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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Wednesday, February 19, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

EQT PRODUCTION COMPANY
625 LIBERTY AVE., SUITE 1700

PITTSBURGH, PA 15222

Re: Permit Modification Approval for OXF43H32
47-017-06884-00-00

Lateral Extension

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:	OXF43H32
Farm Name:	CATHY JEAN WETZEL, ET AL
U.S. WELL NUMBER:	47-017-06884-00-00
Horizontal 6A	New Drill
Date Modification Issued:	February 19, 2020

EQT Production Company
400 Woodcliff Drive
Canonsburg, PA 15317
www.eqt.com

John Zavatchan
Project Specialist - Permitting
O:724-746-9073
C: 412-584-3132
jzavatchan@eqt.com

December 19, 2019

Via FedEx Overnight

West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304

RE: Well Work Permit Modification
OXF43H32 Well
Permit Number 47-017-06884
Southwest/Cove District
Doddridge County, WV

WVDEP Recipient,

Attached please find the Well Work Permit Modification Application for the well referenced above. Included with this submittal you will find:

- Completed Form WW-6B, approved by the Oil and Gas Inspector
- Wellbore Diagram
- Geologic Prognosis
- Casing Letter
- Site Specific Safety and Environmental Plan
- Well Location Plat
- Completed Form WW-6A1 and supporting documentation
- Department of Highways Certification Letter
- Sheet 1 and 10 of the approved as-built site plans, showing the updated proposed AST locations
- Hydraulic Fracturing Monitoring Plan
- DVD containing the Site Specific Safety and Environmental Plan, Site Plans and MSDS Sheets

Please note that there were no changes to the MSDS sheets from the original permit.

EQT Production trusts that if any portion of the submitted documentation is found to be inadequate for processing the permit, notification will be made to our land department at your earliest convenience. It is EQT Production's intent to cooperate fully to provide any additional requested documentation and clarification in a timely manner such that permitting proceeds in a predictable and logical manner.

Best Regards,

John Zavatchan
Landman - Permitting
jzavatchan@eqt.com
724-746-9073

17-06884 MOD

EQT Production

Hydraulic Fracturing Monitoring Plan

Pad ID: OXF43

County: Doddridge

December 10, 2019

Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in Doddridge County, WV prior to hydraulic fracturing at the following EQT wells on the OXF43 pad: 516228, 516229, 516230, 516232, 516238, 516240, OXF43H32, OXF43H34 and OXF43H35.

Due to the requirements under 35CSR8 5.11, the permittee is required to review the area surrounding the proposed well pad so as to identify and evaluate potential conduits for unintended fracture propagation.

A report is required to be submitted along with a well work permit application.

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 coordination with well operators of the timing and location of the hydraulic fracturing, establishment of measures 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 Well Operators

EQT, using available data (WV Geological Survey, WVDEP website, and IHS data service), has identified all known wells and well operators within 500 feet of this pad and the lateral sections that are known or could reasonably be expected to be within range of the fracture propagation. A map showing these wells along with a list of the wells and operators is included in **Attachment A**.

