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

September 22, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-8510132, issued to EQT PRODUCTION COMPANY, 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: 513756
Farm Name: PIERCE, HAROLD K.
API Well Number: 47-8510132
Permit Type: Horizontal 6A Well
Date Issued: 09/22/2014

09/26/2014

API Number: 85-10132

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. The Office of Oil and Gas has approved your permit application, which includes your addendum. Please be advised that the addendum is part of the terms of the well work permit, and will be enforced as such. The Office of Oil and Gas must receive a copy of all data collected, and submitted in a timely fashion, but no later than the WR35 submittal.

2. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

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PERMIT CONDITIONS

8. 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.

9. 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.

10. 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.

09/26/2014

85-10132

EQT Production

Hydraulic Fracturing Monitoring Plan

Pad ID: Oxford 163

Ritchie County, WV

6/4/14

85-10132

Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in Ritchie County, WV prior to hydraulic fracturing at the following EQT wells on the Oxford 163 pad: 513756, 513757, 513758, 513759, 513760, and 513761.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 6,400' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Alexander formation (approximately 5,200' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with existing best management practices and emergency action plans for the site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the OOG is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Well Operators

EQT, using available data (WV Geological Survey, WVDEP website, and IHS data service), has identified all known conventional wells and well operators within 1,500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is attached.

Upon approval of this plan, EQT will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is attached.

The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to EQT and the OOG in the event of any changes in their well conditions.

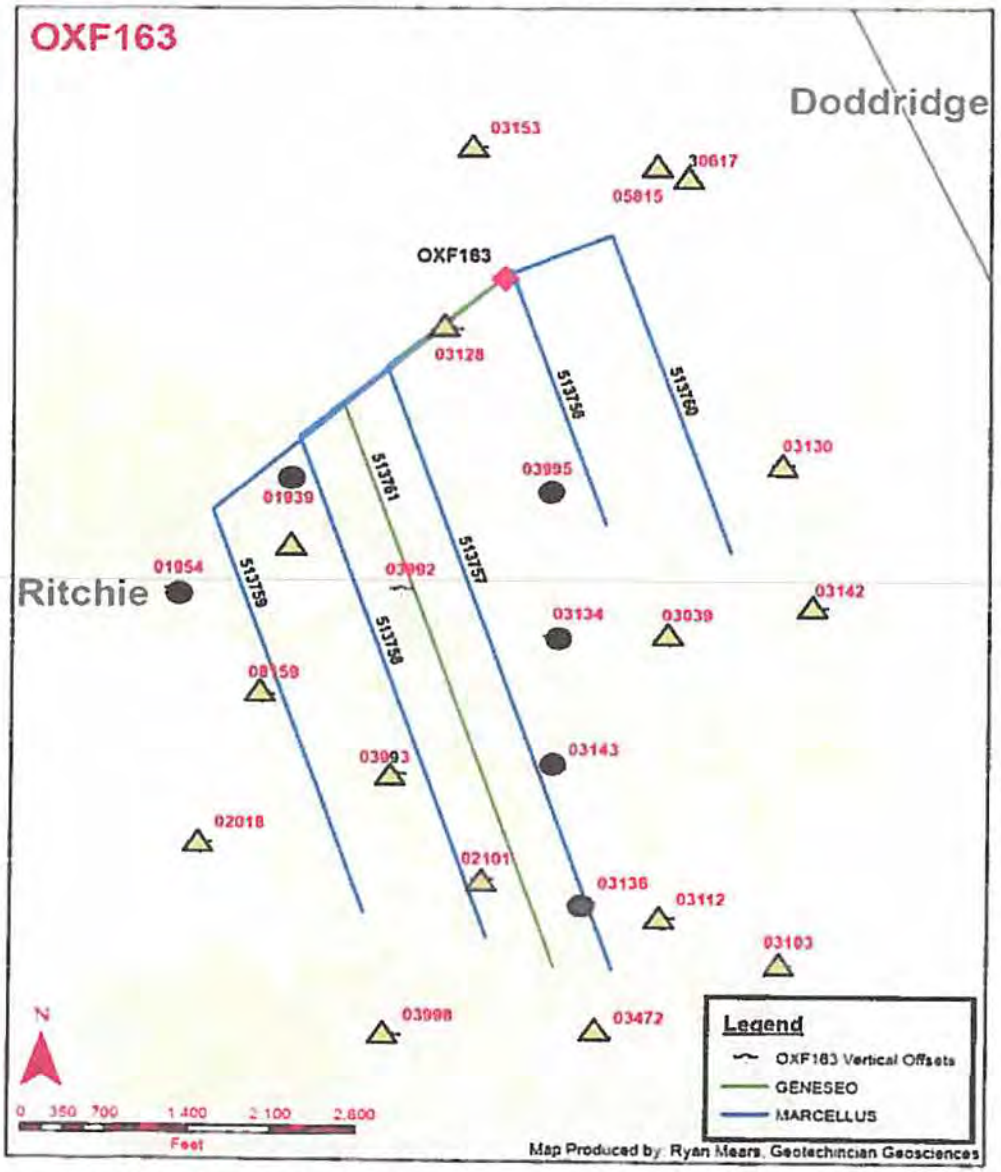
Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity
4. Notify the OOG and EQT if any changes in water, gas production, pressure, or other anomalies are identified

