

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

December 08, 2015

EQT PRODUCTION COMPANY 120 PROFESSIONAL PLACE BRIDGEPORT, WV 26330

Re: Permit Modification Approval for API Number 8510137, Well #: 513761

Added Sub-Surface Easement, Updated Lease Information, Changed Bottom Hole

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.

Sincerely, Taylor Bree For

Gene Smith
Assistant Chief of Permitting

Office of Oil and Gas



October 27, 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 47-085-10137

Dear Mr. Smith,

Enclosed is an updated WW-6B, schematics, WW-6A1, rec plan, SSE and mylar plat, signed by the inspector. EQT would like to revise the landing point & bottom hole. The top hole has not changed. Since this well was already drilled an as drilled plat is included.

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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STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: EQT Produ	ction Company		306686	085	4	526
			Operator ID	County	District	Quadrangle
2) Operator's Well Number:		513761		Well Pad Na	ime	OXF163
3) Farm Name/Surface Owner:		Pierce		_ Public Road	Access:	CR 7/18
4) Elevation, current ground:	1,175.0	Eleva	tion, proposed p	oost-constructio	on:1,15	8.5
5) Well Type: (a) Gas	Oil	Un	derground Stor	age		
Other						
(b) If Gas:	Shallow	4	Deep			
	Horizontal					
6) Existing Pad? Yes or No:	yes					
Proposed Target Formation(s) Target formation is Marcelle Proposed Total Vertical Depth	us at a depth of 656	0' with the antic	ipated thickness to	be 53 feet and anti	ure(s). icipated target pres	sure of 2190 PSI
9) Formation at Total Vertical De	oth:			Marcellus		
10) Proposed Total Measured De				15,325		
11) Proposed Horizontal Leg Len				8,075		
12) Approximate Fresh Water Str	ata Depths:	176, 453, 517				
13) Method to Determine Fresh V		By offset wells				
 Approximate Saltwater Depth 				1,156		
15) Approximate Coal Seam Dep	ths:		No C	oal Seams Pre	sent	
16) Approximate Depth to Possib 17)Does proposed well location adjacent to an active mine?	le Void (coal mii n contain coal s	ne, karst, oth eams directly	ner): y overlying or		None rep	orted
(a) If Yes, provide Mine Info:	Name:					
	Depth:					
	Seam:					
	Owner:					

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CASING AND TUBING PROGRAM

18)

TYPE	Size	New	Grade	Weight per	FOOTAGE:	INTERVALS:	CEMENT:
		<u>or</u> <u>Used</u>		<u>ft.</u>	for Drilling	Left in Well	Fill- up (Cu.Ft.)
Conductor	20	New	MC-50	81	40	40	38 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	1,055	1,055	914 C.T.S.
Coal	-	•	•	-	-	•	-
Intermediate	9 5/8	New	MC-50	40 .	3,036	3,036	1,184 C.T.S.
Production	5 1/2	New	P-110	20	15,325	15,325	See Note 1
Tubing	2 3/8		J-55	4.6			May not be run, if run will be set 100 less than TD
Liners							

TYPE	<u>Size</u>	<u>Wellbore</u> <u>Diameter</u>	<u>Wall</u> <u>Thickness</u>	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	0.375	-	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	* See Note 2	1.21
Coal	-	-	-	-	-	-
Intermediate	9 5/8	12 3/8	0.395	3,590	* See Note 2	1.21
Production	5 1/2	8 1/2	0.361	12,640	-	1.27/1.86
Tubing					 	, 1.00
Liners						

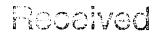
<u>Packers</u>

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.

