west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

August 9, 2016
PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE

BRIDGEPORT, WV 26330

Re: Permit Modification Approval for 513757
47-085-10133-00-00

Modified with Sub-Surface Tract

EQT PRODUCTION COMPANY

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: 513757
Farm Name: PIERCE, HAROLD K.
U.S. WELL NUMBER: 47-085-10133-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 08/09/2016

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47- 085 - 10133 MOD 4708510133
OPERATOR WELL NO. 513757
Well Pad Name: OXF163

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

1) Well Operator: EQT Production Company | 306686 | Ritchie | Union | Oxford
Operator ID | County | District | Quadrangle

2) Operator's Well Number: 513757 Well Pad Name: OXF163

3) Farm Name/Surface Owner: Pierce Public Road Access: CR 7/18

4) Elevation, current ground: 1158.4 Elevation, proposed post-construction: 1158.4

5) Well Type (a) Gas X Oil ____ Underground Storage ____
Other ____
(b)If Gas Shallow X Deep ____
Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 6527', 53', 2190 PSI

8) Proposed Total Vertical Depth: 6527

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14606

11) Proposed Horizontal Leg Length: 7405

12) Approximate Fresh Water Strata Depths: 173, 450, 514

13) Method to Determine Fresh Water Depths: By offset wells

14) Approximate Saltwater Depths: 1153

15) Approximate Coal Seam Depths: none identified

16) Approximate Depth to Possible Void (coal mine, karst, other): none

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes ____ No X

(a) If Yes, provide Mine Info: Name: ____
Depth: ____
Seam: ____
Owner: ____

RECEIVED
Office of Oil and Gas
JUL 12 2016
WV Department of
Environmental Protection

4708510133

WW-6B
(04/15)

API NO. 47- 085 - 10133 MOD
OPERATOR WELL NO. 513757
Well Pad Name: OXF163

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20	New	A-500	78.6	40	40	44.84 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	1054	1054	1050.2 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	A-500	40	3026	3026	1321.6 ft^3 / CTS
Production	5 1/2	New	P-110	20	14597	14597	500' above top producing zone
Tubing	2 3/8		J-55	4.7		May not be run, if run set 40' above top perf or 80° inclination	
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	.375	1378	1102	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	Class A	1.18
Coal							
Intermediate	9 5/8	12 3/8	.395	3950	3160	Class A	1.18
Production	5 1/2	8 1/2	.361	12640	10112	Class A/H	1.26/1.97
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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Office of Oil and Gas
JUL 12 2016
WV Department of
Environmental Protection

WW-6B
(10/14)

API NO. 47- 085 - 10133 Mon
OPERATOR WELL NO. 513757
Well Pad Name: OXF163

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. Drill the vertical to an approximate depth of 5312'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

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 freshwater 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 anticipated internal casing pressure is expected to be approximately 10000 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.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): no additional disturbance

22) Area to be disturbed for well pad only, less access road (acres): no additional disturbance

23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One centralizer at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One centralizer at the shoe and one spaced every 500'.
- Production: One solid body centralizer spaced every other joint from production casing shoe to KOP

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

Conductor: Class A no additives
Surface (Class A Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries
Intermediate (Class A Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries.
Production:
Lead (Class A Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50:50 POZ (extender)
Tail (Class H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation. 60 % Calcuim Carbonate. Acid solubility.

25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.
Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.
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.

*Note: Attach additional sheets as needed.

4708510133

MOD

WW-6A1 attachment

Operator's Well No. 513757

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Lease 118212	**J.E. Pierce, et al (current royalty owner)**		***	
	J. E. Pierce, L. L. Pierce & Felsie Pierce (original lessor)	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
TMP 27-23	Jon Mathew and Sherri L. Bonnell	EQT Production Company	n/a	330/273 Subsurface
Lease 118210	**B.M Pierce, et ux (current royalty owner)**		***	
	B. M. Pierce & G. M. Pierce (original lessor)	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
Lease 107857	**J.P. Smith, et ux (current royalty owner)**		Min pd 1/8	
	Betty Jean Nutter (original lessor)	EQT Production Co.		LB 255/510
	Jerry Allen Riddle	EQT Production Co.		LB 255/516
Lease 986161	**Shirley & Ruth Riddle Heirs (current royalty owner)**		***	
New lease #1007216	Shirley S. Riddle, et al (original lessor)	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

*** We will pay one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas so extracted, produced, or marketed before deducting the amount to be paid to or set aside for the owner of the oil or gas in place, on all such oil or gas to be extracted, produced, or marketed from the well.

