

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

January 26, 2015

WELL WORK PERMIT Horizontal 6A Well

This permit, API Well Number: 47-1706653, 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: OXFD17GHS

Farm Name: MORRIS, I.L.

API Well Number: 47-1706653

Permit Type: Horizontal 6A Well

Date Issued: 01/26/2015

API Number: 17-06653

PERMIT CONDITIONS

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

CONDITIONS

- 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 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.
- 9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

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

1) Well Operat	tor: CNX Gas C	Company LLC	494458046	Doddridge	Southwest	Oxford, WV, 7.5'	
	***		Operator ID	County	District	Quadrangle	
2) Operator's '	Well Number: OX	FD17GHS	Well Pac	d Name: OXFD	17HS		
3) Farm Name	/Surface Owner:	I.L. Morris	Public Roa	d Access: CR	19/11		
4) Elevation, c	urrent ground:	1152.14' El	levation, proposed	post-constructi	on: 1152'		
5) Well Type	(a) Gas	Oil Underground Storage					
	Other						
		llow _	Deep				
		rizontal					
	d: Yes or No NO			-	n ()		
	arget Formation(s kett, Depth - 6580' (t	HE 16 (1) 10 (1	cipated Thickness a b' Pressure - 4000#	and Associated	Pressure(s):	8	
AN THE SAME	otal Vertical Dept	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
	nt Total Vertical D	All the second second					
	Total Measured D						
	Horizontal Leg Le	a divers				2100	
	ate Fresh Water S		710', 790'		· ·	9-2015	
					1	-4	
	Determine Fresh ate Saltwater Dept		Offset Well				
			. D. I				
	ate Coal Seam De			i var			
16) Approxima	ate Depth to Possi	ble Void (coal m	ine, karst, other):	None Anticipated			
	osed well location ing or adjacent to		ms Yes	No	V		
(a) If Yes, pr	ovide Mine Info:	Name:					
		Depth:					
Dor	eived	Seam:					
Office of	MIR Gas	Owner:					
	0 9 2015						

WW-6B (9/13)

Liners

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.	94#	80'	80'	Grout to surface w/ Class A type correct
Fresh Water	13 3/8"	N	J-55	54.5#	1050'	1050'	CTS w/ Class A Type Cement
Coal	La						
Intermediate	9 5/8"	N	J-55	36#	2700'	2700'	CTS w/ Class A Type Cement
Production	5 1/2"	N	P-110	20#	14080'	14080'	2200 cu. ft. w/ 50/50 POZ Lead & Claud
Tubing	2 3/8"	N	J-55	4.7#	7000'	7000'	
Liners							

Wellbore Wall **Burst Pressure** Cement Type Cement Yield TYPE Size Diameter Thickness (cu. ft./k) Conductor 20" 26" 2110 Class A Type 1.18 0.438 Fresh Water 0.380 2730 1.39 13 3/8" 17 1/2" Class A Type 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 14360 Class A Type 1.26 Tubing 7700 2 3/8" 5 1/2" Csg 0.190

PACKERS

Kind:	None	
Sizes:	None	
Depths Set:	None	

Office of DII & Gas
JAN 0 9 2015

19) Describe	proposed we	l work.	including	the drilling	g and t	olugging	back of a	ny pilot hole:
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Drill and stimulate new horizontal Burkett well. Well to be drilled to a TMD of 14080'. Well to be drilled to a TVD of 6790', formation at TVD - Oriskany. The well bore will not be drilled any deeper than 100' beyond the Onondaga top, nor will there be any perforation, stimulation, or production of any formations below the target formation. Well will be plugged back to an approximate depth of 6000' (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.

20	Describe fracturin	g/stimulating	methods in detail.	including	anticipated max	k pressure and max rate:
			5		,	- process - mile mile: 1410.

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):	29.6
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- 22) Area to be disturbed for well pad only, less access road (acres): 8.2
- 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.