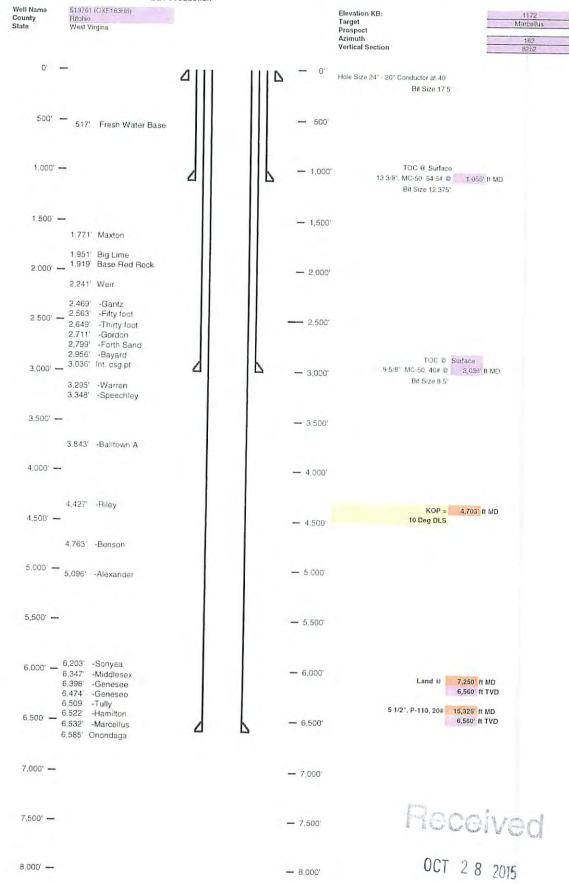
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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:
Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go down to an approximate depth of 4703°. Then kick
off the horizontal leg into the Marcellus formation using a slick water frac.
20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:
Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from
treshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum
internal casing pressure is expected to average approximately 8500 psi, maximum anticipated treating rates are expected to average
approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.
Average approximately 200,000 pounds of sand per stage.
21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres):
22) Area to be disturbed for well pad only, less access road (acres):
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 at the shoe and one spaced every 500'.
 Intermediate: Bow spring centralizers - One cent at the shoe and one spaced every 500'. Production: One spaced every 1000' from KOP to Int csg shoe
24) Describe all cement additives associated with each cement type. Used to speed the setting of cement slurries. Surface (Type 1 Cement): 0-3% Calcium Chloride
0.4% flake. Loss Circuiton Material (LCM) is used to combat the loss of the cement slurry to a thief zone.
intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow low temperature formations to accord to accordance to accord to according to
slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate)
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.
25) Proposed borehole conditioning procedures. <u>Surface</u> : Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating
one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5
minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on
and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up.
Intermediate: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at
surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance
hole cleaning use a soap sweep or increase injection rate & foam concentration.
Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume.
Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across
the shakers every 15 minutes
Piocoived
Note: Attach additional sheets as needed.

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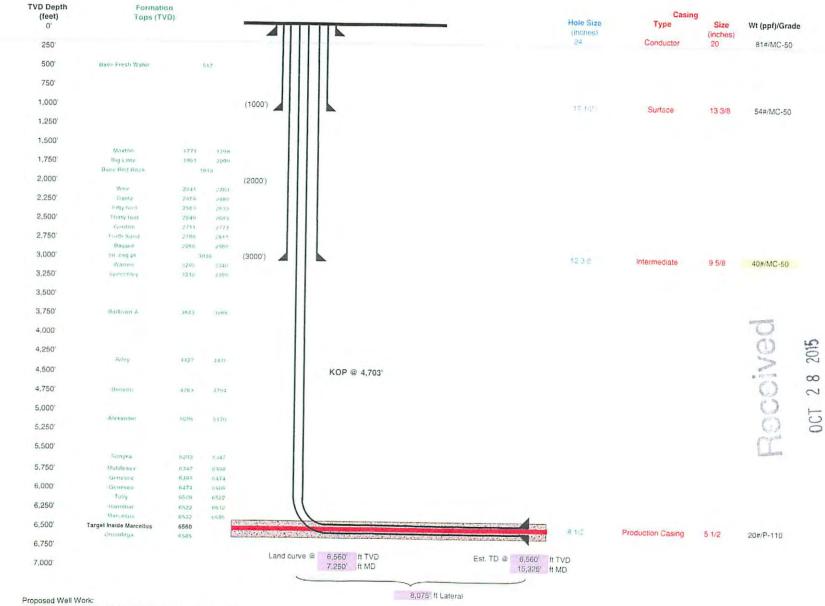


Well 513761 (OXF163H6)

