

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

July 20, 2015

EQT PRODUCTION COMPANY 120 PROFESSIONAL PLACE BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 8510085, Well #: WV 513762

Extend Lateral

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.

101 1/1

Sincerely

Gene Smith

Assistant Chief of Permitting

Office of Oil and Gas



July 8, 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 085-10085

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.

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WW	÷	6B	
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API NO.	<u>47</u>	×	085	16	10085	MOD
OPERATO	R WE	L NO).	11	513762	
Well Pag	d Nan	ne:			OXF122	

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

1) Well Operator:	EQT Production Cor	mpany	306686	085	4	526
			Operator ID	County	District	Quadrangle
2) Operator's Well	Number:	513762		_Well Pad Nan	ne	OXF122
3) Farm Name/Surf	ace Owner :	Richard L & Sher	yl A Ray	_Public Road A	ccess:	Co Rt 22/3
4) Elevation, curren	t ground:1,111	.0 Elev	ation, proposed p	ost-construction	:1,111.	0
5) Well Type: (a) Ga	as	OilU	nderground Stora	ige	·	
Ot	her					
(b)	If Gas: Shallo	w	Deep			
	Horizon	tal				
6) Existing Pad? Ye	s or No: yes					
7) Proposed Target	Formation(s), Depth(s	s), Anticipated Thick	nesses and Asso	ciated Pressure	e(s):	
Target formation is	Marcellus at a depth of	6494 with the antic	ipated thickness to be	54 feet and anti-	cipated target pres	sure of 2190 PSI
8) Proposed Total V	ertical Depth:			6615		
9) Formation at Tota	Vortical Death:			Onondaga		
10) Proposed Total	Managered Dooth			17969		
11) Proposed Horizo				11,002		
	esh Water Strata Dept	ths:		236		
	mine Fresh Water De			By offset w	ells	
14) Approximate Sa		In the second		N/A	0110	
15) Approximate Co				929		
	pth to Possible Void (coal mine, karst, oth	ner):	020	None rep	orted
	vell location contain co			-	Trone rep	orted
adjacent to an a		er elimet imzen/e		s	No x	
(a) If Yes, provid	le Mine Info: Nam	e:				
8.8	Dept	e: h:				
	Sear	A				

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WW -	6B
(4/15)	

API NO.	<u>47</u>		085	 10085	MC
OPERATO	R WE	LL NO		513762	
Well Pag	d Nar	ne:		OXF122	

CASING AND TUBING PROGRAM

18)

TYPE	Size	New	Grade	Weight per ft.	FOOTAGE: For	INTERVALS:	CEMENT:
	<u>(in)</u>	<u>or</u> Used		(lb/ft)	Drilling (ft)	Left in Well	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	1,049	1,049	909 C.T.S.
Coal	-	(-)	:-	-	-,	-	_
Intermediate	9 5/8	New	MC-50	40	2,982	2,982	1,163 C.T.S.
Production	5 1/2	New	P-110	20	17,969	17,969	See Note 1
Tubing	2 3/8		J-55	4.6			May not be run, if run will be set
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall_ Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	0.375		18	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	2,184	* See Note 2	1.21
Coal							
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	12-1	1.27/1.86
Tubing							
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)