Office of Oil & Gas

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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4701706653

API Number 47 - 017
Operator's Well No. 0xFD17GHs

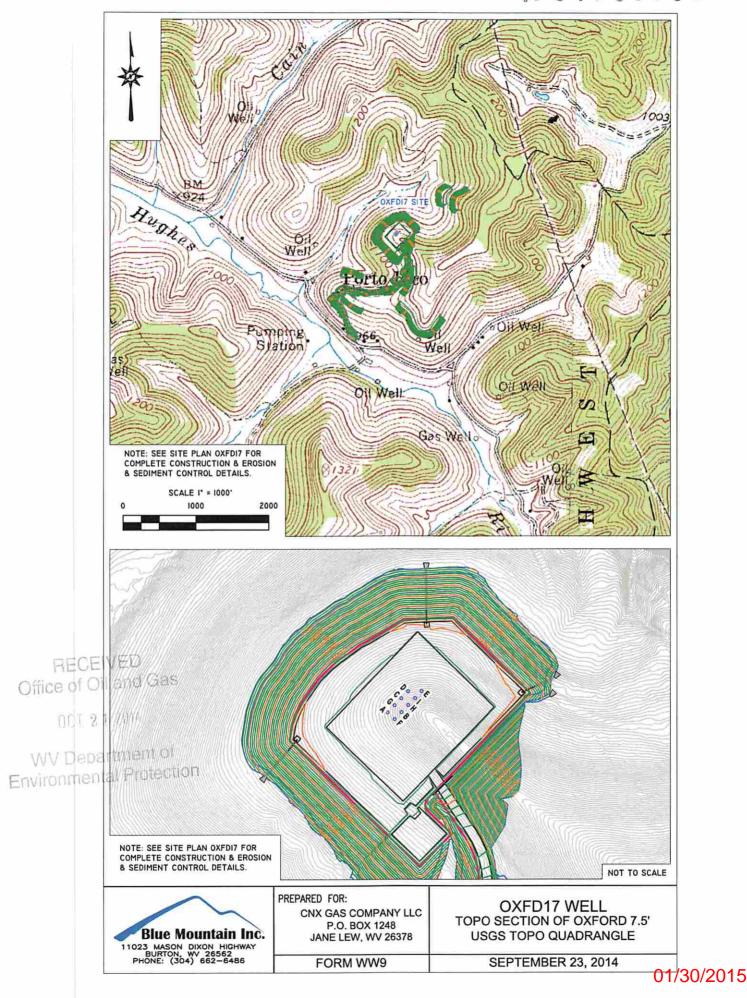
STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name CNX Gas Company LLC OP Code 494458046
Watershed (HUC 10)_South Fork Hughes River Quadrangle Oxford
Elevation 1152 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 V
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
Will closed loop system be used? If so, describe: Yes
Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Synthetic
-If oil based, what type? Synthetic, petroleum, etc.Synthetic
Additives to be used in drilling medium? Bactericide, Polymers, and Weighting Agents
Orill 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 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 aw 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 trenalties for submitting false information, including the possibility of fine or imprisonment. Company Official Signature Company Official Title Permitting Supervisor
ubscribed and sworn before me this 19 TH day of JAN. , 20 15
(Brolinde) Co Nglary Publicanon
OFFICIAL SEAL NOTARY PUBLIC STATE OF WEST VIRGINIA CAROLINDA FLANAGAN PO Box 603 Lumbergori W 2006

Operator's Well No. OXFD17GHS

roposed kevegetation Treatment	: Acres Disturbed	29.6	Prevegetation pH 6.	.5
according to pH test	Tons/acre or to corre	ect to pH 7.0		
10-20-20 Fertilizer type		ect to pir		
Fertilizer amount 500		lbs/acre		
hay or straw	 ത 2			
Mulch	<u> </u>	Tons/acre		
		Seed Mixtur	<u>es</u>	
Тетро	rary		Permanent	
Seed Type	lbs/acre		Seed Type	lbs/acre
Orchard Grass	25		Orchard Grass	25
Birdsfoot Trefoil	15		Birdsfoot Trefoil	15
Ladino Clover	10	· · · · · · · · · · · · · · · · · · ·	Ladino Clover	10
Attach: Drawing(s) of road, location, pit a provided) Photocopied section of involved 7			(unless engineered plans includir	ng this info h
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7	7.5' topographic sheet		(unless engineered plans includir	ng this info h
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7 Plan Approved by:	7.5' topographic sheet	t.		
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7 Plan Approved by: Dougla	5.5' topographic sheet So Aswfor Mulch	t.		
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7 Plan Approved by:	5.5' topographic sheet So Aswfor Mulch	t.		
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7 Plan Approved by: Dougla	5.5' topographic sheet So Aswfor Mulch	t.		
Photocopied section of involved 7 Plan Approved by: Dougle Comments: Present to	5.5' topographic sheet So Aswfor Mulch	t.		
Orawing(s) of road, location, pit a provided) Photocopied section of involved 7 Plan Approved by: Dougla	1.5' topographic sheet So Aurfan Mulch lation5	t.		
Photocopied section of involved 7 Plan Approved by: Present to Manager 1999 Comments: Present to Manager 1999 Comments to Manager 1	1.5' topographic sheet So Aurfan Mulch lation5	t.		
Photocopied section of involved 7 Plan Approved by: Present T WW Dep requirements: Present T Office of Oil and Gas	1.5' topographic sheet So Anufor Notch 14 Tron 5	t.		
Photocopied section of involved 7 Plan Approved by: Present F WW Rep requi	Aufor Mulch	t.		





