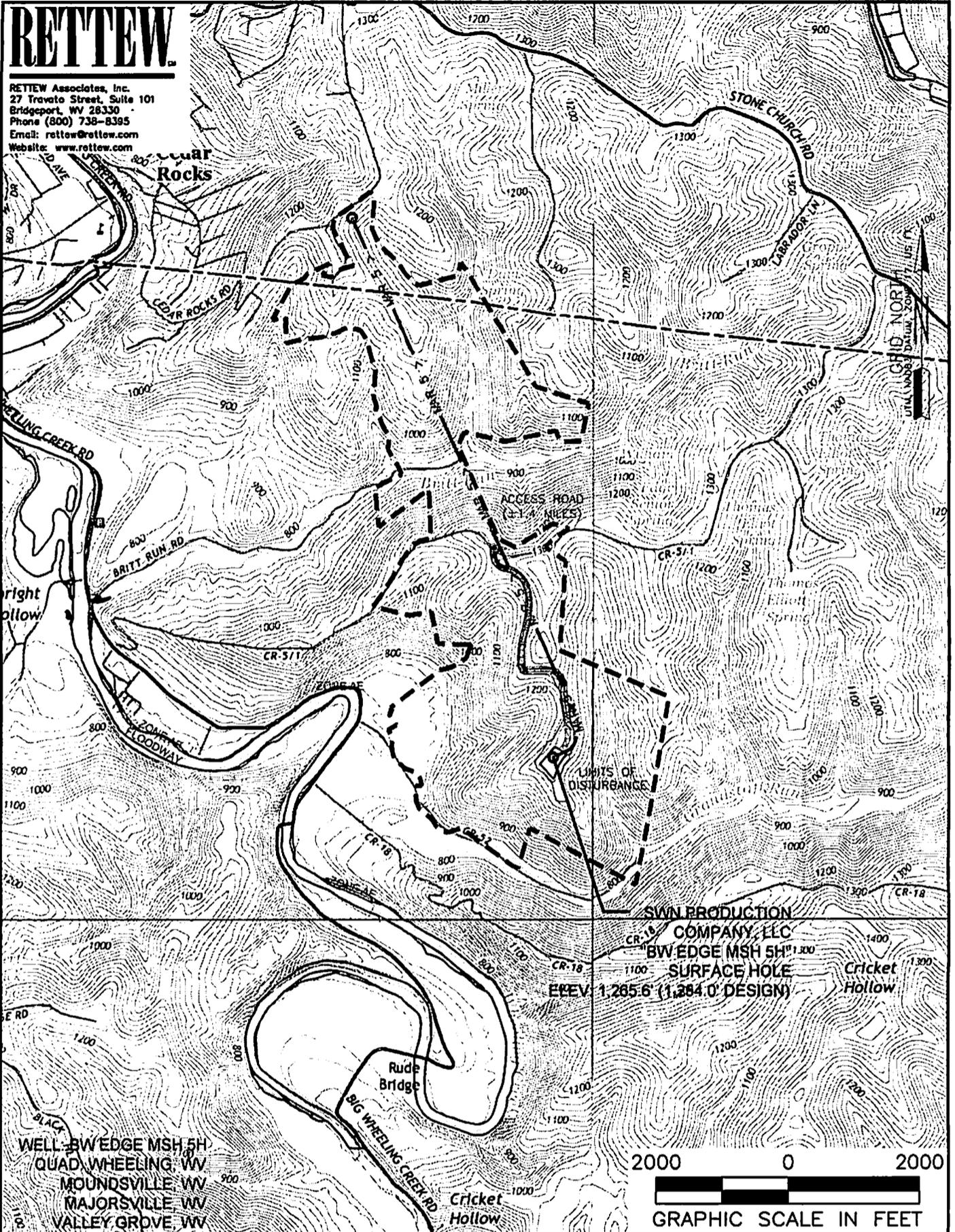
OPERATOR'S: BW EDGE MSH
 WELL #: 5H

LOCATION: SAND HILL DISTRICT,
 MARSHALL COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.006607°
 LONGITUDE: -80.627443°

BOTTOM HOLE LOCATION:
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.029085°
 LONGITUDE: -80.638365°