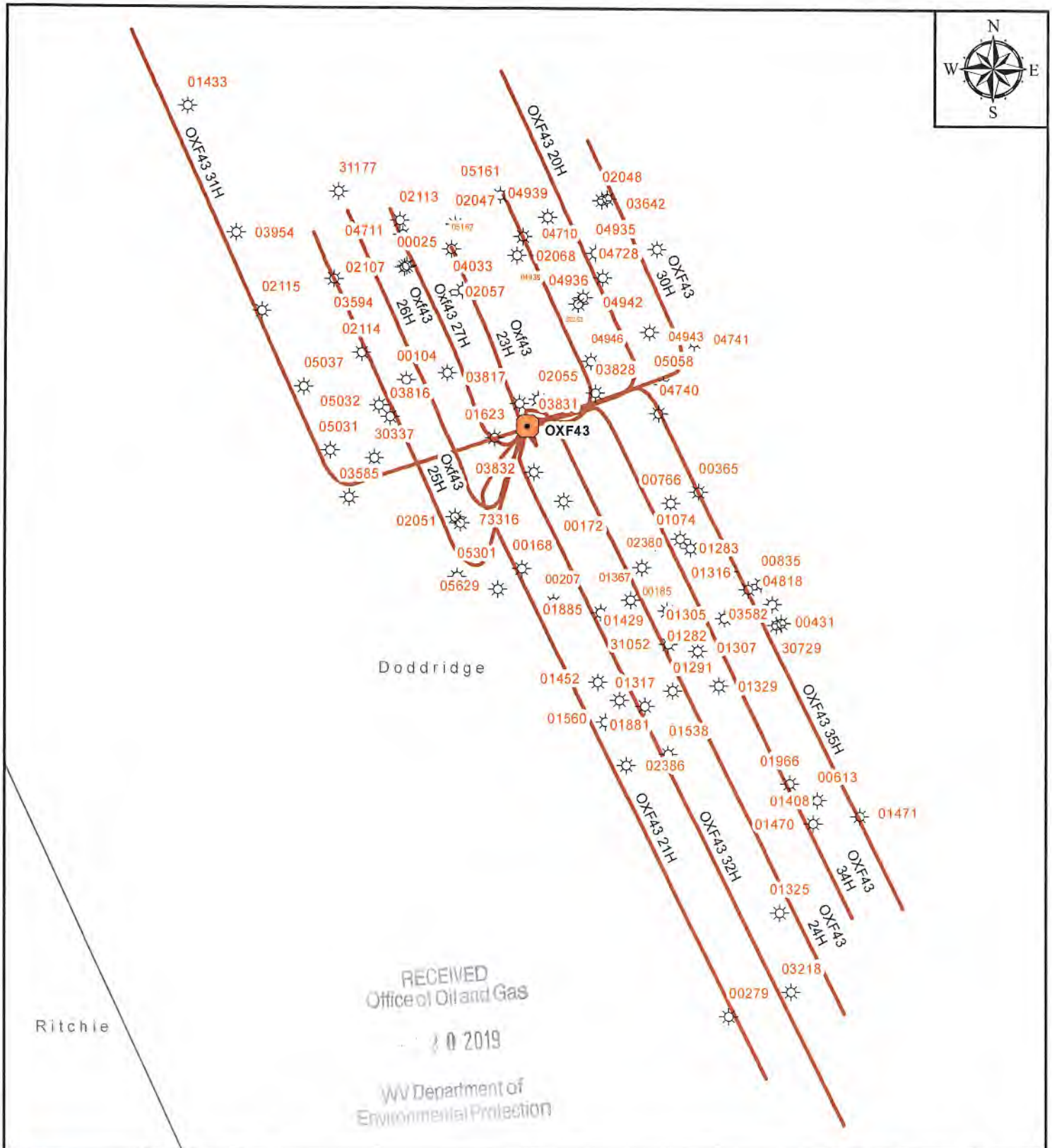
EQT will notify these operators of the hydraulic fracturing schedule for these wells, and coordinate with them throughout the fracturing process.

EQT will recommend to these operators at a minimum to:

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 or other necessary equipment for wellhead integrity capable of a pressure recommended by EQT
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 other operators, and ongoing monitoring of the work upon request of OOG or immediately in the event of any noted abnormalities.



EQT

EQT Corporation
625 Liberty Avenue
Pittsburgh, PA 15222

OXF43 - South

Vertical Offsets and Foreign Laterals within 1500'

Legend

- OXF43OV
- Well Pad Sites

Well Lateral_FM Formation

- Geneseo
- Marcellus
- Utica

2,400 1,200 0 2,400 Feet

1:31,655

Disclaimer:

This map is confidential and is to be used only for the express informational purposes for which it was created. Unauthorized use, copying, or dissemination is strictly prohibited. EQT does not warrant the accuracy of the location of any items shown on this map, including, but not limited to, any structures, well or pipeline facilities, property boundaries, topography, roadways, or waterways. The items shown on the map may not have been placed on the map using survey lines or GPS coordinates. The specific location of any of the map items should be determined by a field survey performed by a licensed surveyor upon consultation with EQT.