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WW - 6B	APINO. <u>47</u> - <u>085</u> -	10085 Mo
(10/14)	OPERATOR WELL NO.	513762
	Well Pad Name:	OXF122
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 6615.	
Tag the Onondaga not more than 100', run logs, then plug back to approximately 4960'.		
Then kick off the horizontal leg into the Marcellus formation using a slick water frac.		
20) Describe fracturing/stimulating methods in detail, including anticipated		
Hydraulic fracturing is completed in accordance with state regulations using water recycled fr freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of the state regulations using water recycled from the sand and a small percentage (less than 0.3%) of the sand and a small percentage (less than	of chemicals (including 15% Hydrochloric acid	
gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the indu	stry as a "slickwater" completion. Maximum	
anticipated internal casing pressure is expected to average approximately 8500 psi, maximur approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 20	n anticipated treating rates are expected to average	
vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per sta	ge.	
21) Total area to be disturbed, including roads, stockpile area, pits, etc, (ac	cres): 29.51	
22) Area to be disturbed for well pad only, less access road (acres):		
 Describe centralizer placement for each casing string. 	18.14	
Surface: Bow spring centralizers – One at the shoe and one spaced ever Intermediate: Pow spring centralizers	y 500'.	
 Intermediate: Bow spring centralizers One cent at the shoe and one spa Production: One spaced every 1000' from KOP to Int csg shoe 	iced every 500'.	
24) Describe all cement additives associated with each cement type.	Surface (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 ceme	ent slurny to a thirt zone	-
Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low ten	operature formations to speed the setting of cement	
slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of to a thief zone.	whole drilling fluid or cement slurry (not filtrate)	
Production:		
Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time	N.	
0.3% CFR (dispersant). Makes cement easier to mix.		
Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time	e.	
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.		
25) Proposed borehole conditioning procedures. <u>Surface</u> : Circulate hole clean	(Approximately 30-45 minutes) rotating & reciprocating	g
one full joint until cuttings diminish at surface. When cuttings returning to surface d		b
minutes. To ensure that there is no fill, short trip two stands with no circulation. If the		
and circulate hole clean. A constant rate of higher than expected cuttings volume I		
Intermediate: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating		,
surface. When cuttings returning to surface diminish, continue to circulate an addit		======================================
hole cleaning use a soap sweep or increase injection rate & foam concentration.		
Production: Pump marker sweep with put plus to determine actual hole washout. Calcul-	ate a gauge holes bottoms un volume	
Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. the shakers every 15 minutes	Check volume of cuttings coming across	=== =
the shakers every 15 minutes.	RECEIVED	

*Note: Attach additional sheets as needed.

the shakers every 15 minutes.

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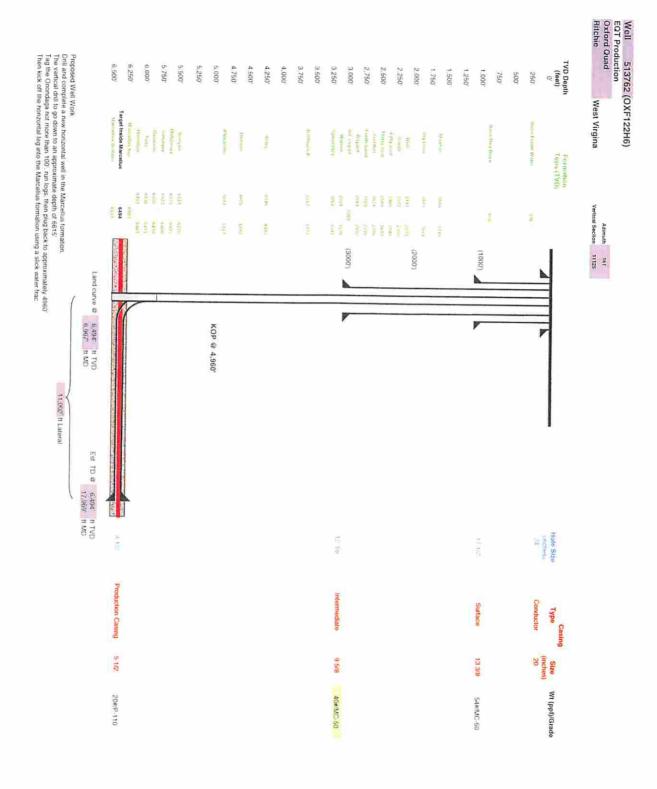
Well Schematic EQT Production

Well Name 513762 (OXF122Hi) Elevation KB: Ritchia West Virgina County Target State Prospect Azimuth Vertical Section 0. 10 Hole Size 24" - 20" Conductor at 40" 236' Fresh Water Base 500' -- 500 1,000' - 999' Base Red Rock TOC & Surface - 1,000 13 3/8" MC-50, 54 5# @ 1,049 ft MD Bit Size 12 375* 1,500' -- 1,500 1,689' Maxton 1,871' Big Lime 2,000' --- 2,000 2.147' Weir 2.372 -Gantz 2,465' -Fifty foot 2,500' — 2,564' -Thirty foot 2,621' -Gordon 2,709' -Forth Sand 2,884' -Bayard TOC @ Surface 9.5/8" MC-50.40# @ 2,982 ft MD 3,000' - 2,982' Int csg pt 4 - 3.000 Bit Size 8.5" 3,204' -Warren 3.262' -Speechley 3,500' --- 3.500 3.761' -Balltown A 4,000' ---- 4,000 4.340 -Riley 4,500' --- 4,500 4.679' -Benson 5.000' - 5.012' -Alexander KOP = 4,960 ft MD - 5,000 10 Deg DLS 5.500' --- 5,500 6,124' -Sonyea 6,000' - 6,270' -Middlesex - 6,000 6,323 -Genesee 6,400 -Geneseo 6,967" ft MD 6,438' -Tully 6,494 ft TVD 6.451' -Hamilton 6.500' — 6.461' -Marcellus 6.515' Onondaga 5 1/2", P-110, 20# 17,969" ft MD - 6,500 6,494" ft TVD