2. Reporting

EQT will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately in the event of any noted abnormalities.

OXF163 Vertical Offsets



△	Landed above 2,600'
●	Plugged

Note: Vertical wells are only displayed if within 1500' (lateral distance) of the new/planned horizontal OXF163 wells.

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Well ID	Prior Operator on Record	Operator-DEP*	Status	Latitude	Longitude	Vertical TD	Closest Distance from OXF163 Lateral Map View	OXF163 Horizontal TVD minus Offset Vertical TD	Hypotenuse Distance	Producing Formation	Gas Show/Pay Zone Depths	Notes
4708501939	PURSLEYS PULLING	Pursley Well & Pulling Service	GAS-P	39.1308	-80.8492	1969	151	7506	7507.518698	Injun Sand	1922-1963	Plugged 1/17/1974
4708501954	WILLIARD FERRELL	Ferrell, Willard E	GAS-P	39.128	-80.8526	2018	590	7555	7578.002705	Big Injun	1970-2011	Plugged 2/22/1964
4708502018	ALAMCO	Allegheny Land and Minderal Co.	GAS	39.1215	-80.8518	2106	1140	7643	7727.551294	Big Injun	2056-2087	Fractured 1959
4708502101	PURSLEYS PULLING	RITCHIE PETROLEUM CORP.	GAS	39.1206	-80.8435	1927	18	7464	7464.021704	Big Lime	1788-1794	Fractured 1959
4708503039	WOLF RUN OIL & GAS	RITCHIE PETROLEUM CORP.	GAS	39.1267	-80.8382	1925	1155	7462	7550.858825	Big Injun	1840-1875	Fractured 1959- 500 gals acid, 25k galswater, 25k lbs sand
4708503112	E W BOWERS & R WEEKS	RITCHIE PETROLEUM CORP.	GAS	39.1196	-80.8382	2159	786	7696	7736.03335	Big Injun	2035	Fractured 1966 - 700 bbl water, 23k lb 40/70m, 500 gals Acid
4708503128	WILLARD FERRELL	DEEM, J. F. OIL & GAS, LLC	GAS	39.1346	-80.8445	2080	49	7617	7617.157606	Big Injun	2048-2070	Fractured1966- 850 bbls fluid, 500 gals Acid
4708503134	WOLF RUN OIL & GAS	Wolf Run Oil & Gas	O&G-P	39.1268	-80.8414	2098	845	7635	7681.617668	Big Injun	1979-1998	Plugged 5/30/1974-Fractured 1966- 600 bbl water, 500 gals Acid, 15k lbs sand
4708503136	PURSLEYS PULLING	Ferrell, Willard E.	GAS-P	39.12	-80.8405	1899	216	7436	7439.136509	Big Injun	1735-1760	Plugged 1/2/1974
4708503143	PURSLEYS PULLING	Ferrell, Willard E.	GAS-P	39.1234	-80.8414	1987	374	7524	7533.289587	Big Injun	1958	Plugged 1/2/1974
4708503153	FRANCIS FRIESTAD	P & C OIL & GAS, INC.	O&G	39.1392	-80.8438	1806	1195	7343	7439.601737	Big Injun	1755	Fractured 1966 - water, 20/40m, 30/50m
4708503472	TROY A BRADY	ROSS & WHARTON GAS CO INC	GAS	39.1166	-80.84	1854	457	7391	7405.115124	Big Injun	1884	Fractured 1974
4708503992	EPC	EQT PRODUCTION COMPANY	GAS	39.12799	-80.84596	2071	190	7608	7610.372133	Big Injun	1964	Fractured 1922
4708503993	EPC	EQT PRODUCTION COMPANY	GAS	39.12325	-80.84613	2027	87	7564	7564.500314	Big Injun	1954	Fractured 1922
4708503995	EPC	EQUITRANS, L P	P&A	39.1305	-80.8415	2068	316	7605	7611.562323	Big Injun	1970	Fractured 1923 - Plugged
4708503998	EPC	EQT PRODUCTION COMPANY	GAS	39.11665	-80.84622	2057	818	7594	7637.929039	Big Injun	1956-2020	Fractured 1924 & 1929
4708508159	ALAMCO	CHESAPEAKE APPALACHIA, L.L.C.	UNK	39.1253	-80.85	2535	210	8072	8074.731203	Big Injun & Weir	2070-2397	Fractured 1993
4708505815	PETROLEUM RESOURCES	DEEM, J. F. OIL & GAS, LLC	O&G	39.138538	-80.838086	5204	712	10562	10585.97128	Weir	2002-2090	Fractured 1982 - 16 holes, 600 bbls, 50k # sand, 500 gals Acid
4708530617	PGH & WV GAS	Pittsburgh & WV Gas	GAS	39.138473	-80.837257	2531	815	7889	7930.986446	Big Injun	1999	Fractured 1937
4708503130	WILLIARD FERRELL	DEEM, J. F. OIL & GAS, LLC	GAS	39.130785	-80.918811	1980	675	7338	7368.980187	Big Injun	1909-1939	Fractured 1966- Acid Frac
4708503142	WOLF RUN OIL & GAS	JAY-BEE OIL & GAS	GAS	39.1275	-80.8337	2120	887	7478	7530.421834	Big Injun	1923	Fractured 1966 - Acid Frac
4708503103	WOLF RUN OIL & GAS	JAY-BEE OIL & GAS	GAS	39.1184	-80.8347	1884	1413	7242	7378.559006	Big Lime & Big Injun	1790-1834	Fractured 1966 - Acid Frac Big Injun

