

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

API 47 - 069 - 00263 County OHIO District RICHLAND
Quad TILTONSVILLE, OH Pad Name RAYLE COAL-OHI-PAD1 Field/Pool Name PANHANDLE FIELD WET
Farm name RAYLE COAL COMPANY Well Number RAYLE COAL OHI 201H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,445,734.92 Easting 531,779.23
Landing Point of Curve Northing 4,445,912.92 Easting 531,099.71
Bottom Hole Northing 4,448,262.02 Easting 530,378.64

Elevation (ft) 1064' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 04/17/2018 Date drilling commenced 08/03/2018 Date drilling ceased 08/15/2018
Date completion activities began 03/28/2019 Date completion activities ceased 04/24/2019
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 290' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 555' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 242' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

C. [Signature] 9-9-19

Reviewed by: *[Signature]*

API 47- 069 - 00263 Farm name RAYLE COAL COMPANY Well number RAYLE COAL OHI 201H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	371	NEW	J-55/54.5#	148.4	Y
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1,737	NEW	J-55/36#		Y
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	14,971	NEW	HCP-110/20#		Y
Tubing		2.375	6,820	NEW	P-110/4.7#		N
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	476	15.60	1.20	571.2	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	725	15.60	1.20	870	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2,757	15.60	1.19	3,280.83	SURFACE	24
Tubing							

Drillers TD (ft) 14,971' Loggers TD (ft) 14,971'
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,776'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	5,805'	TVD 14,971' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1757 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 5,121 mcfpd Oil 775 bpd NGL _____ bpd Water 792 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company BAKER HUGHES
Address 9110 GORGANS MILL RD City THE WOODLANDS State TX Zip 77380

Cementing Company SCHLUMBERGER WELL SERVICES
Address 110 SCHLUMBERGER DRIVE City SUGAR LAND State TX Zip 77478

Stimulating Company SWN WELL SERVICES
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Please insert additional pages as applicable.

Completed by Elizabeth Gee Telephone 832-796-7632
Signature  Title Staff Regulatory Analyst Date 07/12/2011

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/29/2019
Job End Date:	4/8/2019
State:	West Virginia
County:	Ohio
API Number:	47-069-00263-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	Rayle Coal OHI 201
Latitude:	40.16137255
Longitude:	-80.62682022
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,776
Total Base Water Volume (gal):	12,142,386
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Sand	SWN Well Services	Proppant					
				Listed Below			
Ecopol-FEAC	SWN Well Services	Iron Control					
				Listed Below			

Base Water	Operator	Base Fluid							
					Listed Below				
HCL	SWN Well Services	Solvent							
					Listed Below				
SCAL16486A	Nalco	Scale Inhibitor							
					Listed Below				
BIOC11219A	Nalco	Biocide							
					Listed Below				
SWN FRW-13LA	SWN Well Services	Friction Reducer							
					Listed Below				
Econo-CI200	SWN Well Services	Corrosion Inhibitor							
					Listed Below				
Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.									
			Water		7732-18-5	100.00000	85.61238	Density = 8.345	
			Crystalline Silica, quartz		14808-60-7	100.00000	12.95297		
			Water		7732-18-5	85.00000	0.79360		
			Petroleum Distillates, Hydrotreated		64742-47-8	45.00000	0.40792		
			Ethylene glycol		107-21-1	10.00000	0.09250		
			Hydrochloric Acid		7647-01-0	15.00000	0.07384		
			Alcohols, C12-C16, Ethoxylated propoxylated		68213-24-1	2.00000	0.01813		