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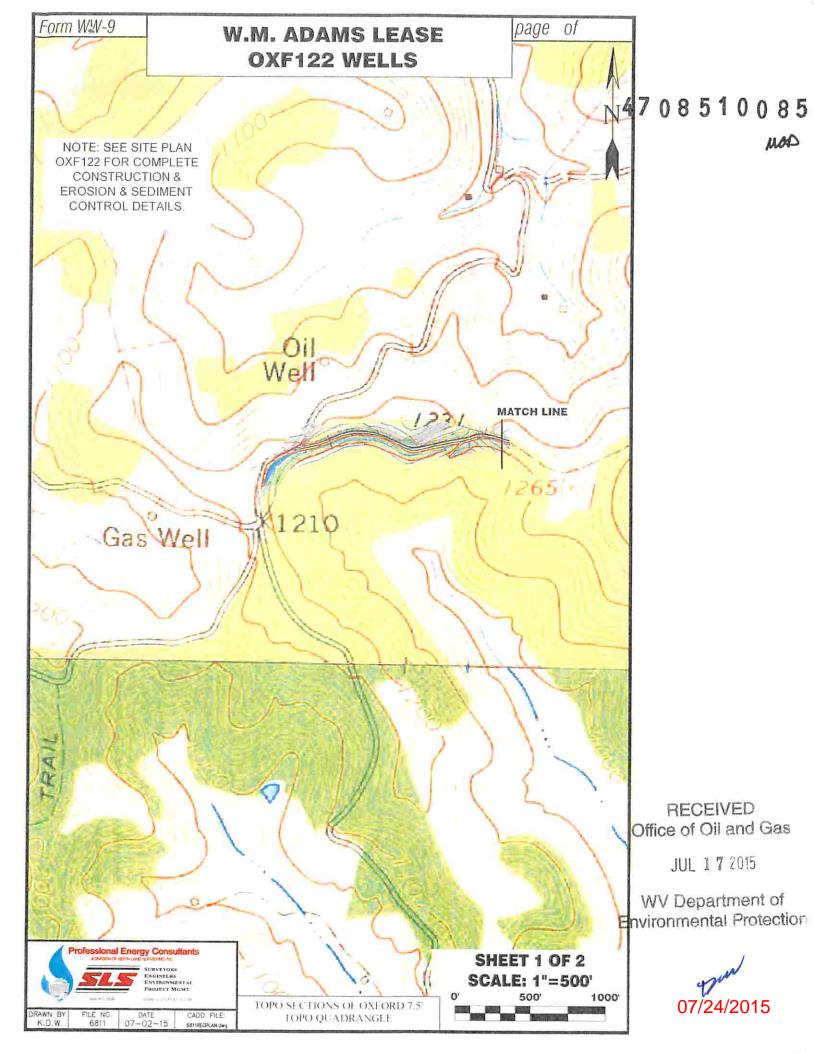