REVISIONS:	DATE: 08-07-2015
	DRAWN BY: B. HERMAN
	SCALE: 1" = 2 MILES
	DRAWING NO: 078569005
	DRIVING DIRECTION MAP



NAME AND DISTANCE TO THE NEAREST STREAM: UNNAMED TRIBUTARY TO GRANDSTAFF RUN IS LOCATED #0.17 MILES SE OF THE CENTER OF THE DRILL PAD		STREAM CROSSING COORDINATES (NAD 83): NO NEW CROSSINGS.		COMPANY: SWN Production Company, LLC		SWN Production Company™	
WELL RESTRICTIONS: WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET CENTER OF PAD TO AGRICULTURAL BUILDINGS LARGER THAN 2500 SQ FT: >625 FEET				OPERATOR'S BW EDGE MSH		WELL #: 5H	
FEMA FLOOD INFORMATION: BY GRAPHIC PLOTTING ONLY FEMA FIRM UNINCORPORATED AREA OF MARSHALL COUNTY, WEST VIRGINIA; MAP NUMBER 54051C0019E, EFFECTIVE DATE SEPTEMBER 25, 2009.				LOCATION: SAND HILL DISTRICT, MARSHALL COUNTY, WEST VIRGINIA		SURFACE HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.006607° LONGITUDE: -80.627443°	
LEGEND: * PROPOSED SURFACE HOLE / BOTTOM HOLE * EXISTING / PRODUCING WELLHEAD X ABANDONED WELL X PLUGGED & ABANDONED WELL Δ CUT CONDUCTOR (S) EXISTING SPRING (W) EXISTING WATER WELL — ACCESS ROAD — ACCESS ROAD TO PREV. SITE — HIGHWAY/INTERSTATE — COUNTY ROAD				BOTTOM HOLE LOCATION: GEOGRAPHIC (NAD83): LATITUDE: 40.029085° LONGITUDE: -80.638365°		REVISIONS: DATE: 08-07-2015	
WELL: BW EDGE MSH 5H QUAD: WHEELING, WV MOUNDSVILLE, WV MAJORSVILLE, WV VALLEY GROVE, WV				SWN PRODUCTION COMPANY, LLC BW EDGE MSH 5H SURFACE HOLE ELEV: 1,285.6' (1,284.0' DESIGN)		Cricket Hollow	



RETTEW Associates, Inc.
27 Travato Street, Suite 101
Bridgeport, WV 26330
Phone (800) 738-8395
Email: rettew@rettew.com
Website: www.rettew.com

LINE	DESCRIPTION	DISTANCE	DESCRIPTION	MONUMENT
L1	N02°36'42"W	185'	SHL TO REF. PIN	IRON PIN
L2	N80°27'36"W	218'	SHL TO REF. PIN	IRON PIN
L3	N48°29'18"W	193'	SHL TO LANDMARK	POST
L4	N03°27'13"E	1,630'	SHL TO LANDMARK	REBAR
L5	N19°55'48"E	807'	SHL TO LP	
L6	N24°25'17"W	8,143'	LP TO BHL	

Latitude: 40°02'30"

684'

Longitude: 80°37'30"