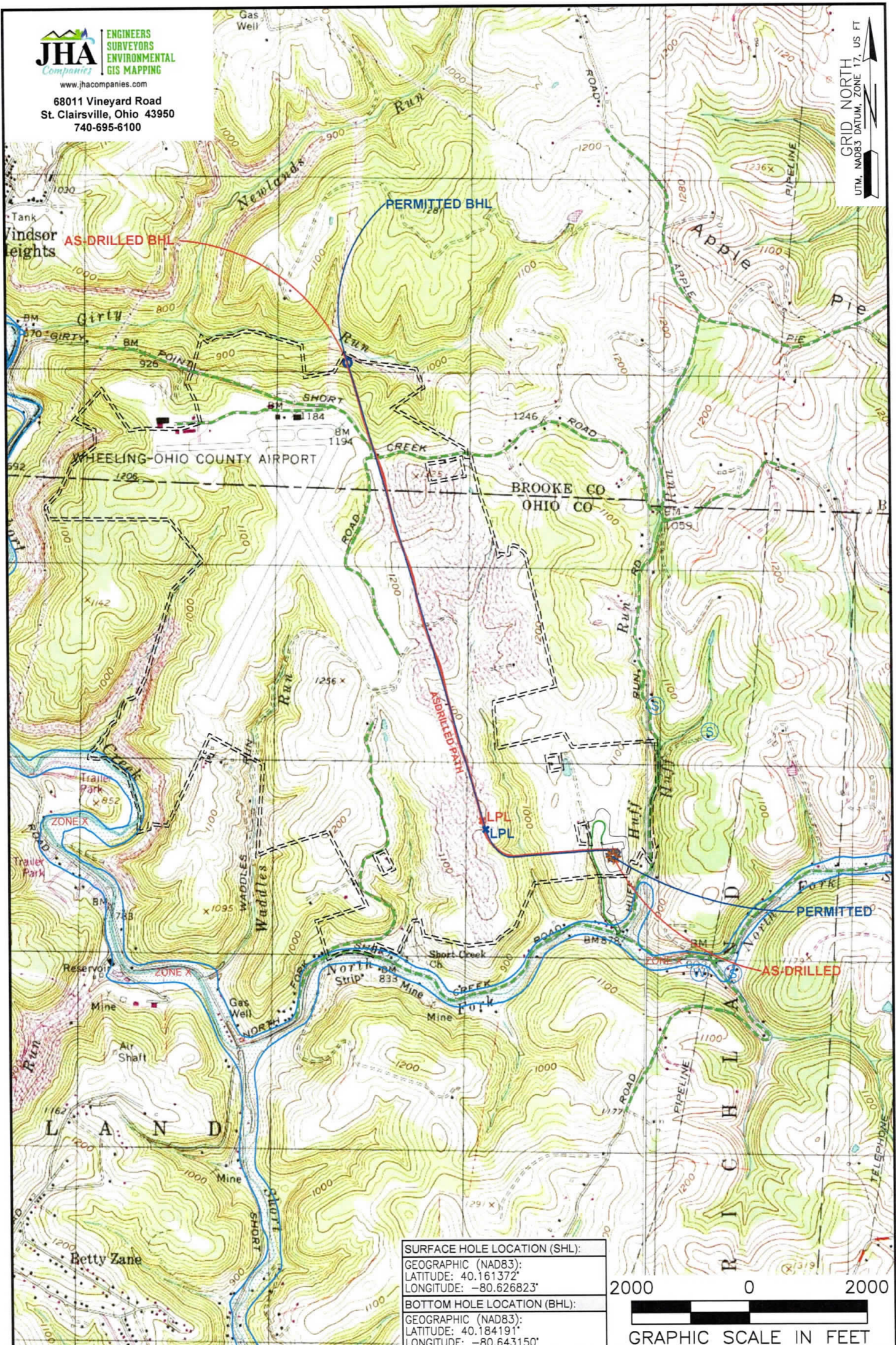
			Fatty alcohols ethoxylated	Proprietary	2.00000	0.01813
			Methanol	67-56-1	60.00000	0.01582
			Benzyl-(C12-C16 Alky)-Dimethyl-Ammonium	68424-85-1	30.00000	0.00791
			Chloride Glutaraldehyde	111-30-8	10.00000	0.00264
			Amine Triphosphate	Proprietary	30.00000	0.00185
			Acetic Acid	64-19-7	37.50000	0.00098
			Methanol	67-56-1	80.00000	0.00060
			Citric Acid	77-92-9	22.50000	0.00059
			Oxyalkylated fatty acid	68951-67-7	9.67400	0.00007
			Fatty acids	61790-12-3	5.02700	0.00004
			Modified thiourea polymer	68527-49-1	4.74600	0.00004
			Potassium acetate	127-08-2	0.02200	0.00000
			Formaldehyde	50-00-0	0.00400	0.00000