Safety Plan for Well # OXFD17GHS CNX Gas Company LLC

DCN 2014

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WV Department of Environmental Protection



11023 Mason Dixon Hwy | Burton, WV 26562 Ph: (304) 662-6486 | Fax: (304) 662-6501

September 23, 2014

CNX GAS COMPANY P.O. BOX 1248 JANE LEW, WV 26378

WATER WELL REPORT

PROJECT: OXFD17
DISTRICT: Southwest
COUNTY: Doddridge
STATE: West Virginia

The following surface owners may have water supplies within 2,000 feet of the above location:

NAME	ADDRESS	CITY, STATE, ZIP
1 & 2) May Revocable Trust	641 Scott St.	Port Township, WA 98368
Susan V. Drennan	9255 SE Wayndotte Rd.	Galena, KS 66739
3 4 5 &6) I L (Ike) Morris	PO Box 397	Glenville WV 26351

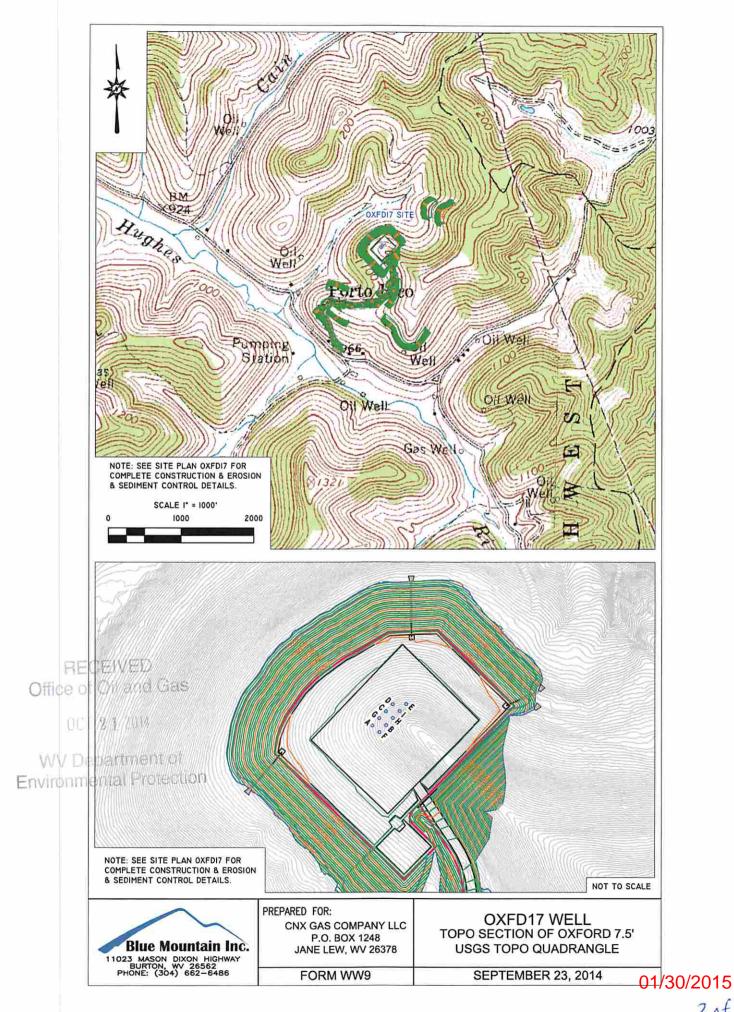
The following surface owners may have water supplies within 2,500 feet of the above location:

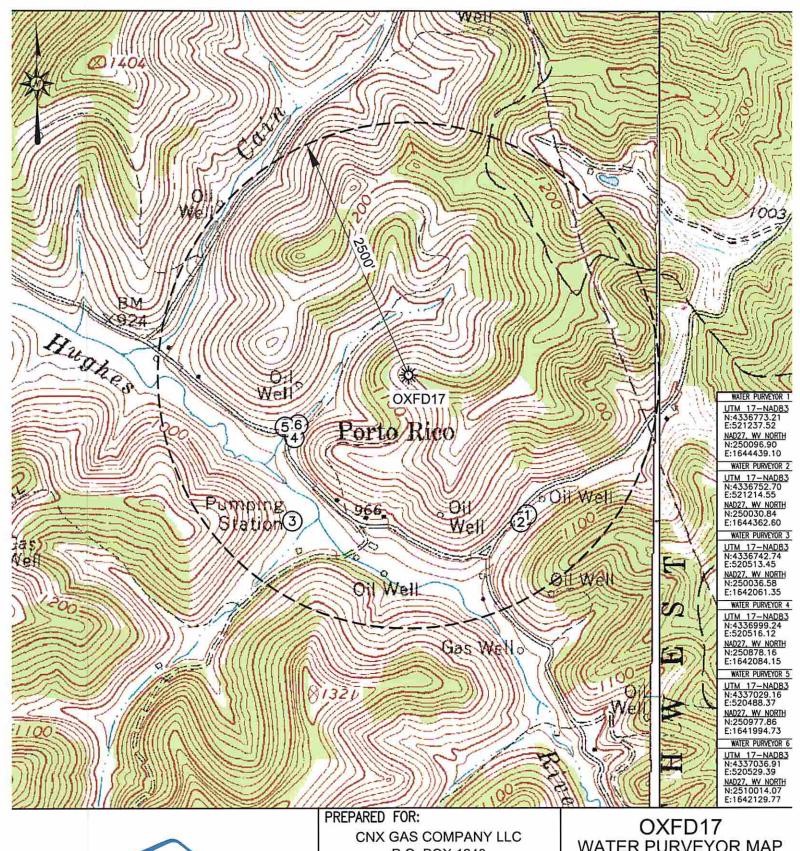
NAME ADDRESS CITY, STATE, ZIP
None

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WV Department of Environmental Protection







11023 MASON DIXON HIGHWAY BURTON, WV 26562 PHONE: (304) 662-6486 CNX GAS COMPANY LLC P.O. BOX 1248 JANE LEW, WV 26378

LEGEND

1) - POSSIBLE WATER PURVEYOR

OXFD17
WATER PURVEYOR MAP
DODDRIDGE COUNTY
SOUTHWEST DISTRICT
WEST VIRGINIA

TOPO QUAD: OXFORD, WV

SCALE: 1" = 1000'

DATE: SEPTEMBER 23, 2014 15

WW-6A1 (5/13)

Operator's Well No.	OXFD17GHS
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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 Attached

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: CNX Gas Company LLC

By: Matthew Imrich Operations Superintendent, WV Gas Operations

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Page 1 of 2

WV Dispartment of Environmental Protection

Attachment - Form WW-6A1 for OXF17GHS:

Tract ID 1	<u>Title QLS</u> 245974000	Grantor, Lessor, etc Susan V. Drennan, et vir, et al Interstate Drilling, Inc. Key Oil Company Antero Resources Appalachian Corporation	Grantee, Lessee, etc Interstate Drilling, Inc. Key Oil Company Antero Resources Appalachian Corporation CNX Gas Company LLC	Royalty 1/8 Assignment Assignment Assignment	Book/Page 178/75 179/494 276/526 314/174
9, 12	245965000	W.M. Stout, et ux M.G. Zinn The Carter Oil Company Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings Consol Gas Company	M.G. Zinn The Carter Oil Company Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings Consol Gas Company CNX Gas Company LLC	1/8 Assignment Assignment Assignment Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change	11/457 14/127 42/410 DB 143/345 135/583 Harrison Co. Aol51/795 Harrison Co. Aol58/362 245/1 DB 292/469 DB 293/252
8	245765000	L.M. Stout, et al M.G. Zinn The Carter Oil Company Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings Consol Gas Company	M.G. Zinn The Carter Oil Company Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corp CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings Consol Gas Company CNX Gas Company LLC	1/8 Assignment Assignment Assignment Assignment Merger/Name Change Merger/Name Change Assignment Merger/Name Change Merger/Name Change Merger/Name Change	11/458 14/127 42/410 DB 143/345 135/583 Harrison Co. AoI51/795 Harrison Co. AoI58/362 245/1 DB 292/469 DB 293/252

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OCT 21 2014

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