4708510133

Where energy meets innovation.℠

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

Todd Klaner
Manager, Permitting
tklaner@eqt.com

MOD

Via E-Mail

June 1, 2016

WV DEP Reviewer

RE: EQT Production Company
PAD ID – OXF163
Well# - 513757
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 Memorandum of Subsurface Use Agreement which gives EQT the right to drill below the surface of the tracts 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

Instrument 201400003962
Book Page 330 273
4708510133
MOD

201400003962
Filed for Record in
RITCHIE COUNTY, WV
TRACIE D. MCDONALD, COUNTY CLERK
07-22-2014 At 12:01 pm.
RW/EASEMENT 163.00
Book 330 Page 273 - 276

201400003962
ST TAX $ 99.00
CNTY TAX $ 33.00
Date Paid 07-22-2014

SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT

This SUBSURFACE RIGHT-OF-WAY AND EASEMENT AGREEMENT ("Agreement") is made the 20th day of May, 2014, between **Jon Mathew Bonnell and Sherri L. 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 Union District, Ritchie County, West Virginia containing 133.42 acres, more or less, and conveyed to Grantor in Deed Book 268, at page 129. Map 27 Parcel 23

1. **Subsurface.** 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 (513756 / 513757 / 513758) 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.

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 Matthew Bonnell

Sherri L. Bonnell

EQT PRODUCTION COMPANY

Name: John Damato

Title: Attorney-in-fact

4708510133

MOD

STATE/ OF West Virginia ;
COUNTY OF Doddridge :

Before me, Rex K. Bumgardner II, a Notary Public, on this day personally appeared Jon Mathew Bonnell and Sherri Bonnell, his wife, known 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 20th day of May, 2014

My Commission expires: 6/13/2014.

[SEAL]

OFFICIAL SEAL
Commissioner Of West Virginia
REX K. BUMGARDNER II
145 Ocello St.
Clarksburg, WV 26301
My Commission Expires June 13, 2016

Notary Public

STATE OF West Virginia ;
COUNTY OF Harrison ;

Before me, Rex K. Bumgardner II, a Notary Public, on this day personally appeared, known to me to be the John Damato 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 20th day of May, 2014.

My Commission expires: 6/13/2014.

[SEAL]

OFFICIAL SEAL
Commissioner Of West Virginia
REX K. BUMGARDNER II
145 Ocello St.
Clarksburg, WV 26301
My Commission Expires June 13, 2016

Notary Public

Prepared by: EQT Production Company, 625 Liberty Avenue, Suite 1700, Pittsburgh, PA 15222

4708510133

MOD

May 20, 2016

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

Re: OXF 163, 513757, 47-08510133

Dear Mr. Martin,

EQT Production Company is submitting an application for a new well work permit for the above well number. 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.

Sincerely,

Vicki Roark
Permitting Supervisor-WV

EQT Production 115 Professional Place I P.O. Box 280 I Bridgeport, WV 26330
T 304.848.0000 I F 304.848.0040 I www.eqt.com

FORM WW 6

ROYALTY OWNERS		
B.M. PIERCE ET UX	84.50 AC.±	LEASE NO. 118210
J.P. SMITH ET UX	130 AC.±	LEASE NO. 107857
SHIRLEY & RUTH RIDDLE HEIRS AND/OR ASSIGNS	272 AC.±	LEASE NO. 986161

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.
3. NONPRODUCTIVE SUBSURFACE RIGHT OF WAY

EQT PRODUCTION COMPANY
J.E. PIERCE ET AL LEASE
108 (98.73±) ACRES±
WELL NO. WV 513757
(OXF163 H2)

