

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

April 15, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-1706456, issued to CNX GAS COMPANY LLC , is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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

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

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

James Martin

Chief

Operator's Well No: OXFD13AHS Farm Name: MORRIS, I.L.

API Well Number: 47-1706456

Permit Type: Horizontal 6A Well

Date Issued: 04/15/2014

PERMIT CONDITIONS

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

CONDITIONS

- 1. This proposed activity will require permit coverage from the United States Army Corps of Engineers (USACE) and WV DEP Department of Water and Waste Management (DWWM). No activity authorized under this permit shall be commenced until all necessary permits from USACE and DWWM are obtained.
- 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 fifty (50) 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. 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.
- 8. 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.



west virginia department of environmental protection

Oil and Gas Conservation Commission 601 57th Street, SE Charleston, WV 25304 (304)926-0499, Ext 1656 Earl Ray Tomblin, Governor Randy C. Huffman, Cabinet Secretary dep.wv.org

March 19, 2014

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

RE: Application for Deep Well Permit - API #47-017-06456

COMPANY: CNX Gas Company, LLC

FARM: I. L. Morris – OXFD 13 AHS

COUNTY: Doddridge DISTRICT: Southwest QUAD: New Milton

The deep well review of the application for the above company is <u>APPROVED ORISKANY – MARCELLUS COMPLETION</u>. If operator wishes to drill deeper than the POINT PLEASANT, additional approval must be obtained from the OGCC.

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

- Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners; yes
- Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells, well name, and the name and address of the operator; none
- 3. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Cindy Raines

Executive Assistant

Cindy Laines

To avoid enforcement action and per 39CSR1.4.6 and 4.10 filing of wells logs and directional surveys are due within 90 days of completion of a deep well.

CERTIFICATE OF CONSENT AND EASEMENT

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

Executed this day of, 2014.
J. L. Morris
STATE OF West Virginia
COUNTY OFTo-Wit
I, Sephen E. Holloway, a Notary Public in and for the aforesaid
County and State, do hereby certify that, whose name is signed to the writing above, bearing date on the 6th day of
, 2014, has this day acknowledged the same before me,
in my said County and State. Given under my hand this to day of January , 20 14.
OFFICIAL SEAL COMMISSIONER FOR WEST VIRGINIA STEPHEN E. HOLLOWAY
GLENVILLE, WV My Commission Expires April 27, 2021

My Commission expires on:

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

Office of Elland Gas OH 2 4774

Environ Linear Con 04/18/2014

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

			17	- 21	51
1) Well Operator: CNX Gas Co	mpany LLC	494458046	Doddridge	Southwest	New Milton
		Operator ID	County	District	Quadrangle
2) Operator's Well Number: OXF	D13AHS	Well Pa	d Name: OXFD	13HS	
3) Farm Name/Surface Owner: 1.	L. Morris	Public Roa	ad Access: Co.	Rt. 40	
4) Elevation, current ground: 1	180' E	levation, proposed	post-constructi	on: 1152'	
5) Well Type (a) Gas	Oil	■ Und	erground Storag	ge	
Other					
(b)If Gas Shall	-	Deep	_		
	zontal _				
6) Existing Pad: Yes or No NO	2 40.000				
7) Proposed Target Formation(s),			and Associated	Pressure(s):	
Target - Marcellus, Depth - 6950',		71essure - 2500#			
8) Proposed Total Vertical Depth:	The state of the state of				
9) Formation at Total Vertical Dep	pth: Oriskany S	Sand			
0) Proposed Total Measured Dep	oth: 19260'				
1) Proposed Horizontal Leg Leng	gth: 10720'				
2) Approximate Fresh Water Stra	ata Depths:	50', 600'			
13) Method to Determine Fresh W	ater Depths:	Offset Well			
(4) Approximate Saltwater Depth	s: 1050', 1955				
5) Approximate Coal Seam Dept	hs: 600'				
(6) Approximate Depth to Possibl	le Void (coal m	ine, karst, other):	None Anticipated		
7) Does Proposed well location c	contain coal sea				
lirectly overlying or adjacent to an	n active mine?	Yes	No	✓	
(a) If Yes, provide Mine Info:	Name:				
	Depth:				-B
	Seam:				1000
ý.	Owner:				

WW-6B (9/13)

18)

CASING AND TUBING PROGRAM

ТҮРЕ	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	N	L.S.	81.3#	100'	100'	Grout to surface or Class A type corners
Fresh Water	13 3/8"	N	J-55	54.5#	690'	690'	CTS w/ Class A Type Cement
Coal							
Intermediate	9 5/8"	N	J-55	36#	5400'	5400'	CTS w/ Class A Type Cement
Production	5 1/2°	N	P-110	20#	19260'	19260'	2200 ou # == 50:00 POZ Lead & Cites
Tubing	2 3/8"	N	J-55	4.7#	7450'	7450'	
Liners					,		

OC 2014

ТҮРЕ	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	26"	0.438	2110	Class A Type	1.18
Fresh Water	13 3/8"	17 1/2"	0.380	2730	Class A Type	1.39
Coal						
Intermediate	9 5/8"	12 3/8"	0.352	3520	Class A Type	1.18
Production	5 1/2"	8 3/4" & 8 1/2"	0.361	12640	Class A Type	1.26
Tubing	2 3/8"	5 1/2" Csg	0.190	7700		******
Liners			•			

PACKERS

Kind:	None		
Sizes:	None		
Depths Set:	None		

WW-6B (9/13)

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

Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 19260'. Well to be drilled to a TVD of 7180', formation at TVD - Oriskany Sand. Well will be plugged back to an approximate depth of 6800' (approximate due to exact kick off point being unknown). Plugging back will be done using the displacement method and Class A Type cement. A solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement. There will not be any production, perforation, or stimulation of any formations below the target formation.