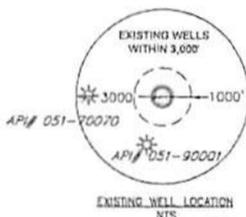
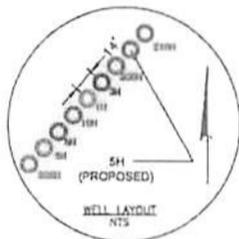
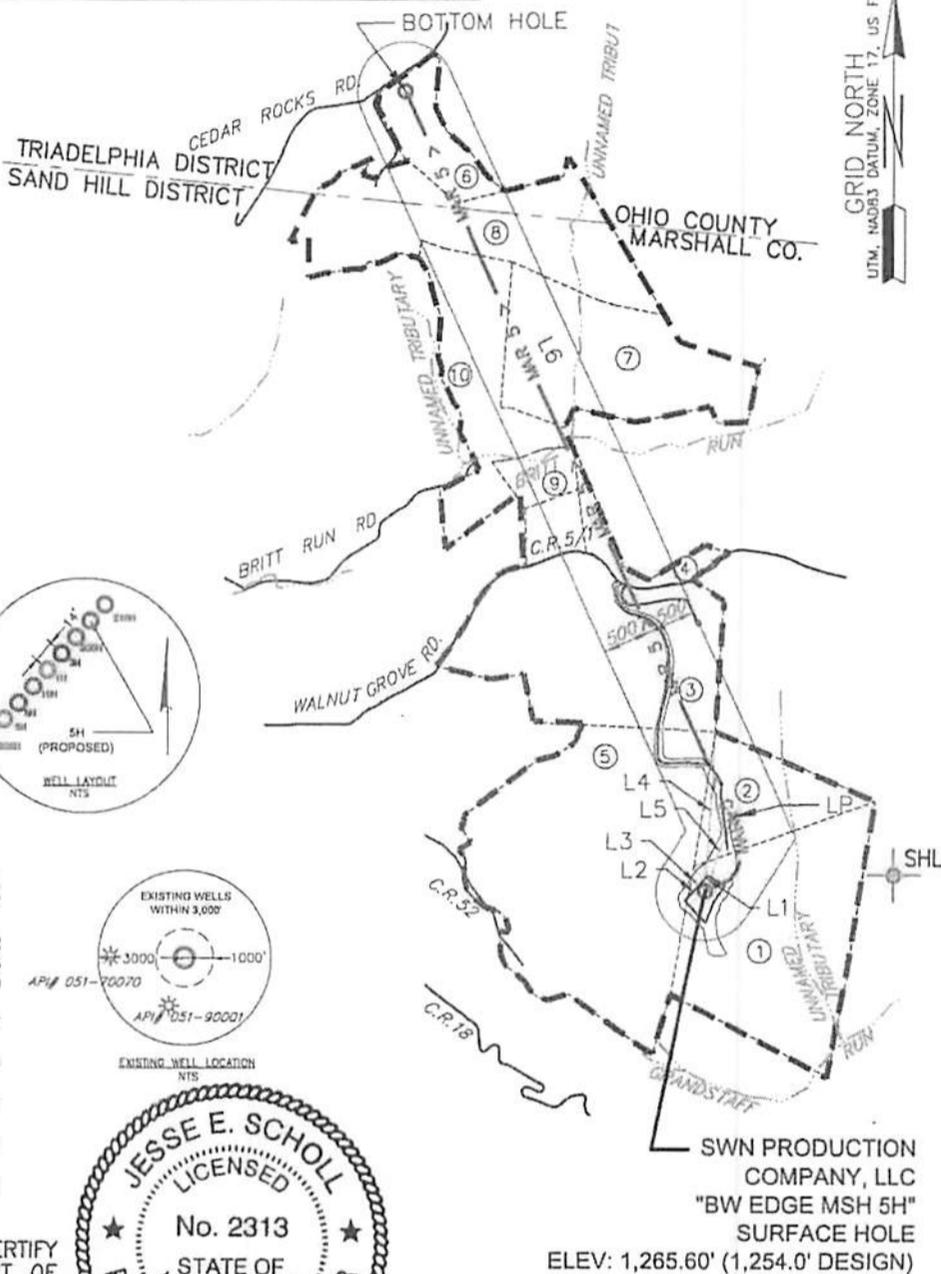
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	EDGE, WILLIAM F. JR. & BARBARA (S)/FLETCHER, JOSEPHINE (R)	12-9-B	87.8±
2	EDGE, WILLIAM F. JR. & BARBARA (S)/FLETCHER, JOSEPHINE (R)	12-9-B.1	28.0±
3	SCHILLINGER, MARK A. & ANDREA K. (S)/P	12-1-18	93.8±
4	WELLS, VOLET S. (S)/P	12-1-18.3	8.0±
5	FOLKER, ERWIN R. & EDITH (S)/P	12-1-19	112.6±
6	CAFFONE, RAYMOND A. & KAREN (S)/P	6-117-15	22.3±
7	COFFIELD, MICHAEL L. & THERIE R. (S)/P	12-1-13	71.6±
8	HATHMAN, WALTER LEWIS & OLGA LOUISE (S)/P	12-1-10.1	47.8±
9	BARTOLOMEI, STEPHEN (S)/P	12-1-18.4	7.5±
10	BARTOLOMEI, STEPHEN (S)/P	12-1-11	48.5±

2000 0 2000



GRAPHIC SCALE IN FEET

SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.006607' LONGITUDE: -80.627443'
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,529,357.404' EASTING: 1,744,741.680'
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,556.993' EASTING: 531,798.327'
"LANDING POINT" LOCATION (LPL):
GEOGRAPHIC (NAD83): LATITUDE: 40.008687' LONGITUDE: -80.626449'
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,530,116.030' EASTING: 1,745,016.790'
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,428,788.224' EASTING: 531,882.181'
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.029085' LONGITUDE: -80.638365'
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,537,530.010' EASTING: 1,741,650.030'
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,431,048.009' EASTING: 530,855.991'



NOTES ON SURVEY

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

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. 2313

COMPANY: **SWN** Production Company, LLC

(+) 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)

BW EDGE MSH
OPERATOR'S WELL #: 5H
API WELL #: 47 051 01845H6A Mod

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

WATERSHED: UPPER OHIO SOUTH ELEVATION: 1265.6 (1,254 DESIGN)

DISTRICT: SAND HILL COUNTY: MARSHALL QUADRANGLE: WHEELING, WV-OHIO

SURFACE OWNER: EDGE, WILLIAM F. JR. & BARBARA ACREAGE: 87.8 ±

OIL & GAS ROYALTY OWNER: FLETCHER, JOSEPHINE ACREAGE: 115.8 ±

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

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,359' TVD 14,983' TMD

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

LEGEND:	REVISIONS:	DATE:
○ PROPOSED SURFACE HOLE / BOTTOM HOLE		08-07-2015
⊗ EXISTING / PRODUCING WELLHEAD		
⊗ ABANDONED WELL	--- LEASE BOUNDARY	
⊗ PLUGGED & ABANDONED WELL	--- 500' DHP BUFFER	
△ CUT CONDUCTOR	--- MAR 5 --- MARCELLUS DHP	
	--- ABANDONED PATH	
		DRAWN BY: B. HERMAN
		SCALE: 1" = 2000'
		DRAWING NO: 078569005
		WELL LOCATION PLAT