AS DRILLED COORDINATES

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 234,487.9	E. 1,619,117.6
NAD'27 GEO.	LAT-(N) 39.135992	LONG-(W) 80.842780
NAD'83 UTM (M)	N. 4,331,889.2	E. 513,602.8
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 233,897.8	E. 1,618,525.6
NAD'27 GEO.	LAT-(N) 39.134347	LONG-(W) 80.844835
NAD'83 UTM (M)	N. 4,331,706.4	E. 513,425.5
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 226,888.4	E. 1,620,901.8
NAD'27 GEO.	LAT-(N) 39.115201	LONG-(W) 80.836092
NAD'83 UTM (M)	N. 4,329,583.1	E. 514,185.0

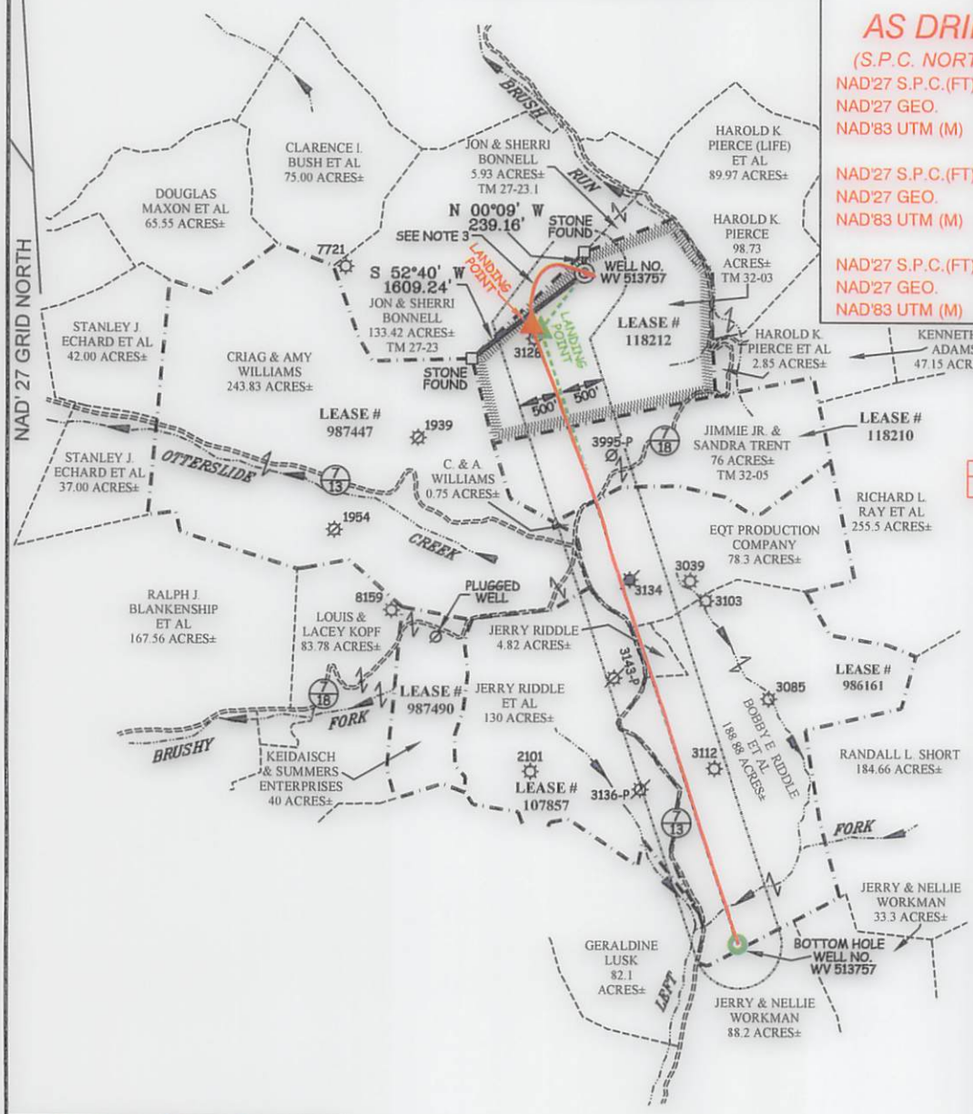
LATITUDE 39°10'00"

