

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

August 19, 2015

EQT PRODUCTION COMPANY 120 PROFESSIONAL PLACE BRIDGEPOR1, W\ 26330

Re: Permit Modification Approval for API Number 8510086, Well #: WV 512501

Extend Lateral, Modify casing

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.

Gene Smith

Assistant Chief of Permitting

Par Geno Smith

Office of Oil and Gas



July 28, 2015

Mr. Gene Smith West Virginia Department of Environmental Protection Office of Oil and Gas 601 57th Street SE Charleston, WV 25304

Re: Modification of 085-10086

Dear Mr. Smith,

Enclosed is an updated WW-6B, schematics, WW-6A1, rec plan and mylar plat. EQT would like to modify the length of the lateral. The top hole has not changed.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

Vicki Roark

Permitting Supervisor-WV

Enc.

Cc: David Cowan

PACSINSO SUIS

עט - טט (4/15)

APINO. <u>47</u>	085	10086		
PERATOR WELL NO.	4		512501	
Vell Pad Name: _			OXF122	

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

1) Well Operator: EQT Product	ion Company		306686	085	1 4	T 500
A			Operator ID	County	District	526 Quadrangle
2) Operator's Well Number:		512501		_Well Pad Nam		OXF122
3) Farm Name/Surface Owner : _	Richa	rd L & Sheryl	A Ray	_Public Road A	ccess:	7/18
4) Elevation, current ground:	1,111.0	Elevati	ion, proposed p	ost-construction	:1,111.0)
5) Well Type: (a) Gas	Oil	Unc	derground Stora	ge		
Other						
(b) If Gas:	Shallow	<u> </u>	Deep	7		
1	-lorizontal	*				
6) Existing Pad? Yes or No:	yes					
7) Proposed Target Formation(s),	Depth(s), Antici	pated Thickne	esses and Asso	ciated Pressure	(e):	
				54 feet and antic		ure of 2190 PSI
8) Proposed Total Vertical Depth:				6489		
9) Formation at Total Vertical Dept	h:			Marcellus		
10) Proposed Total Measured Dep				17320		
11) Proposed Horizontal Leg Lengt	h			10,137		
12) Approximate Fresh Water Stra				236		
13) Method to Determine Fresh Wa				By offset we	olle	
14) Approximate Saltwater Depths:				N/A		
15) Approximate Coal Seam Depth				929		
16) Approximate Depth to Possible	Void (coal mine	e, karst, other):		None repo	rted
17)Does proposed well location cor				-	110110 1000	
adjacent to an active mine?			50 197		No x	
(a) If Yes, provide Mine Info:	Name:		~ 25		7) Was and J. (1995)	
	D 11					
	Seam:					

Owner:

Page 1 of 3 ved
Received Gas
Office of Oil & Gas
JUL 30 2015
JUL 30 2015
7-24-15

WW - 6B	
(4/15)	

API NO.	<u>47</u>	41	085	. = ,_	10086	MOL
OPERATOR WELL NO.					512501	
Well Pac	l Nan	ne:			OXF122	

CASING AND TUBING PROGRAM

18)

TYPE	Size (in)	<u>New</u> <u>or</u> <u>Used</u>	Grade	Weight per ft.	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well	CEMENT: Fill- up (Cu.Ft.)
Conductor	20	New	MC-50	81	40	(ft) 40	38 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	386	386	356 C.T.S.
Coal	-	.=	=:	_	-	_	- 0.1.0.
Intermediate	9 5/8	New	MC-50	40	2,982	2,982	1,185 C.T.S.
Production	5 1/2	New	P-110	20	17,320	17,320	See Note 1
Tubing	2 3/8		J-55	4.6			May not be run, if run will be set
Liners							100' less than TD

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	<u>Cement</u> <u>Type</u>	Cement Yield (cu. ft./k)
Conductor	20	24	0.375	/#1	18	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	2,184	* See Note 2	1.21
Coal					2,101		
Intermediate	9 5/8	12 3/8	0.395	3,590	3,160	* See Note 2	1.21
Production	5 1/2	8 1/2	0.361	12,640	10,112	■ 1 × × × × × × × × × × × × × × × × × ×	1.27/1.86
Tubing			===		10,112		
Liners							

Packers

Kind:	N/A	
Sizes:	N/A	
Depths Set:	N/A	

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

Note 2: Reference Variance 2014-17. (Attached)