Created By: Kellen Waltman Printed By: MearsR on 12/11/2019

Path: \\mdcfs2\gisdept\GIS_Department\GIS_Users\MearsR\Geology\Vertical Offset\Foreign Well Working Map.mxd

WellID	WellStatus	date	FmatTD	Permit	Operator	Longitude	Latitude	TargetFm	DatumEleva	TD SS	TD
4701700025	UNK	8/13/1930		00025	PGH & WV GAS	-80.8015	39.1659		1012.0000	-1490.0000	2502
4701700104	GAS	9/21/1939		00104	EPC	-80.8015	39.1596		1095.0000	-1397.0000	2492
4701700168	GAS	10/15/1946		00168	P & M OIL	-80.7932	39.1491		905.0000	-1416.0000	2321
4701700172	GAS	12/7/1946		00172	P & M OIL	-80.7903	39.1529		955.0000	-1262.0000	2217
4701700185	GAS	2/11/1919		00185	EPC	-80.7847	39.1492		1103.0000	-905.0000	2008
4701700207	GAS	10/5/1954		00207	P & M OIL	-80.7910	39.1473		883.0000	-853.0000	1736
4701700279	GAS	9/9/1959		00279	DORIS G FUEL	-80.7785	39.1244		1197.0000	-945.0000	2142
4701700365	O&G	9/2/1960		00365	BEECHLICK OIL	-80.7807	39.1534		1152.0000	-881.0000	2033
4701700431	O&G	11/26/1960		00431	ASH & CHAPMAN	-80.7751	39.1460		937.0000	-967.0000	1904
4701700613	GAS-P	10/14/1961		00613	PENNZOIL	-80.7722	39.1363		954.0000	-1140.0000	2094
4701700766	O&G	8/2/1962		00766	WILLIAMS OIL & GAS	-80.7826	39.1528		935.0000	-912.0000	1847
4701700835	O&G-P	7/23/1962		00835	EDWARD DOLLY	-80.7762	39.1483		1068.0000	-1016.0000	2084
4701701074	GAS	2/21/1964		01074	WILLIAMS OIL & GAS	-80.7837	39.1506		949.0000	-1510.0000	2459
4701701282	O&G	8/31/1965		01282	PENNZOIL	-80.7829	39.1468		1061.0000	-971.0000	2032
4701701283	O&G	8/17/1965		01283	PENNZOIL	-80.7785	39.1490		1041.0000	-977.0000	2018
4701701291	O&G	9/3/1965		01291	PENNZOIL	-80.7825	39.1424		1027.0000	-994.0000	2021
4701701305	DRY	10/18/1965		01305	PENNZOIL	-80.7788	39.1464		893.0000	-1007.0000	1900
4701701307	O&G	9/18/1965		01307	PENNZOIL	-80.7807	39.1446		927.0000	-993.0000	1920
4701701316	O&G	1/5/1966		01316	EPC	-80.7812	39.1503		1131.0000	-894.0000	2025
4701701317	OIL	2/27/1919		01317	EPC	-80.7845	39.1416		1067.0000	-934.0000	2001
4701701325	DRY	10/27/1965		01325	QUAKER STATE	-80.7749	39.1301		1008.0000	-1072.0000	2080
4701701329	O&G	10/28/1965		01329	PENNZOIL	-80.7792	39.1427		1180.0000	-990.0000	2170
4701701367	O&G	10/19/1966		01367	EPC	-80.7855	39.1474		1071.0000	-959.0000	2030
4701701408	O&G	10/23/1966		01408	MID AMERICAN EXPLORATION	-80.7756	39.1350		1241.0000	-1059.0000	2300
4701701429	O&G	3/31/1967		01429	EPC	-80.7853	39.1450		883.0000	-933.0000	1816
4701701433	GAS-P	2/9/1967		01433	FRANCIS FRIESTAD	-80.8172	39.1747		913.0000	-871.0000	1784
4701701452	O&G	6/29/1967		01452	EPC	-80.7878	39.1429		1091.0000	-936.0000	2027