EQT Production

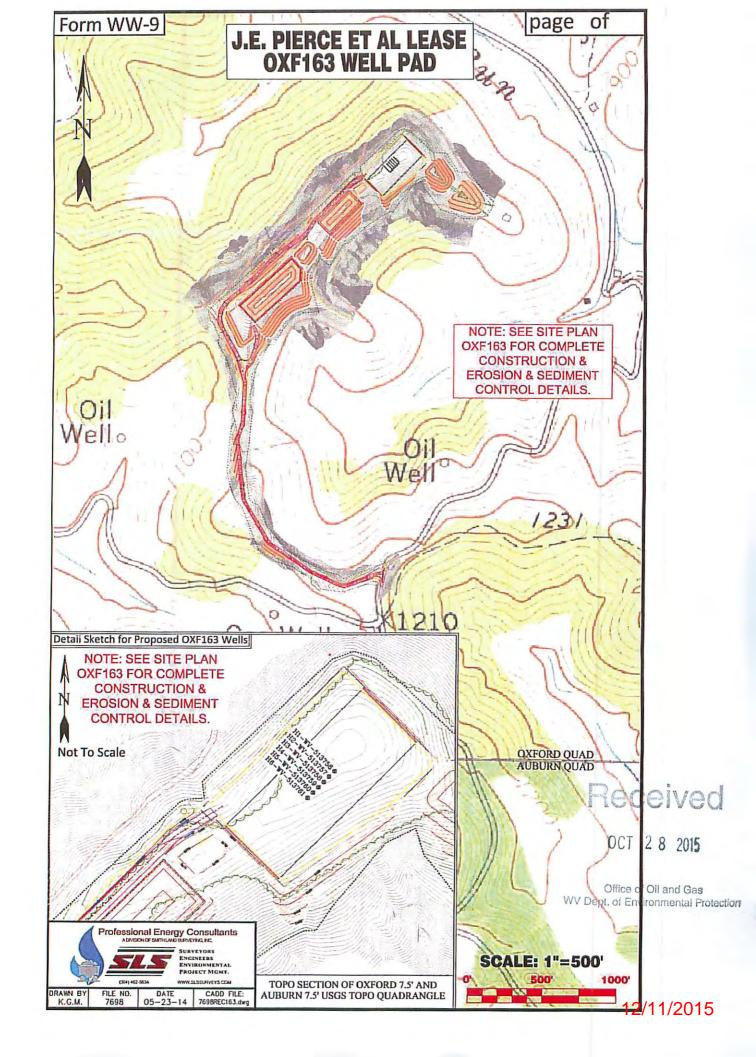
Oxford Ritchie West Virgina

Azimuth 162 Vertical Section 8252



Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go down to an approximate depth of 4703'.

Then kick off the horizontal leg into the Marcellus formation using a slick water frac.





EQT Production Company 2400 Zenith Ridge Rd. Suite 200 Canonsburg, PA 15317 www.eqt.com

Todd Klaner Manager, Permitting tklaner@egt.com

October 26, 2015

WV DEP Reviewer

RE: EQT Production Company PAD ID – OXF163 Well# - 513761 Ritchie County

Dear Reviewer,

This well indicated by this permit application contains a Subsurface Easement Agreement for non-productive portions of the well bore. Attached is a recorded copy of the Subsurface Use Agreement which gives EQT the right to drill below the surface of the tract 27/23 shown on the well plat.

EQT Production understands that the WVDEP will issue the permit in the normal process subject to the completeness of the requirements of the Office of Oil and Gas and does not take a position with regards to the property rights under this agreement.

EQT Production agrees that the WVDEP's issuance of the permit is in no way an affirmance or validation of EQT Production's claimed rights.

Regards,

Todd Klaner

Manager, Permitting

EQT Production Company

Received

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201500000882
Filed for Record in
"RITCHIE COUNTY, MV
FRACIE D. MCODHALD, COUNTY CLERK
02-12-2015 At 08:33 dm.
RW/EASEMENY 11.00
Book 333 Page 549 - 557

SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT

This SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT ("Agreement") is made the Haday of January, 2015, between Jon Mathew Bonnell and Sherri Bonnell, his wife, (hereinafter "Grantor" whether one or more), whose address is 9 Crystal Lake Road West Union, WV 26456 and EQT PRODUCTION COMPANY, (hereinafter "EQT"), whose corporate headquarters are located at 625 Liberty Avenue, Suite 1700, Pittsburgh, PA, 15222.

Property. Grantor owns that certain tract of land located in <u>Union</u> District, <u>Ritchie County</u>, West Virginia containing <u>133.42</u> acres, more or less, and conveyed to Grantor in Deed Book <u>268</u>, at page <u>129</u>. Map <u>27</u> Parcel <u>23</u>

- 1. <u>Subsurface</u>. For purposes of this Agreement, the subsurface shall be limited to the subsurface region and underground lying below the deepest economically mineable and merchantable coal seam.
- 2. Grant. In consideration of Ten Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Grantor grants to EQT a non-exclusive, perpetual right of way and subsurface easement within and underlying the Land for the purpose of locating and maintaining a total of three wellbores (513759/513760/513761) for the production of hydrocarbons by EQT from EQT's adjacent mineral tracts and leases. This right of way and easement shall run with the land and shall remain in force and effect until released and relinquished by EQT back to the Grantor, in writing.
- 3. Wellbores. Upon completion of any wellbore within the subsurface underlying the Land (the "Subsurface Land"), the subsurface easement in the area of the wellbore and the one hundred (100') feet on each side of the wellbore that parallels it shall become an exclusive right of way and easement in that area. The wellbore locations are generally described in the plat(s) filed with the West Virginia Department of Environmental Protection (the "DEP") for well(s): If an as-built plat is not available from the DEP for a wellbore located within the Subsurface Land, any third-party with the right to operate within the Subsurface Land may contact EQT's land department for a copy of such as-built plat. After the date of this Agreement, EQT shall provide notice of additional wellbores located within the remaining Subsurface Land by filing an amendment, affidavit or other appropriate document.
- 4. No Surface Operations. This Agreement does not grant EQT the right to conduct any operations on the surface of the Land. No surface operations shall be conducted on the Land by EQT unless the parties enter into a separate agreement.