Page 2 of 3

Office of Oil & Gas
JUL 3 0 2015

	APINO. 47 - 085 - 1008	6 MOI
(10/14)	OPERATOR WELL NO. 51250	_
	Well Pad Name: OXF12	2
19) Describe proposed well work, including the drilling and plugging back of any	pilot hole:	
Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go down	to an approximate depth of 5053'.	
The kick off the horizontal leg into the Marcellus using a slick water frac.		
20) Describe fracturing/stimulating methods in detail, including anticipated max p		
Hydraulic fracturing is completed in accordance with state regulations using water recycled from previous freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemical control of the control	riously fractured wells and obtained from	
gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a	a "slickwater" completion Maximum	
anticipated internal casing pressure is expected to average approximately 8500 psi, maximum anticipated approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 bits approxi	ated treating rates are expected to average	
vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.	arreis of water per stage. Sand sizes	
21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres):	29.51	
22) Area to be disturbed for well pad only, less access road (acres):	18,14	
 23) Describe centralizer placement for each casing string. Surface: Bow spring centralizers – One at the shoe and one spaced every 500'. 		
 Intermediate: Bow spring centralizers One cent at the shoe and one spaced ev 	very 500'.	
Production: One spaced every 1000' from KOP to Int csg shoe	·	
24) Describe all cement additives associated with each cement type. Surfac	e (Type 1 Cement): 0-3% Calcium Chloride	
Used to speed the setting of cement slurries.		
0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low temperature	y to a thief zone.	
sturries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole di	rilling fluid or cement slurry (not filtrate)	
to a thief zone.		
Production:		
Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time.		
0.3% CFR (dispersant). Makes cement easier to mix.		
Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time.		
0.2-0.3% CFR (dispersant). This is to make the cement easier to mix.		
60 % Calcuim Carbonate. Acid solubility.		
0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.		
(5) Proposed harabala conditioning		
25) Proposed borehole conditioning procedures. Surface: Circulate hole clean (Approximate full initiative Proposed borehole conditioning procedures.		
one full joint until cuttings diminish at surface. When cuttings returning to surface diminish,		
minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fil		
and circulate hole clean. A constant rate of higher than expected cuttings volume likely indi	icates washouts that will not clean up.	
ntermediate: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full	joint until cuttings diminish at	
urface. When cuttings returning to surface diminish, continue to circulate an additional 5 m	ninutes. If foam drilling, to enhance	
State Paradiant state of the advantages to be a proper state of the control of th	Received	l.
ole cleaning use a soap sweep or increase injection rate & foam concentration.		des
ole cleaning use a soap sweep or increase injection rate & foam concentration. roduction: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gaug	ge holes bottoms up volume.	k Ga
	ge holes bottoms up volume.	k Ga 15

M M - PR



July 17, 2015

Mr. Gene Smith West Virginia Department of Environmental Protection Office of Oil and Gas 601 57th Street SE Charleston, WV 25304

Re: Casing Plan on Well (OXF122)

Dear Mr. Smith,

EQT is requesting the 13-3/8" surface casing be set at 386' KB, 150' below the deepest fresh water. We will set the 9-5/8" intermediate string at 2982' KB, 50' below the base of the Bayard formation.

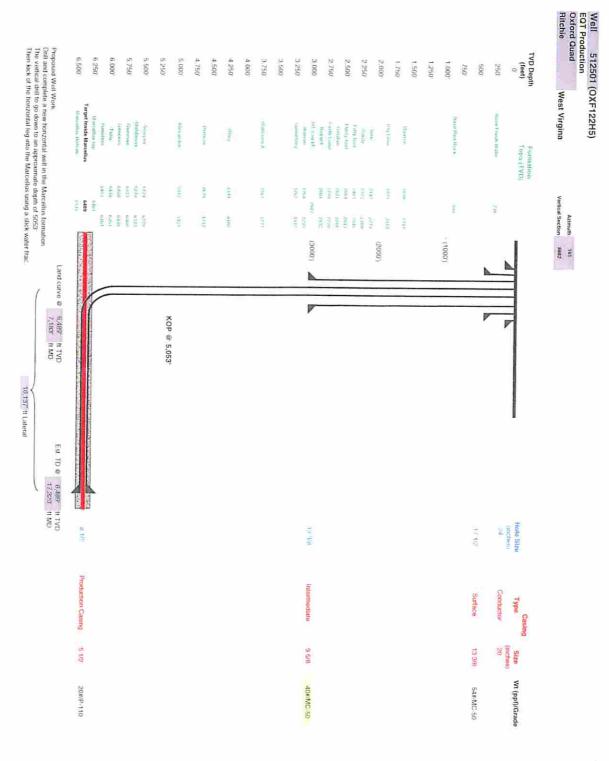
If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