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

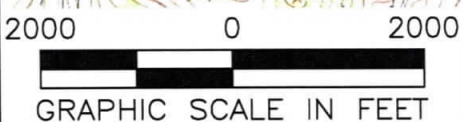
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(f) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



SURFACE HOLE LOCATION (SHL):
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.161372°
 LONGITUDE: -80.626823°

BOTTOM HOLE LOCATION (BHL):
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.184191°
 LONGITUDE: -80.643150°



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:

○	EXISTING BOTTOM HOLE	—	ACCESS ROAD
☼	EXISTING / PRODUCING WELLHEAD	---	PUBLIC ROAD
LPL*	EXISTING LANDING POINT LOCATION	==	LEASE BOUNDARY
○	PROPOSED SURFACE HOLE / BOTTOM HOLE	---	PROPOSED PATH
LPL*	PROPOSED LANDING POINT LOCATION	---	ASDRILLED PATH
		○	FLOOD PLAIN

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC		WELL (FARM) NAME: RAYLE COAL OHI		WELL # 201H	SERIAL # XXXX
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201, MORGANTOWN, WV 26508		COUNTY: OHIO	CODE: 069	DISTRICT: RICHLAND	API # 47-069-00263
SURFACE OWNER: RAYLE COAL COMPANY		USGS 7 1/2 QUADRANGLE MAP NAME: TILTONVILLE, OH			

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

506'

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

5069'

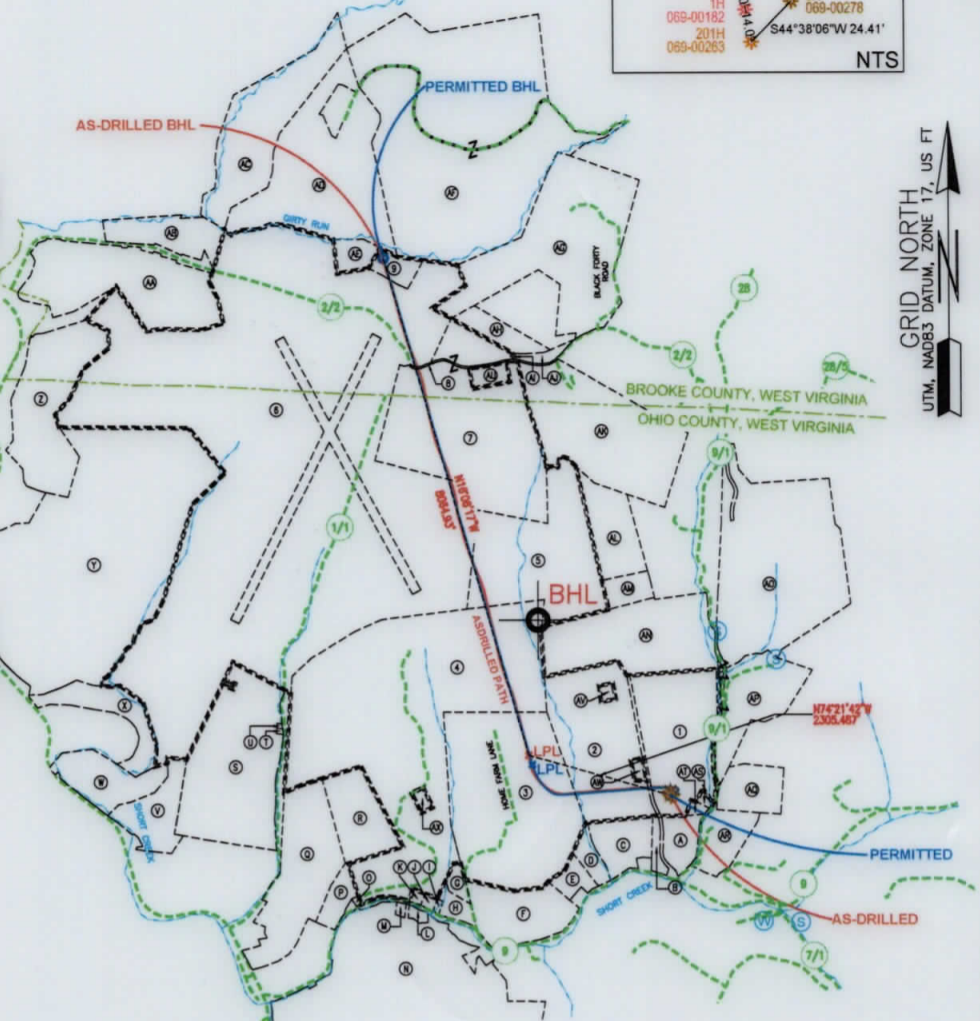
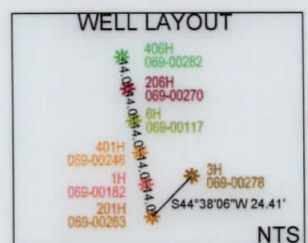
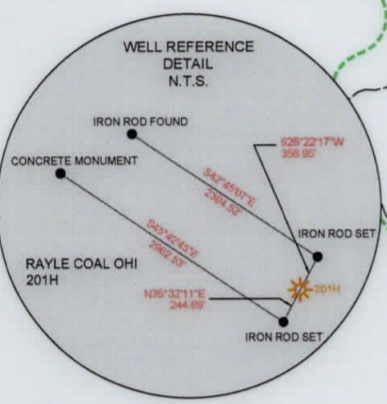
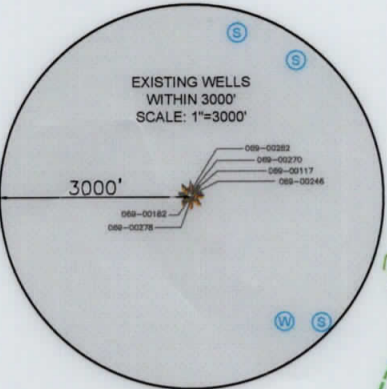
1947'