5. Miscellaneous Provisions

- (a) This instrument may be executed in one or more counterparts, each of which will be deemed to be an original copy of this instrument and all of which will be deemed to comprise one single instrument.
- (b) The parties agree that this Agreement shall be filed of record together with all exhibits thereto.
- (c) For no additional consideration, Grantor shall execute such further documents as may be reasonably requested by EQT from time to time to effectuate the intent of this Agreement.

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IN WITNESS WHEREOF, effective as of the date first above written. This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors, assigns, heirs and administers and executors.

[NAME OF GRANTOR]

Jon Mathew Bonnell

Sherri Bonnell

EQT PRODUCTION COMPANY

Name: John W. Damato

Title: Attorney-In-Fact

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STATE/COMMONWEALTH OF West Virginia; COUNTY OF Doddridge: ImbER (TARTNES, Sa Notary Public, on this day personally appeared Jon Mathew Blankhown to me and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 14th day of January 2015. December 4, 2022 My Commission expires: ISEALL Notary Public STATE/COMMONWEALTH OF WEST VIRGINA; COUNTY OF HARRISON: , a Notary Public, on this day Before me, personally appeared, known to me to be the Attorney-in-feet of EQT PRODUCTION COMPANY, subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 20 day of and y 2015. My Commission expires: June 16, 2016 State of Wort Virgin Kimberly Harman Notary Public OFFICIAL SEAL
Commissioner Of West Virginia
ECT P. B. H. Company, 2025 Liberty Avenue, Suite 1700, Pittsburgh, PA 15222

Clarksburg, WV 26301 My Commission Expires June 13, 2016

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Declaration of Consideration of Value

The Grantee hereby dec	clares that the cons	sideration being paid	i to Grantor fo	or the transfer of real
estate is \$ 10.00				

Given under my hand this 9th day of February, 2015.

EQT PRODUCTION COMPANY John W. Damato

Attorney-In-Fact

201500000882 EQT 115 PROFESSIONAL PLACE PO BOX 280 BRIDGEPORT WV 26330

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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
Lease 118212			min pd 1/8th	
	J. E. Pierce, L. L. Pierce & Felsie Pierce	Pittsburgh & WV Gas. Co.		LB 45/257
	Pittsburg & WV Gas Co.	Equitable Gas Company		DB 126/473
	Equitable Gas Company	Equitrans, Inc.		LB 201/253
	Equittrans, Inc.	Equitable Production Company		LB 192/19
	Equitable Production Company	EQT Production Co		DB 281/346
			min pd 1/8th	
Lease 118210	B. M. Pierce & G. M. Pierce	Pittsburgh & WV Gas. Co.		LB 45/253
	Pittsburg & WV Gas Co.	Equitable Gas Company		DB 126/473
	Equitable Gas Company	Equitrans, Inc.		LB 201/253
	Equittrans, Inc.	Equitable Production Company		LB 192/19
	Equitable Production Company	EQT Production Co.		DB 281/346
			min pd 1/8th	
<u>Lease 986161</u>	Shirley S. Riddle, et al	E. W. Bowers		LB105/146
	E. W. Bowers	A. W. Bowers & George Bowers		WB65/66
	A. W. Bowers & George Bowers	Rick J. Garret & Desari Garrett		DB251/211
	Rick J. Garret & Desari Garrett	EQT Production Co.		DB251/865
ease 1005925			min pd 1/8th	
	George H. Taylor, et al	Hope Natural Gas Co.		LB81/263
	Hope Natural Gas Co.	Consolidated Gas Supply Corp.		LB151/436
	Consolidated Gas Supply Corp.	Consolidated Gas Transmission Co	orp.	LB169/756
	Consolidated Gas Transmission Corp.	CNG Development Co.		LB217/194
	CNG Development Co.	CNG Producing Co.		CB1096/124 (Delaware
	CNG Producing Co.	Dominion Exploration & Production	, Inc.	CB82/07 (Delaware)
	Dominion Exploration & Production, 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>ГМ 27/23</u>	Jon & Sherri Bonnell	EQT Production Co.	n/a	Sub Surface(see attach

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.

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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

Received

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