LONGITUDE 80°50'00"

2,680'

11,173'

NAD'27 GRID NORTH



SUBSURFACE AGREEMENT		
JOHN M. & SHERRI L. BONNELL	133.42 AC.±	TM 27-23

LEGEND:

LEASE LINE	
SURFACE LINE	
PROPOSED PATH	
AS DRILLED PATH	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
FENCE LINE	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PLUGGED WELL	
TAX MAP–PARCEL	00–00

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-5634 WWW.SLSSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 2288 *Earl N. Thompson*

EARL N. THOMPSON LICENSED No. 2288 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE MAY 27, 20 14

REVISED 08/22/14, 10/27/14, 12/03/15, 05/16/16 & 06/08/16

OPERATORS WELL NO. WV 513757

API WELL NO. 47 — 085 — 10133H (MOD)
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7698AD513757R2

SCALE 1" = 2000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :

PAD ELEVATION 1,158.4' WATERSHED BRUSH RUN OF MIDDLE FORK

DISTRICT UNION COUNTY RITCHIE QUADRANGLE OXFORD 7.5'

SURFACE OWNER HAROLD K. PIERCE ACREAGE 98.73±

ROYALTY OWNER J.E. PIERCE ET AL ACREAGE 108± (98.73±)

PROPOSED WORK : LEASE NO. 118212

DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___

PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH 6495'

COUNTY NAME PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280

BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

SLS 124508

FORM WW 6

ROYALTY OWNERS		
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108 (98.73±) ACRES±
WELL NO. WV 51375 7
(OXF163 H2)

AS DRILLED COORDINATES

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LATITUDE 39°10'00"

LONGITUDE 80°30'00"

11,172'

2,680'

NAD 27 GRID NORTH

SUBSURFACE AGREEMENT		
JOHN M. & SHERRI L. BONNELL	133.42 AC.±	TM 27-23

LEGEND:

- LEASE LINE
- SURFACE LINE
- PROPOSED PATH
- AS DRILLED PATH
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FENCE LINE
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PLUGGED WELL
- TAX MAP–PARCEL 00–00

Professional Energy Consultants
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P.S. 2288

EARL N. THOMPSON
LICENSED
No. 2288
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE MAY 27, 20 14

REVISED 08/22/14, 10/27/14, 12/03/15, 05/16/16 & 06/08/16

OPERATORS WELL NO. WV 51375

API WELL NO. 47 — 085 — 10133H MOD
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7598ADS13757R2

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE: OIL ____ GAS X INJECTION ____ DISPOSAL ____ WASTE IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

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PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH 6495'