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

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



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



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

Table with 4 columns: Location Type (SHL, LPL, BHL), UTM (NAD83, ZONE 17, METERS), Northing, Easting. Includes coordinates for Surface Hole, Landing Point, and Bottom Hole.

- NOTES ON SURVEY
1. COORDINATE SYSTEM IS UTM NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. 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.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS OR BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
5. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
6. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF THE LIMITS OF DISTURBANCE.
7. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
8. THIS AS-DRILLED PLAT IS PREPARED FROM THE FINAL WELL PLAT PREPARED BY ANOTHER CONSULTANT AND THE DRILLING INFORMATION IS PROVIDED TO JHA.



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

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

RAYLE COAL OHI
OPERATOR'S WELL #: 201H
API WELL #: 47 069 00263
STATE COUNTY PERMIT

WELL TYPE: OIL [] WASTE DISPOSAL [] PRODUCTION [X] DEEP [] GAS [X] LIQUID INJECTION [] STORAGE [] SHALLOW [X]
WATERSHED: UPPER OHIO SOUTH ELEVATION: 1,064.0'
DISTRICT: RICHLAND COUNTY: OHIO QUADRANGLE: TILTONSVILLE, OH
SURFACE OWNER: RAYLE COAL COMPANY ACREAGE: ±61.53
OIL & GAS ROYALTY OWNER: RAYLE COAL COMPANY ACREAGE: ±61.53
DRILL [] DRILL DEEPER [] REDRILL [] FRACTURE OR STIMULATE [] PLUG OFF OLD FORMATION [] PERFORATE NEW FORMATION []
CONVERT [] PLUG & ABANDON [] CLEAN OUT & REPLUG [] OTHER CHANGE [X] (SPECIFY) AS-DRILLED
TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,805' TVD 14,971' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITTANY WOODY
ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201 ADDRESS: 1300 FORT PIERPONT DRIVE, SUITE 201
CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:
EXISTING BOTTOM HOLE (circle with dot)
EXISTING / PRODUCING WELLHEAD (star)
EXISTING WATER WELL (circle with W)
EXISTING SPRING (circle with S)
EXISTING LANDING POINT LOCATION (LPL with star)
SURVEYED BOUNDARY (dashed line)
PROPOSED SURFACE HOLE / BOTTOM HOLE (circle with dot)
LEASE BOUNDARY (dotted line)
PROPOSED LANDING POINT LOCATION (LPL with star)
ASDRILLED PATH (solid red line)
PROPOSED PATH (dashed red line)