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

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. Max Pressure - 9500 psi. Max Rate - 100 bbl/min.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.4 Acres
- 22) Area to be disturbed for well pad only, less access road (acres): 10.6 Acres

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water & Coal - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. Intermediate - Bow spring centralizers one on the first two joints and every forth joint until inside surface casing. Production - Rigid bow spring centralizer on first joint then every 2 casing joints (free floating) through the lateral and the curve. (Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

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

Conductor - 2% CaCl2. Fresh Water/Coal - 2% CaCl2. Intermediate - 2% CaCl2. Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing ran in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Coal - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. Intermediate - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing shoe will be cleared with fresh water and gel prior to cementing. (Note: Drilling soap may be utilized if the hole gets wet/damp during the drilling of all air holes with the exception of the conductor). Production - The hole will be drilled with synthetic oil base mud and once at TD the hole is circulated at a drilling pump rate until the hole is clean. Once casing is ran the hole is circulated for a minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.

Cement Additives

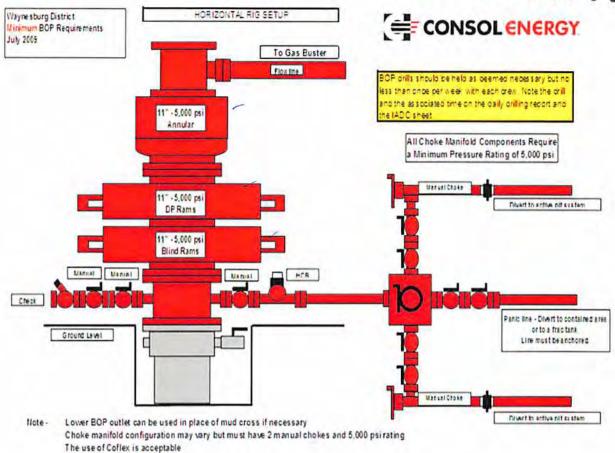
- Conductor 2% CaCl2
- Freshwater/Coal 2% CaCl2
- Intermediate 2% CaCl2
- Production
 - o 2.6% Cement extender
 - o 0.7% Fluid Loss Additive
 - o 0.5% High Temperature Retarder
 - o 0.2% Friction Reducer

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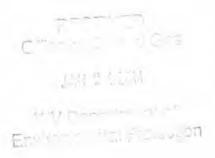
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Remote Controls

Remote controls shall be readily accessible to the driller. Remote controls for all systems shall be capable of closing the preventer. Remote controls systems shall be capable of both opening and closing the preventer.



PG. 10F3

Operator's Well No. OXFD13AHS

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name CNX Gas Company LLC OP Code 494458046	
Of Code	
Watershed (HUC 10) South Fork Hughes River Quadrangle New Milton	
Elevation 1,180 County Doddridge District Southwest	
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: N/A	
Will a synthetic liner be used in the pit? Yes No If so, what ml.? N/A	
Proposed Disposal Method For Treated Pit Wastes:	
Land Application Underground Injection (UIC Permit Number Reuse (at API Number Off Site Disposal (Supply form WW-9 for disposal location) Other (Explain Recycle on other well on same pad or adjacent pads	14-20
Will closed loop system be used? If so, describe: Yes	
Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air and oil based mud	
-If oil based, what type? Synthetic, petroleum, etc.Synthetic	
Additives to be used in drilling medium? Bactericide, Polymers, and Weighting Agents	
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) N/A	
-Landfill or offsite name/permit number? Meadowfill, Northwestern Landfill, Max Environmental Yukon Landfill, & Bulger Landfill	
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August I, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action. I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Company Official Signature Company Official Title Designated Agent General Manager WV Gas Operations	
Company Content Time 1990 Service Manager IV Cas Operations	
Subscribed and sworn before me this 1574 day of JANUACY Notary Public STATE OF WEST WINGING CAROLINDA FLANAGAN PO Box 603 Lumbuport W 20365	

roposed Revegetation Treatment: Ac	cres Disturbed 16.4	i icvegetation pri	.5
Lime Ton	s/acre or to correct to pH	.0	
Fertilizer type			
Fertilizer amount 500	lbs/act	re	
Mulch hay or straw @ 2	Tons/acre		
	Seed Mi	<u>xtures</u>	
Temporary		Permanent	
	/acre	Seed Type	lbs/acre
 _	<u>25 </u>	Orchard Grass	25
Birdsfoot Trefoil 1	15	Birdsfoot Trefoil	15
Ladina Clause	⁻	1 2 01	
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