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

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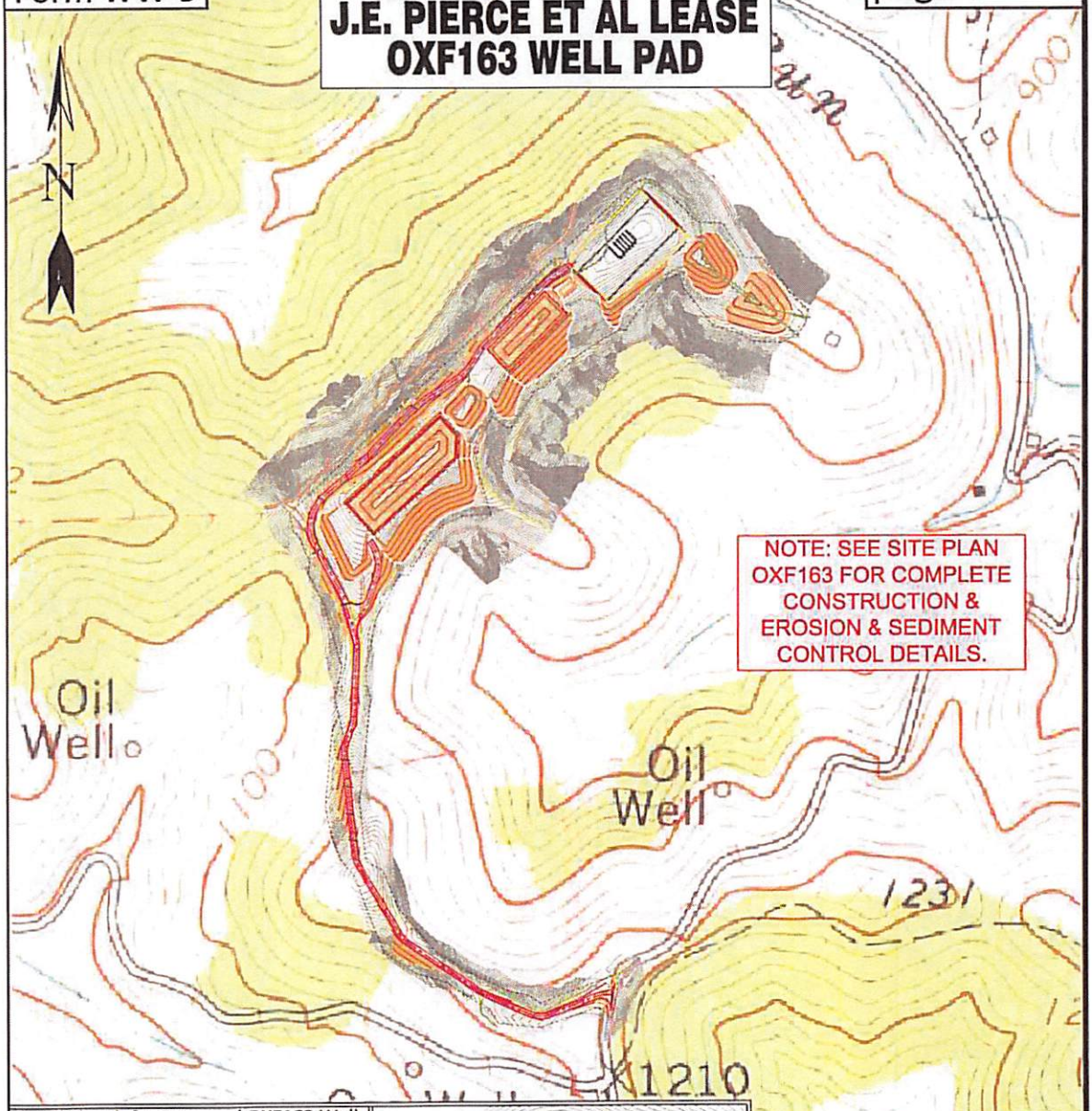
BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