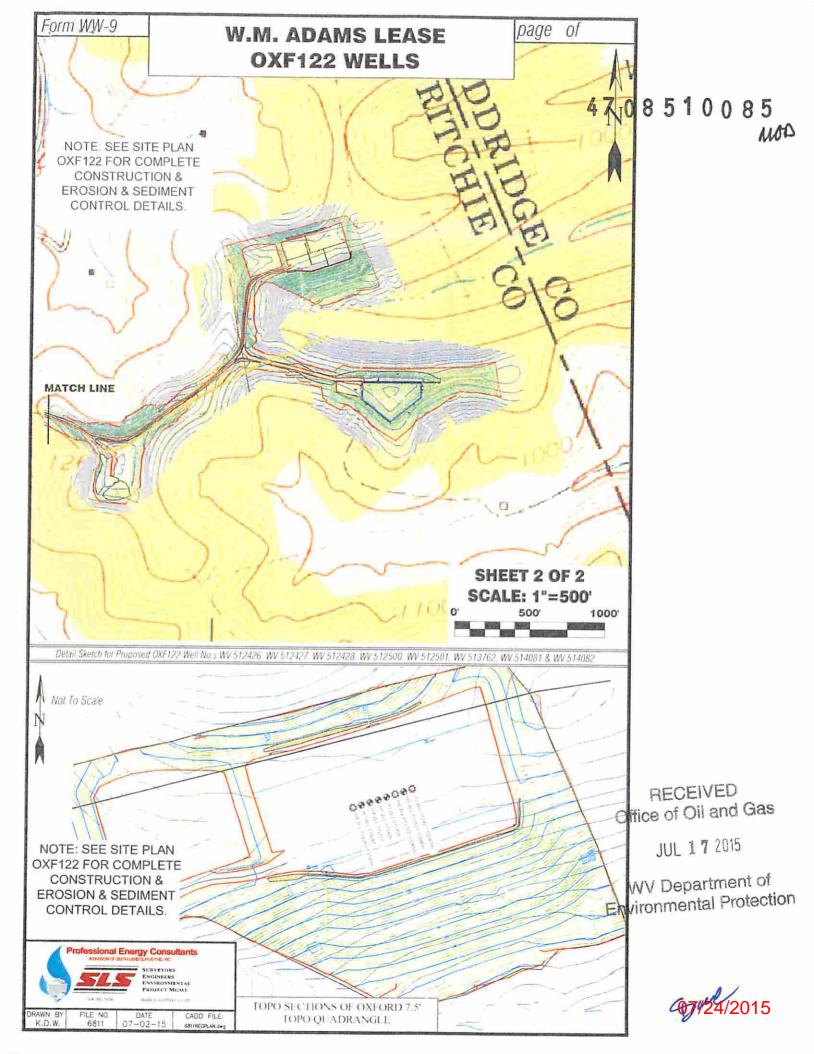
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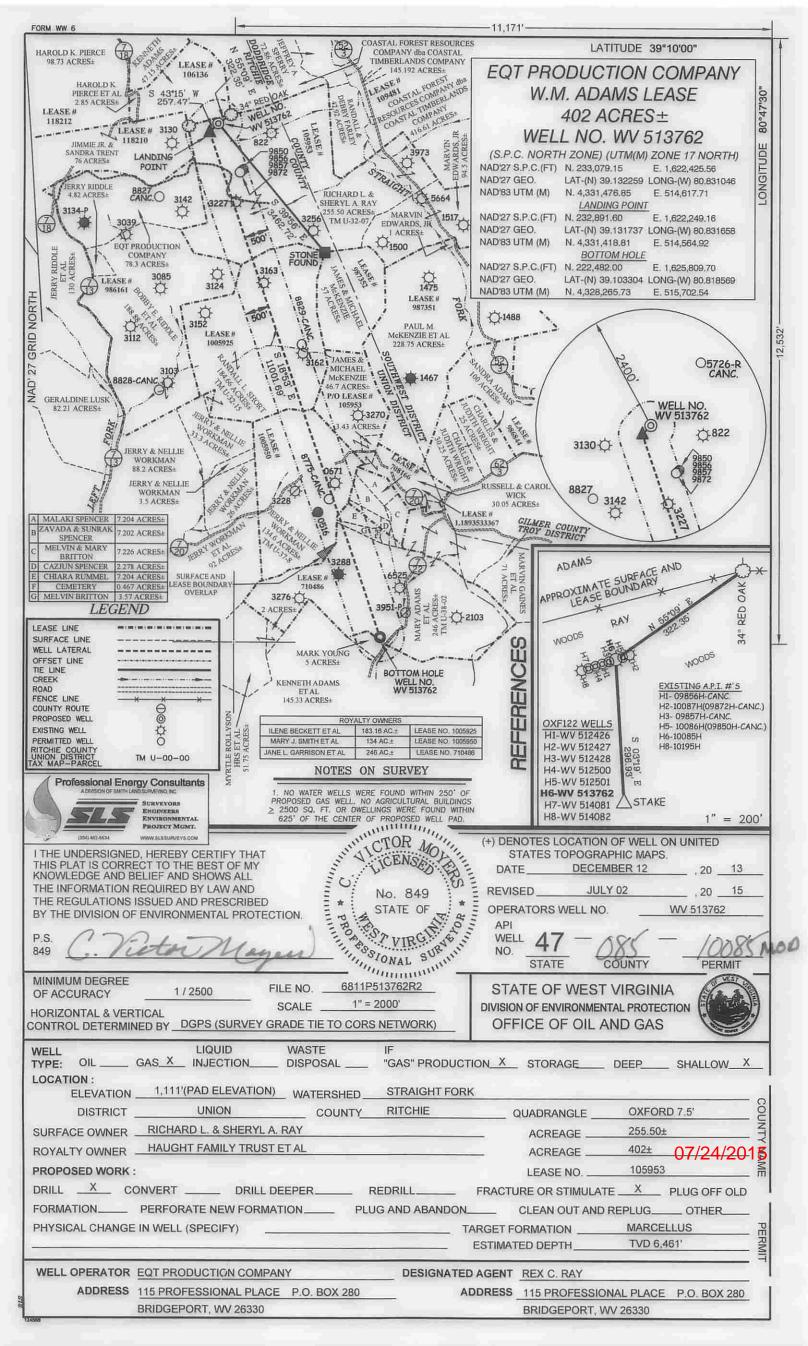
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WW-6A1 (5/13)