*Most recent operator found on DEP website

85-10132

625 Liberty Ave, Suite 1700
Pittsburgh PA 15222
www.eqt.com

TEL: (412) 395-3305
FAX: (412) 395-2156

John Centofanti
Corporate Director,
Environmental Affairs

June 4, 2014

[Conventional Well Operator]
[address]
[state]

RE: Ritchie County Hydraulic Fracturing Notice

Dear Sir/Madam,

EQT has developed a Marcellus pad (Oxford 163 pad) located in Ritchie County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 6,400' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability, Alexander formation (approximately 5,200' TVD).

EQT anticipates conducting hydraulic fracturing at the Oxford 163 pad during the second quarter of 2015. We have identified conventional natural gas wells operated by your company within 1,500' (lateral distance) of our new/planned laterals. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during, and after fracturing operations:

1. Inspect surface equipment, prior to fracturing, to establish integrity and establish well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas, or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and EQT if any changes in water, gas production, pressure, or other anomalies are identified.

Please feel free to contact me at 412-395-3305 with any questions or comments. You may also contact the West Virginia Office of Oil and Gas at 304-926-0440.

Sincerely,
EQT Production

John Centofanti
Corporate Director, Environmental Affairs

cc: James Martin, WV Office of Oil and Gas

WW - 6B
(9/13)

85-10132

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: 513756 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 4393 PSI

8) Proposed Total Vertical Depth: 6,657

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth 9,261

11) Proposed Horizontal Leg Length 2,480

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: No Coal Seams Present

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: _____

85-10132

August 14, 2014

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 Wells (OXF163) 47-085-10132, 10133, 10134, 10135, 10136, 10137

Dear Mr. Smith,

EQT is requesting the 13-3/8" surface casing be set at 1055' KB, 50' below the red rock formation at 1005' without setting below elevation. This will cover up red rock formations that have given EQT drilling issues in the past. We will set the 9-5/8" intermediate string at 2955' 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.

RECEIVED
Office of Oil and Gas
AUG 26 2014
WV Department of
Environmental Protection

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

09/26/2014

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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	9,261	9,261	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
LKC

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			

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.

DMR 6-16-14

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WW - 6B

(3/13)

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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 6637'. Tag the Onondaga not more than 100', run logs, then plug back with solid cement plug, to approximately 5954'. 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 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 treating pressures are 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.

21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 24.6

22) Area to be disturbed for well pad only, less access road (acres): 14.6

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 every 500'.
- Production: One spaced every 1000' from KOP to Int csg shoe

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 cement slurry to a thief zone.

Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling 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.

25) Proposed borehole conditioning procedures. **Surface:** 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.

*Note: Attach additional sheets as needed.