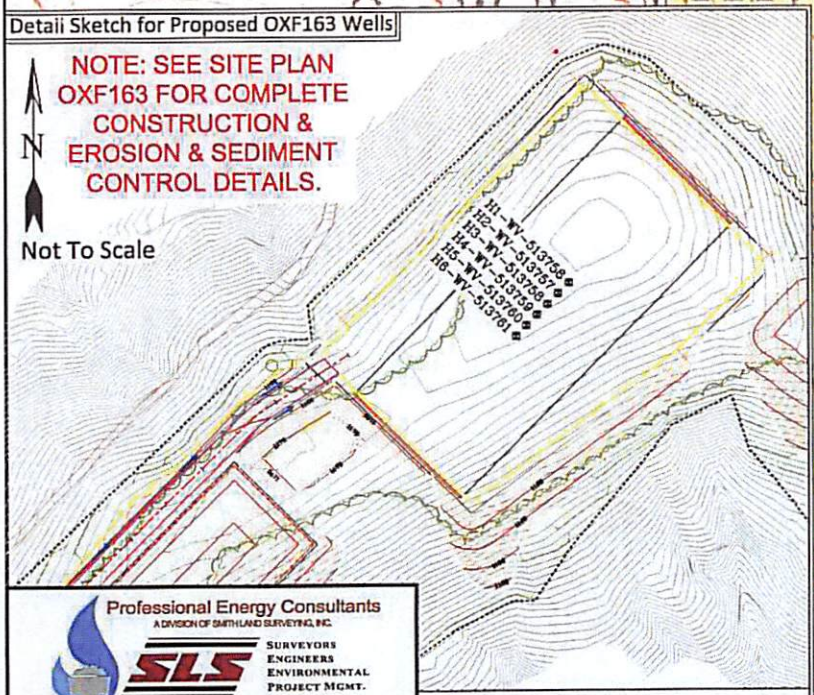
Form WW-9

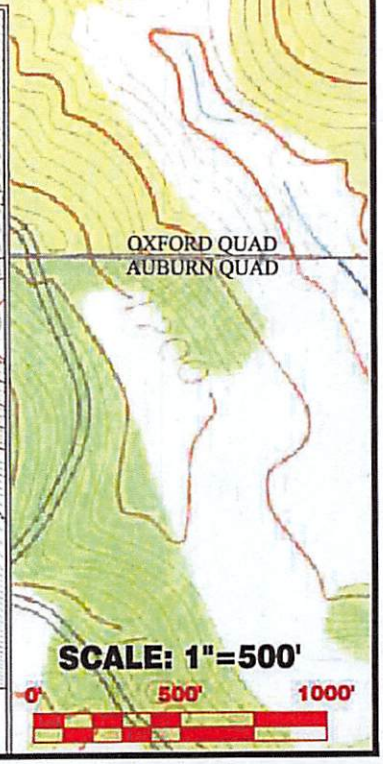
page of

J.E. PIERCE ET AL LEASE
OXF163 WELL PAD



Detail Sketch for Proposed OXF163 Wells





Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
(304) 462-5634
WWW.SLSSURVEYS.COM

DRAWN BY	FILE NO.	DATE	CADD FILE:
K.G.M.	7698	05-23-14	7698REC163.dwg

TOPO SECTION OF OXFORD 7.5' AND AUBURN 7.5' USGS TOPO QUADRANGLE

4708510133

MOD

4708510133

WW-6A1
(5/13)

Operator's Well No. 513757

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
	Equitrans, Inc.	Equitable Production Company		LB 192/19
	Equitable Production Company	EQT Production		DB 281/346
✓ Lease 118210			min pd 1/8th	
	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
	Equitrans, Inc.	Equitable Production Company		LB 192/19
	Equitable Production Company	EQT Production		DB 281/346
✓ Lease 987447				
	Craig H. Williams & Amy L. Williams	EQT Production Co.		DB 370/952
✓ Lease 107857				
	Betty Jean Nutter	EQT Production Co.		LB 255/510
	Jerry Allen Riddle	EQT Production Co.		LB 255/516

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

RECEIVED
Office of Oil and Gas
SEP 11 2014
WV Department of
Environmental Protection

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

WW - 6B
(3/13)

4708510133

CASING AND TUBING PROGRAM

18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: 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	2,955	2,955	1,152 C.T.S.
Production	5 1/2	New	P-110	20	13,706	13,706	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							

✓ letter attached

TYPE	Size	Wellbore Diameter	Wall Thickness	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						
Liners						

Packers

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

VOID

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)

9-10-14
Dell

RECEIVED
Office of Oil and Gas
SEP 11 2014
WV Department of
Environmental Protection

WW - 6B
(9/13)

4708510133

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 Production Company

Operator ID	County	District	Quadrangle
	085	4	526

2) Operator's Well Number: 513757 Well Pad Name: OXF163

3) Farm Name/Surface Owner : Pierce Public Road Access: CR 7/18

4) Elevation, current ground: 1,175.0 Elevation, proposed post-construction: 1,158.5

5) Well Type: (a) Gas • Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow • Deep _____

Horizontal •

6) Existing Pad? Yes or No: no

7) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Target formation is Marcellus at a depth of 6527' with the anticipated thickness to be 53 feet and anticipated target pressure of 4262 PSI