Vicki Roark

Permitting Supervisor

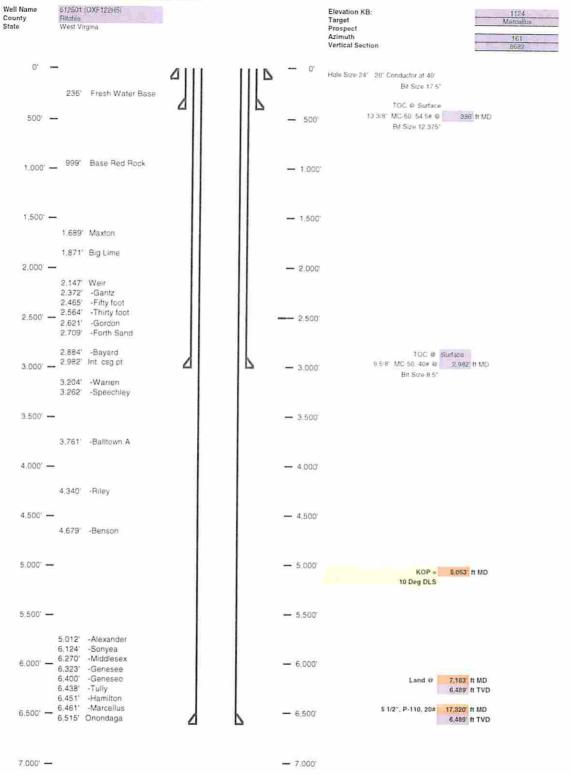
Enc.