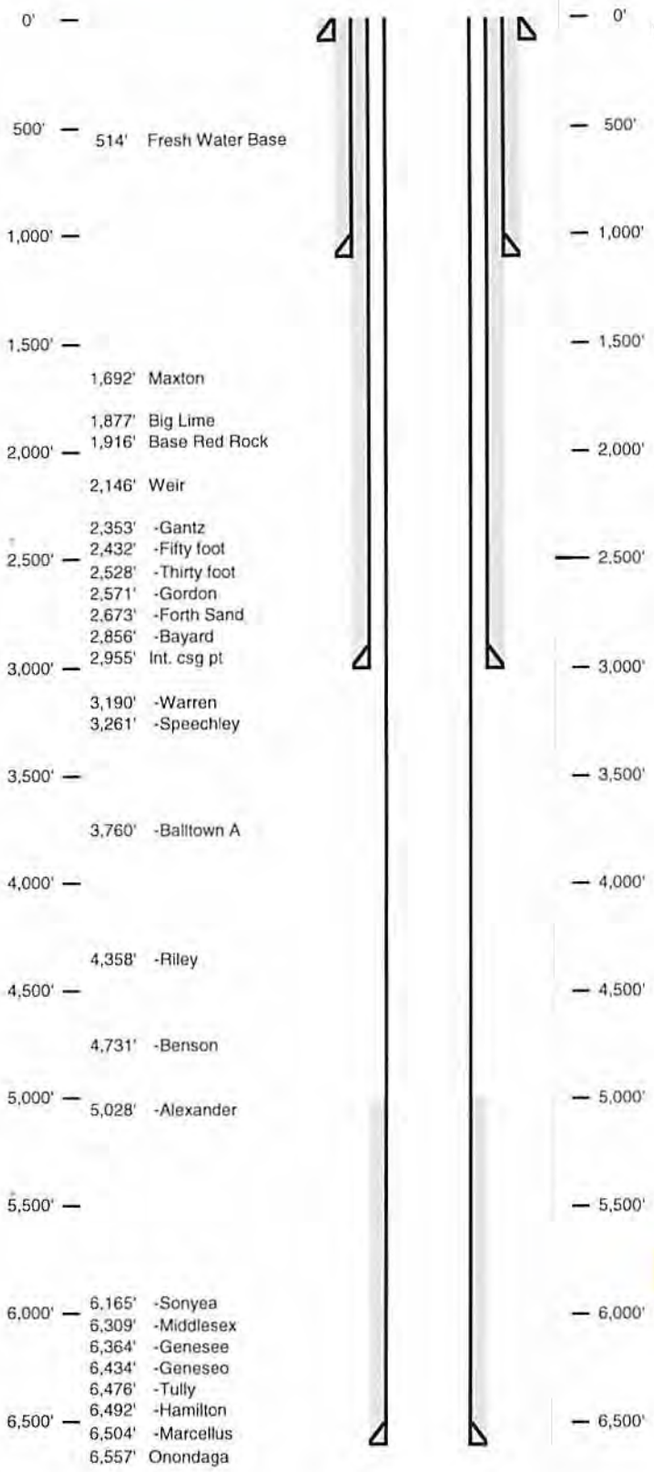
09/26/2014

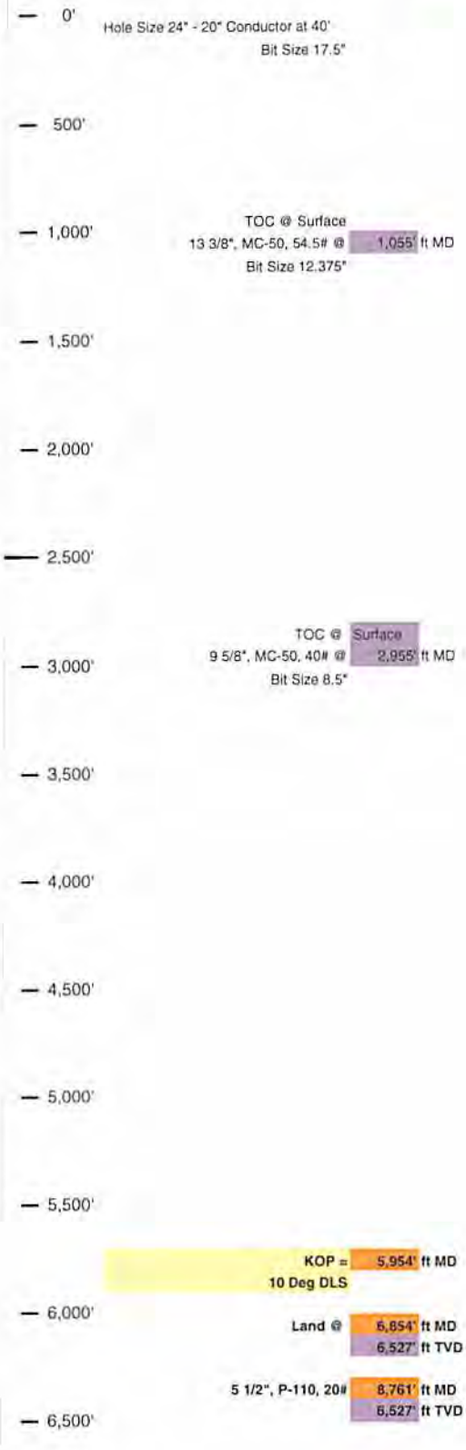
85-10132

Well Schematic
EQT Production

Well Name	513756 (OXF163H1)
County	Doddridge
State	West Virginia

Elevation KB:	1169
Target	Marcellus
Prospect	
Azimuth	162
Vertical Section	2480

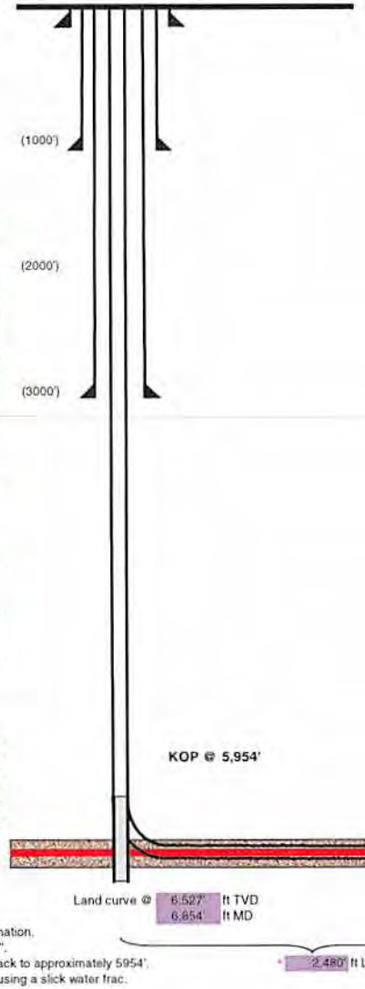




85-10132

Well 513756 (OXF163H1)
EQT Production
Oxford
Doddridge West Virgina

Azimuth 152
Vertical Section 2480



TVD Depth (feet)	Formation Tops (TVD)			Hole Size (inches)	Casing Type	Casing Size (inches)	Wt (ppf)/Grade
0'				24	Conductor	20	81#/MC-50
250'							
500'	Base Fresh Water	518					
750'							
1,000'				17 1/2	Surface	13 3/8	54#/MC-50
1,250'							
1,500'							
1,750'	Big Lime	1877	1977				
	Base Red Rock	1914					
2,000'							
2,250'	Gantz	2353	2407				
	Fifty foot	2432	2471				
2,500'	Thirty foot	2528	2538				
	Gordon	2571	2603				
2,750'	Forth Sand	2673	2704				
	Bayard	2856	2869				
3,000'	Int. sag pt	2955		12 3/8	Intermediate	9 5/8	40#/MC-50
	Warren	3199	3242				
3,250'	Speechley	3251	3341				
3,500'							
3,750'	Balltown A	3760	3916				
4,000'							
4,250'							
	Riley	4358	4385				
4,500'							
4,750'	Benson	4731	4809				
5,000'							
	Alexander	5029	5093				
5,250'							
5,500'							
5,750'	Sonyea	6161	6309				
	Middlesex	6309	6364				
6,000'	Genesee	6364	6434				
	Geneseo	6434	6478				
6,250'	Tully	6478	6492				
	Hamilton	6492	6504				
6,500'	Marcellus top	6504					
	Target Inside Marcellus	**6527**		8 1/2	Production Casing	5 1/2	20#/P-110
6,750'	Marcellus Bottom	6557					

Land curve @ 6,527' ft TVD
6,854' ft MD

Est. TD @ 6,527' ft TVD
8,761' ft MD

2,480' ft Lateral

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
The vertical drill to go down to an approximate depth of 6657'.
Tag the Onondaga not more than 100', run logs, then plug back to approximately 5954'.
Then kick off the horizontal leg into the Marcellus formation using a slick water frac.