8) Proposed Total Vertical Depth: 6527'
9) Formation at Total Vertical Depth: Marcellus
10) Proposed Total Measured Depth: 13,706
11) Proposed Horizontal Leg Length 5,900
12) Approximate Fresh Water Strata Depths: 173, 450, 514
13) Method to Determine Fresh Water Depth: By offset wells
14) Approximate Saltwater Depths: 1,153
15) Approximate Coal Seam Depths: none reported
16) Approximate Depth to Possible Void (coal mine, karst, other): None reported
17) Does proposed well location contain coal seams directly overlying or adjacent to an active mine?
(a) If Yes, provide Mine Info: Name:
Depth:
Seam:
Owner:

VOID

RECEIVED
Office of Oil and Gas
SEP 11 2014
WV Department of
Environmental Protection

4708510133

July 8, 2016

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

Re: Modification of 47-085-10133

Dear Mr. Smith,

Please accept the attached updates for the above referenced permit. Upon inspection of our as-drilled plat, we noted the curve geometry crossed into an additional tract, for which EQT had acquired a subsurface agreement. Enclosed is an updated WW-6A1, WW-6B, mylar plat and rec plan reflecting corrections to update the permit file to be consistent with the as-drilled well bore.

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

Sincerely,

Vicki Roark
Permitting Supervisor-WV

Enc.

RECEIVED
Office of Oil and Gas
JUL 12 2016
WV Department of
Environmental Protection

FORM WW 6

ROYALTY OWNERS		
B.M. PIERCE ET UX	84.50 AC.±	LEASE NO. 118210
CRAIG H. WILLIAMS	243.83 AC.±	LEASE NO. 987447
J.P. SMITH ET UX	130 AC.±	LEASE NO. 107857

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.

EQT PRODUCTION COMPANY
J.E. PIERCE ET AL LEASE
108 (98.73±) ACRES±
WELL NO. WV 513757

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 234,487.9	E. 1,619,117.6
NAD'27 GEO.	LAT-(N) 39.135992	LONG-(W) 80.842760
NAD'83 UTM (M)	N. 4,331,889.2	E. 513,602.8
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 233,632.5	E. 1,618,076.4
NAD'27 GEO.	LAT-(N) 39.133600	LONG-(W) 80.846405
NAD'83 UTM (M)	N. 4,331,623.3	E. 513,289.9
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 228,021.2	E. 1,619,899.6
NAD'27 GEO.	LAT-(N) 39.118271	LONG-(W) 80.839683
NAD'83 UTM (M)	N. 4,329,923.1	E. 513,873.9