Operator's Well No.

513762

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	e or				
Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Pag	ge
<u>105953</u>			Min 1/8 pd		
	William Adams, et ux	The Philadelphia Company of West Virginia	-	LB29/244	
	The Philadelphia Company of West Virginia	Pittsburgh and West Virginia Gas Company		LB55/362	
	Pittsburgh and West Virginia Gas Company	Equitable Gas Company		LB126/473	
	Equitable Gas Company	Equitrans, Inc.		LB201/253	
	Equitrans, Inc.	Equitable Production-Eastern States, Inc.		LB234/830	
	Equitable Production-Eastern States, Inc.	Equitable Production Company		DB281/346	Doddrid
	Equitable Production Company	EQT Production Company		DB281/346	Doddrid
1005925			Min 1/8 pd		
	Delphia G. Taylor and George H. Taylor	Hope Natural Gas Company		LB81/263	
	Hope Natural Gas Company	Consolidated Gas Supply Corp.		LB151/436	
	Consolidated Gas Supply Corp.	Consolidated Gas Transmission Corp.		LB169/756	
	Consolidated Gas Transmission Corp.	CNG Development Co.		LB176/601	
	CNG Development Co.	CNG Producing Co.		CB1096/124	Delawar
	CNG Producing Co.	Dominion Exploration & Production, Inc.		CB82/07	Delawar
	Dominion Exploration & Production, Inc.	Dominion Transmission, Inc.		LB251/621	
	Dominion Transmission, Inc.	CONSOL Energy Holdings, LLC		LB251/648	
	CONSOL Energy Holdings, LLC	CONSOL Gas Co.		CB6/576	
	CONSOL Gas Co.	CNX Gas Co., LLC		CB6/634	
	CNX Gas Co., LLC	EQT Production Co.		LB279/333	
<u>1005950</u>		Mi	n 1/8 pd		
	James E. Spurgeon, et al	Claron Dawson and C. Crane	-	LB127/239	
	Claron Dawson and C. Crane	Sancho Oil and Gas Corp.		LB232/172	
	Sancho Oil and Gas Corp.	Stephen D. Ward		LB232/174	
	Stephen D. Ward	Antero Resources Appalachian Corp.		LB256/22	
	Antero Resources Appalachian Corp.	EQT Production Company		DB282/379	

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710486

Min 1/8 pd

Lewis Garrison, et ux

Carnegie Natural Gas Company

Carnegie Production Company

Carnegie Production Company/USX

Equitable Resources Inc.

Equitable Production Co.

EQT Production Company

LB228/859 See attached DB274/471

LB42/4

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: EQT Production Company

By:
Its: Permitting Supervisor

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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, ("CPC"), (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

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.

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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. Beghini

Title: Vice Chairman - Marathon Group

EQUITABLE RESOURCES, INC.

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

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