8S-10132

WW-9
(5/13)

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API No. 47 - 085 - 10132
Operator's Well No. 513756

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

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name EQT Production Company OP Code

Watershed (HUC10) Brush Run of Middle Fork Quadrangle Oxford 7.5'

Elevation 1158.5 County Ritchie District Union

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes x No

Will a pit be used ? Yes: X No:

If so please describe anticipated pit waste: flowback water & residual solids

Will a synthetic liner be used in the pit? Yes X No If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- • Underground Injection (UIC Permit Number 0014, 8462, 4037)
- Reuse (at API Number)
- • Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain)

Will closed loop system be used ? Yes, The closed loop system will remove drill cuttings from the drilling fluid. The drill cuttings are then prepared for transportation to an off-site disposal facility.

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air is used to drill the top hole sections of the wellbore. Surface, intermediate, and Pilot hole sections, water based mud is used to drill the curve and lateral.

If oil based, what type? Synthetic, petroleum, etc

Additives to be used in drilling medium? MILBAR, Viscosifer, Alkalinity Control, Lime, Chloride Salts,Rate Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra. Of the listed chemicals the following are generally used when drilling on air: lubricant, detergent, defoaming. Water based fluids use the following chemicals: MILBAR, viscosifer, alkalinity control, lime, chloride salts, rate filtration control, deflocculant, lubricant, detergent, defoaming, walnut shell, x-cide, SOLTEX terra

Drill 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? See Attached List

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 law 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 penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature
Company Official (Typed Name) Victoria J. Roark
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 22 day of September, 20 14

Kathy M. Kugel Notary Public

My commission expires August 24, 2022

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Kathy M Kugel
PO Box 109
Davis, WV 26260
My Commission Expires August 24, 2022

RECEIVED
Office of Oil and Gas
SEP 22 2014
WV Department of
Environmental Protection

09/26/2014

WW-9

4708510132

Operator's Well No. 513756

Proposed Revegetation Treatment: Acres Disturbed 24.6 Prevegetation pH 5.9

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type

Fertilizer Amount 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
KY-31	40	Orchard Grass	15
Alsike Clover	5	Alsike Clover	5
Annual Rye	15		

Attach:
Drawing(s) of road, location,pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: David McCune

Comments: proceed mulch all cut area no less than 2 ton per acre maintain all BMP during entire operation

Title: oil & gas inspctr Date: 6-16-14

Field Reviewed? (✓) Yes ( ) No

09/26/2014

85-10132

EQT Production Water plan
Offsite disposals for Marcellus wells

CWS TRUCKING INC.
P.O. Box 391
Williamstown, WV 26187
740-516-3586
Noble County/Noble Township
Permit # 3390

LAD LIQUID ASSETS DISPOSAL INC.
226 Rankin Road
Washington, PA 15301
724-350-2760
724-222-6080
724-229-7034 fax
Ohio County/Wheeling
Permit # USEPA WV 0014

TRI COUNTY WASTE WATER MANAGEMENT, INC.
1487 Toms Run Road
Holbrook, PA 15341
724-627-7178 Plant
724-499-5647 Office
Greene County/Waynesburg
Permit # TC-1009

Waste Management - Meadowfill Landfill
Rt. 2, Box 68 Dawson Drive
Bridgeport, WV 26330
304-326-6027
Permit #SWF-1032-98
Approval #100785WV

Waste Management - Northwestern Landfill
512 E. Dry Road
Parkersburg, WV 26104
304-428-0602
Permit #SWF-1025 WV-0109400
Approval #100833WV

BROAD STREET ENERGY LLC
37 West Broad Street
Suite 1100
Columbus, Ohio 43215
740-516-5381
Washington County/Belpre Twp.
Permit # 8462

TRIAD ENERGY
P.O. Box 430
Reno, OH 45773
740-516-6021 Well
740-374-2940 Reno Office Jennifer
Nobel County/Jackson Township
Permit # 4037