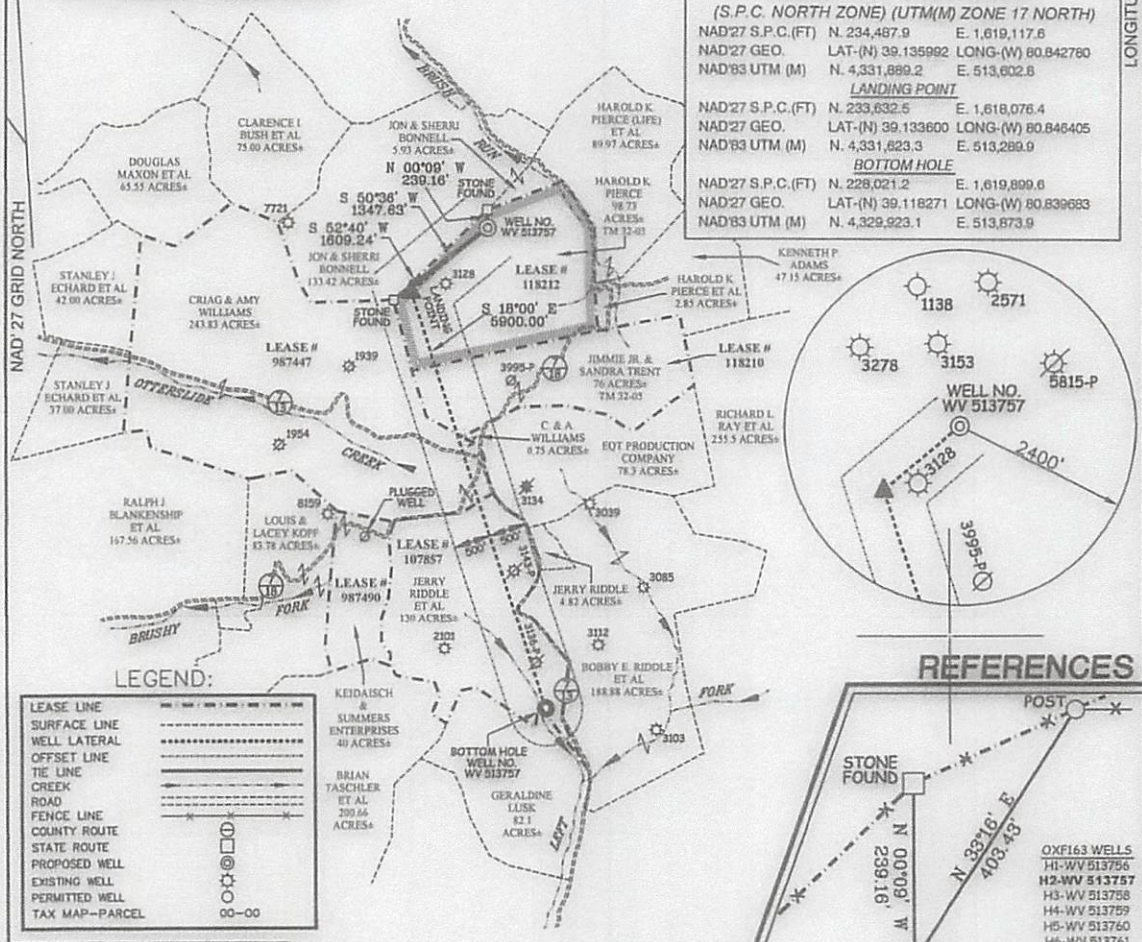
LATITUDE 39°10'00"

LONGITUDE 80°50'00"

2,680'

11,173'

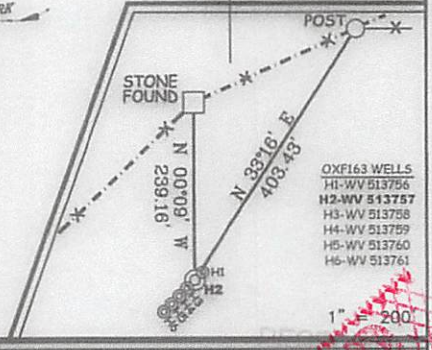
NAD' 27 GRID NORTH



LEGEND:

LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
FENCE LINE	
COUNTY ROUTE	
STATE ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
TAX MAP–PARCEL	00–00

REFERENCES



OXF163 WELLS
H1-WV 513756
H2-WV 513757
H3-WV 513758
H4-WV 513759
H5-WV 513760
H6-WV 513761

1" = 200'

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-5634 WWW.SLSSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 849 C. Victor Moyers

C. VICTOR MOYERS LICENSED No. 849 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE MAY 27 20 14

REVISED AUGUST 22 20 14

OPERATORS WELL NO. WV 513757

API WELL NO. 47 — 085 — 10133
STATE COUNTY PERMIT

VOID

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7698P513757R2

SCALE 1" = 2000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

WELL TYPE: OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION :

ELEVATION 1,175(GROUND)1,158.5'(PROPOSED) WATERSHED BRUSH RUN OF MIDDLE FORK

DISTRICT UNION COUNTY RITCHIE QUADRANGLE OXFORD 7.5'

SURFACE OWNER HAROLD K. PIERCE ACREAGE 98.73±

ROYALTY OWNER J.E. PIERCE ET AL ACREAGE 108± (98.73±)

PROPOSED WORK : LEASE NO. 118212

DRILL X CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ____ PERFORATE NEW FORMATION ____ PLUG AND ABANDON ____ CLEAN OUT AND REPLUG ____ OTHER ____

PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 6495'

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280

BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330