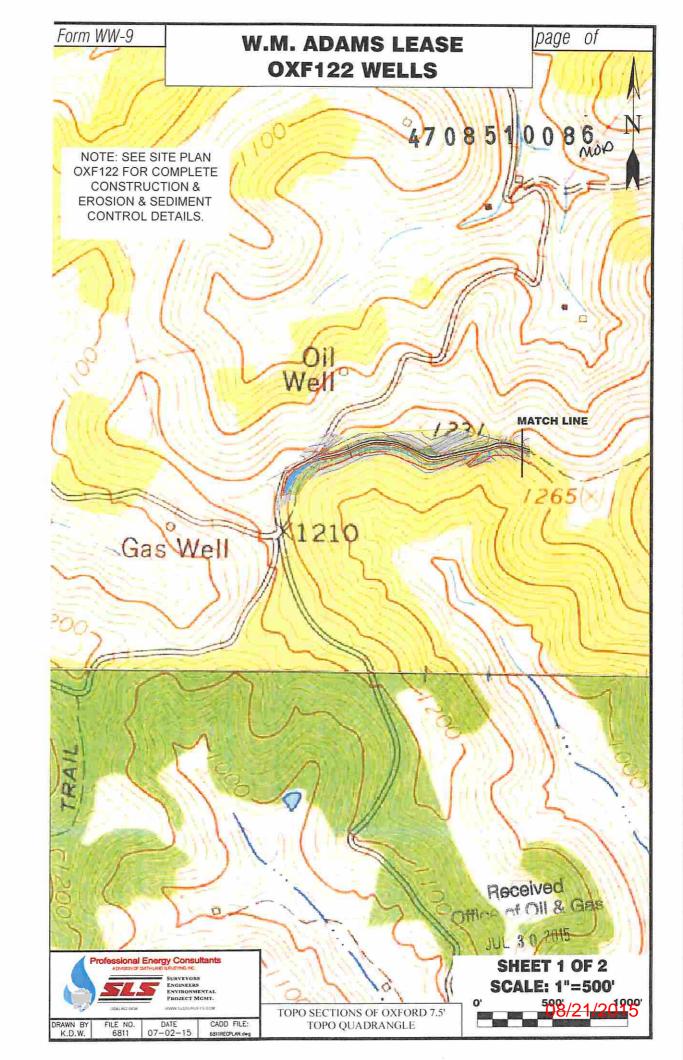
Office of Oil & Gas
JUL 3 0 2015

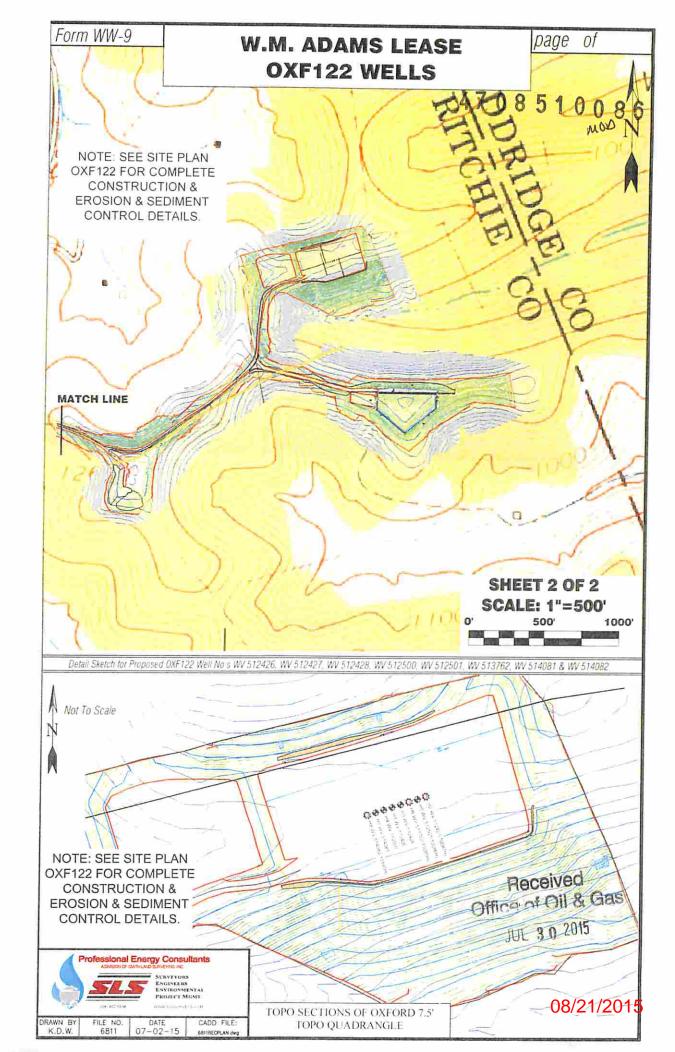
08/21/2015

Well Schematic EQT Production

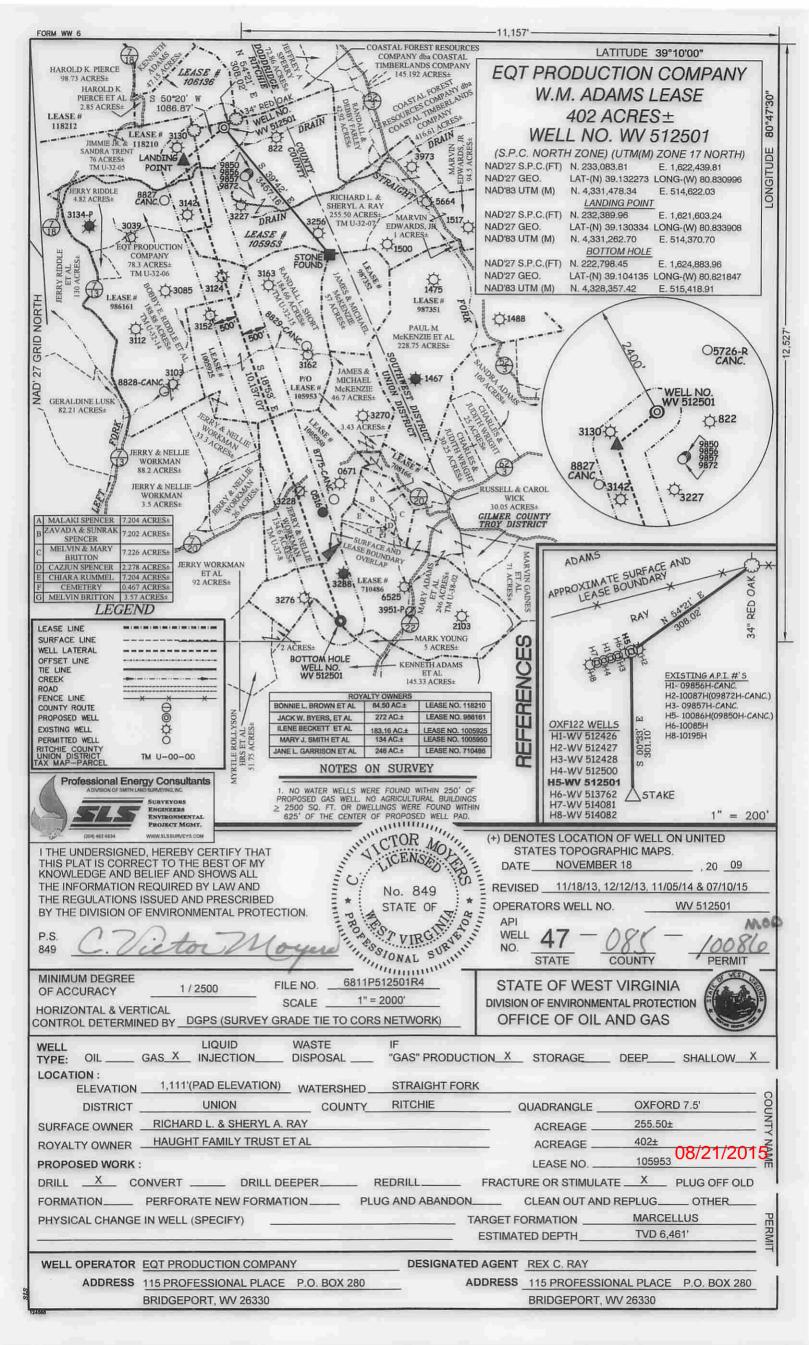


Office of Oil & Gas
JUL 3 0 2015





MIL



WW-6A1 (5/13)

Operator's Well No.

512501

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:

∕ <u>105953</u>	William Adams, et ux The Philadelphia Company of West Virginia Pittsburgh and West Virginia Gas Company Equitable Gas Company Equitrans, Inc. Equitable Production-Eastern States, Inc.		lin 1/8 pd ginia (gany (L	Book/Page LB29/244 LB55/362 LB126/473	_
	The Philadelphia Company of West Virginia Pittsburgh and West Virginia Gas Company Equitable Gas Company Equitrans, Inc.	The Philadelphia Company of West Virg Pittsburgh and West Virginia Gas Comp Equitable Gas Company Equitrans, Inc.	ginia l pany l l	_B55/362	
	Pittsburgh and West Virginia Gas Company Equitable Gas Company Equitrans, Inc.	Equitable Gas Company Equitrans, Inc.	l		
	Equitable Gas Company Equitrans, Inc.	Equitrans, Inc.		.B126/473	
	Equitrans, Inc.	•	1		
		Equitable Production-Eastern States, In-	L	B201/253	
	Equitable Production-Eastern States, Inc.	-quitable i reduction-Lastem States, III	c. L	B234/830	
		Equitable Production Company		DB281/346	Doddrid
	Equitable Production Company	EQT Production Company		DB281/346	Doddrid