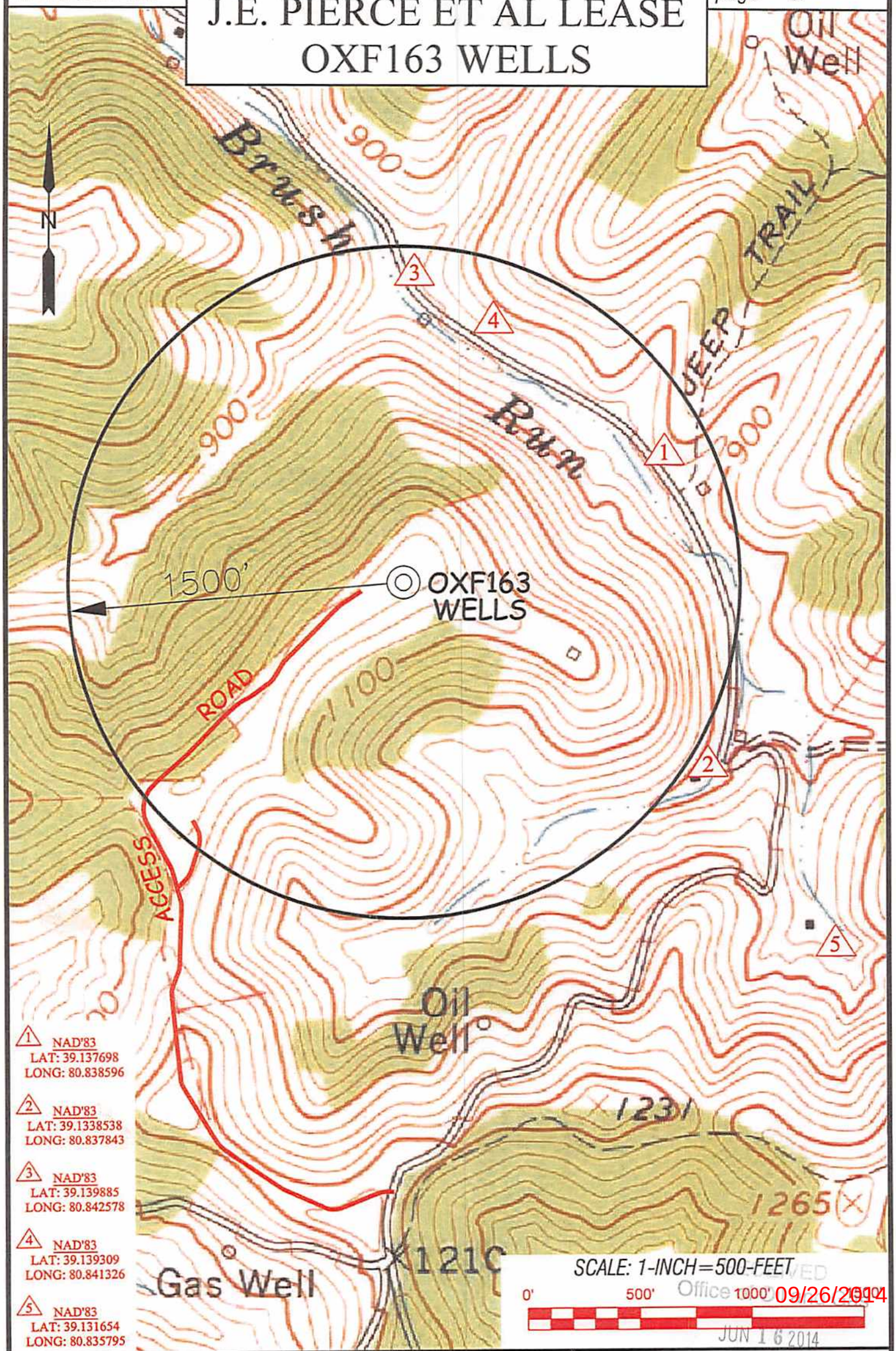
KING EXCAVATING CO.
Advanced Waste Services
101 River Park Drive
New Castle, Pa. 16101
Facility Permit# PAR000029132

85-10132

WATER SAMPLES

J.E. PIERCE ET AL LEASE
OXF163 WELLS

page of



1 NAD'83
LAT: 39.137698
LONG: 80.838596

2 NAD'83
LAT: 39.1338538
LONG: 80.837843

3 NAD'83
LAT: 39.139885
LONG: 80.842578

4 NAD'83
LAT: 39.139309
LONG: 80.841326

5 NAD'83
LAT: 39.131654
LONG: 80.835795

SCALE: 1-INCH=500-FEET
0' 500' 1000'

RECEIVED
Office of Oil & Gas
JUN 16 2014
09/26/2014

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING INC
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.

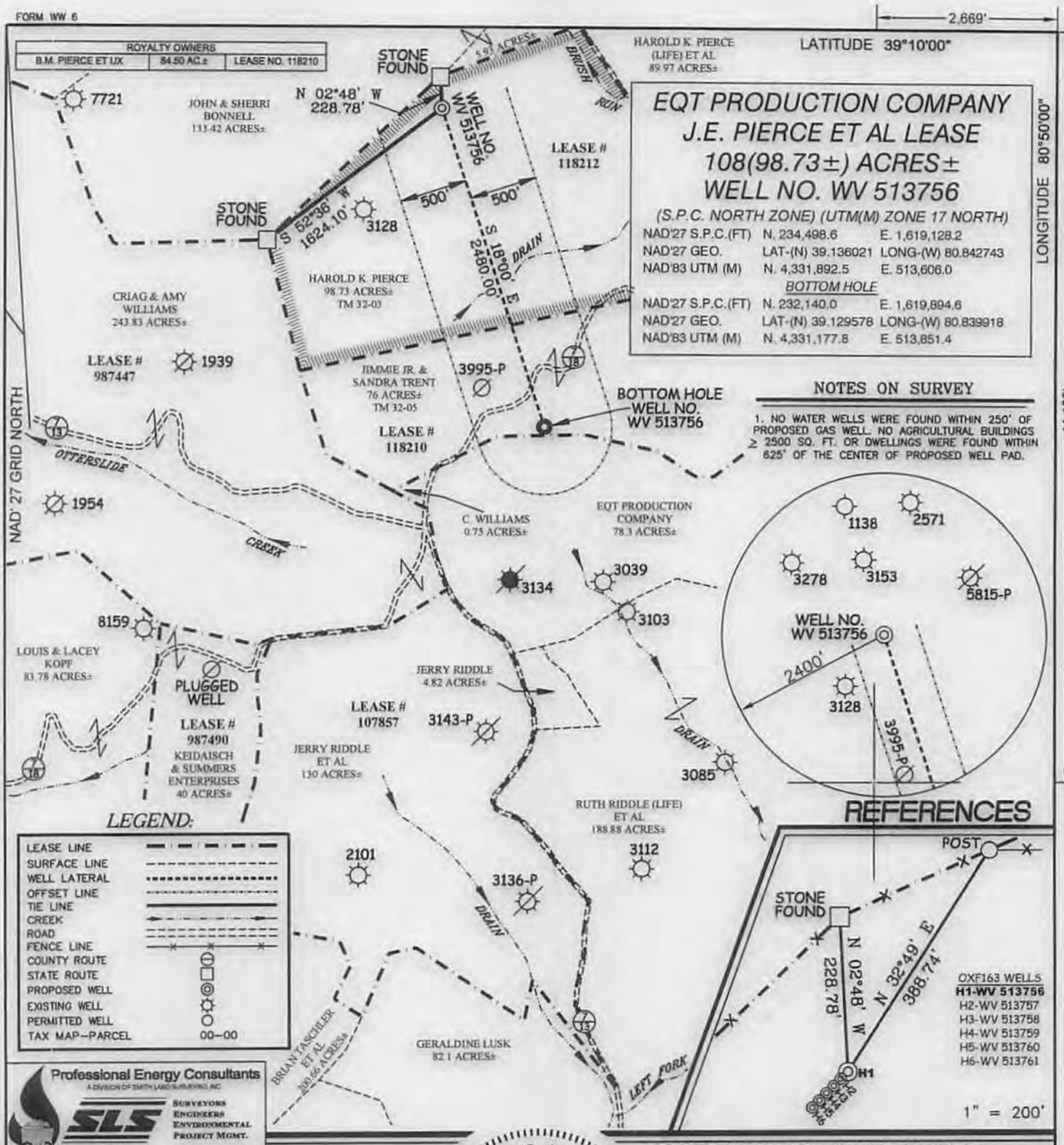
DRAWN BY	FILE NO.	DATE	CADD FILE:
K.D.W.	7698	06/10/14	7698WSOXF163A.dwg

TOPO SECTIONS OF:
OXFORD, WV 7.5' QUAD

DISTRICT	COUNTY	TAX MAP–PARCEL NO.
UNION	RITCHIE	32–03

OPERATOR:
EQT PRODUCTION COMPANY
115 PROFESIONAL PLACE
P.O. BOX 280
BRIDGEPORT, WV 26330

FORM WW-6



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. 677 Gregory A. Smith

GREGORY A. SMITH LICENSED No. 677 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

DATE MAY 27 , 20 14

REVISED , 20

OPERATORS WELL NO. WV 513756

API WELL NO. 47 — 85 — 10132 HGA
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200

FILE NO. 7698P513756

SCALE 1" = 1000'

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'

09/26/2014

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330

DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280
BRIDGEPORT, WV 26330