<u>118210</u>		Min I	/8 pd		
	J. E. Pierce, L. L. Pierce & Felsie Pierce	Pittsburgh & WV Gas. Co.	ı	.B 45/257	
	Pittsburg & WV Gas Co.	Equitable Gas Company		DB 126/473	
	Equitable Gas Company	Equitrans, Inc.		B 201/253	
	Equittrans, Inc.	Equitable Production Company		B 192/19	
	Equitable Production Company	EQT Production Co.	D	B 281/346	Doddridg
		M	in 1/8 pd		
<u>86161</u>	Shirley S. Riddle, et al	E. W. Bowers	•	B105/146	
	E. W. Bowers	A. W. Bowers & George Bowers	W	/B65/66	
	A. W. Bowers & George Bowers	Rick J. Garret & Desari Garrett		B251/211	
	Rick J. Garret & Desari Garrett	EQT Production Co.	D	B251/865	
1005925		Mi	n 1/8 pd		
	Delphia G. Taylor and George H. Taylor	Hope Natural Gas Company	•	B81/263	
	Hope Natural Gas Company	Consolidated Gas Supply Corp.		3151/436	
	Consolidated Gas Supply Corp.	Consolidated Gas Transmission Corp.		3169/756	
	Consolidated Gas Transmission Corp.	CNG Development Co.		3176/601	
	CNG Development Co.	CNG Producing Co.		B1096/124	
	CNG Producing Co.	Dominion Exploration & Production, Inc.		B82/07	
	Dominion Exploration & Production, Inc.	Dominion Transmission, Inc.		3251/621	
	Dominion Transmission, Inc.	CONSOL Energy Holdings, LLC		3251/648	
	CONSOL Energy Holdings, LLC	CONSOL Gas Co.	R	eived	Delaware
	CONSOL Gas Co.	CNX Gas Co., LLC		8 110°9/8	
	CNX Gas Co., LLC	EQT Production Co.		3279/333 3 0 201	

4708510086 MOD

<u> 1005950</u>		Min 1/8 p	od
	James E. Spurgeon, et al	Claron Dawson and C. Crane	LB127/239
	Claron Dawson and C. Crane Sancho Oil and Gas Corp. Stephen D. Ward Antero Resources Appalachian Corp.	Sancho Oil and Gas Corp. Stephen D. Ward Antero Resources Appalachian Corp. EQT Production Company	LB232/172 LB232/174 LB256/22 DB282/379
/		Min 1/8 p	d
<u>√ 710486</u>	Lewis Garrison, et ux Carnegie Natural Gas Company Carnegie Production Company/USX Equitable Resources Inc. Equitable Production Co.	Carnegie Natural Gas Company Carnegie Production Company Equitable Resources Inc. Equitable Production Co. EQT Production Company	LB42/4 LB228/859 See attached DB274/471 DB281/346 Doddridge

Upon information and belief, Operator's lease and/or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

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:

EOT Production Compan

By:

Its:

Permitting Supervisor

Received
Office of Oil & Gas

JUL 3 0 2015

PURCHASE AND SALE AGREEMENT

PURCHASE AND SALE AGREEMENT, dated as of May 27, 1999 (this "Agreement"), by and between USX CORPORATION, a Delaware corporation, ("USX") and EQUITABLE RESOURCES, INC., a Pennsylvania corporation (hereinafter referred to as "Buyer").

WHEREAS, USX owns directly or indirectly all of the outstanding capital stock or other evidence of an equity interest of the following companies (each a "Carnegie Company" and collectively the "Carnegie Companies"), which are involved in one or more of the production, gathering, transportation, treatment, distribution and sale of natural gas: (i) Carnegie Natural Gas Company, a Pennsylvania corporation, ("Carnegie"), (ii) Carnegie Interstate Pipeline Company, a Delaware corporation, ("CIPCO"), (iii) Carnegie Production Company, a Pennsylvania corporation, ("CIPCO"), (iv) Carnegie Natural Gas Sales, Inc., a Delaware corporation, ("CNGS") and (v) Carnegie Gas Storage, LLC, a Delaware limited liability company, ("CGS"); and

WHEREAS, USX desires to sell to Buyer and Buyer desires either for itself and/or one or more designated subsidiaries to purchase from USX one hundred percent (100%) of the capital stock and other evidence of equity interest in the Carnegie Companies;

NOW, THEREFORE, for and in consideration of the premises and the representations, warranties, covenants and agreements herein set forth and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto, intending to be legally bound, agree as follows:

· ARTICLE I DEFINITIONS

Unless otherwise specifically stated in the text of this Agreement, the following terms shall have the following meanings:

Section 1.1 The "1935 Act" shall mean the Public Utility Holding Company Act of 1935, as amended.

Received
Office of Oil & Gas

JUL 3 0 2015

Section 12.6 Names, Trademarks, Etc. USX and its Affiliates will discontinue use of the Carnegie and Apollo Names as promptly as practicable after the Closing.

IN WITNESS WHEREOF, the undersigned have cause this Agreement to be subscribed by their respective representatives duly authorized as of the date first above written.

USX CORPORATION

Typed Name: v. G. Peghini.

Title: Vice Chairman - Marathon Group

EQUITABLE RESOURCES, INC.

Typed Name: David L. Arges
Title: Sentor Vice President and Chief Financial Officer

Received Office of Oil & Gas JUL 3 0 2015