4701701470	GAS	7/11/1968		01470	MID AMERICAN EXPL	-80.7725	39.1350		1244.0000	-1635.0000	2879
4701701471	O&G	9/6/1967		01471	MID AMERICAN EXPLORATION	-80.7692	39.1354		1046.0000	-1607.0000	2653
4701701538	O&G	3/1/1969		01538	PENNZOIL	-80.7828	39.1389		1045.0000	-965.0000	2010
4701701560	O&G	10/8/1969		01560	EPC	-80.7873	39.1407		1022.0000	-921.0000	1943
4701701623	O&G-P	8/8/1971		01623	WARREN DRILLING	-80.7952	39.1564		1226.0000	-1474.0000	2700
4701701881	O&G	5/27/1978		01881	EPC	-80.7863	39.1419		918.0000	-975.0000	1893
4701701885	OIL	5/23/1978		01885	EPC	-80.7876	39.1467		863.0000	-1030.0000	1893
4701701966	GAS	12/2/1924		01966	CONSOLIDATED GAS	-80.7742	39.1372		940.0000	-1580.0000	2520
4701702047	GAS	5/23/1918		02047	EPC	-80.7981	39.1682		0.0000	-1907.0000	1907
4701702048	GAS	5/18/1918		02048	EPC	-80.7876	39.1695		0.0000	-1944.0000	1944
4701702051	GAS	7/5/1918		02051	EPC	-80.7980	39.1521		0.0000	-1801.0000	1801
4701702055	GAS-P	1/1/1918		02055	EPC	-80.7921	39.1585		1097.0000	-542.0000	1639
4701702057	P&A	12/13/1918		02057	EQUITRANS	-80.7986	39.1643		985.0000	-530.0000	1515
4701702068	GAS	2/2/1920		02068	EPC	-80.7936	39.1665		0.0000	-1833.0000	1833
4701702107	GAS	7/14/1930		02107	EPC	-80.8017	39.1658		1012.0000	-814.0000	1826
4701702113	P&A	5/5/1920		02113	EPC	-80.8020	39.1684		0.0000	-2485.0000	2485
4701702114	P&A	10/15/1920		02114	EPC	-80.8047	39.1611		0.0000	-2400.0000	2400
4701702115	GAS-P	10/14/1924		02115	EPC	-80.8118	39.1634		1180.0000	-722.0000	1902
4701702380	GAS	5/7/1919		02380	EPC	-80.7819	39.1508		1068.0000	-1025.0000	2093
4701702386	GAS	2/19/1914		02386	EPC	-80.7858	39.1383		1000.0000	-1604.0000	2604
4701703218	GAS	11/13/1983		03218	TRI DON	-80.7741	39.1257		1250.0000	-4054.0000	5304
4701703582	GAS	10/15/1987		03582	CNG	-80.7771	39.1480		1010.0000	-4332.0000	5342
4701703585	O&G	10/23/1987		03585	MERT DEVELOPMENT	-80.8056	39.1531		920.0000	-4338.0000	5258
4701703594	GAS	10/10/1987		03594	TERM ENERGY	-80.8067	39.1652		958.0000	-4073.0000	5031
4701703642	GAS	6/27/1988		03642	TERM ENERGY	-80.7872	39.1696		1228.0000	-4204.0000	5432
4701703816	GAS	9/20/1990		03816	ECA	-80.8027	39.1576		1065.0000	-4170.0000	5235
4701703817	GAS	6/21/1990		03817	ECA	-80.7986	39.1600		1210.0000	-4110.0000	5320
4701703828	GAS	9/28/1990		03828	ECA	-80.7880	39.1589		920.0000	-4187.0000	5107
4701703831	GAS	9/18/1990		03831	ECA	-80.7934	39.1583		1250.0000	-4172.0000	5422
4701703832	GAS	9/20/1990		03832	ECA	-80.7924	39.1545		1092.0000	-4191.0000	5283
4701703954	GAS	6/30/1992		03954	TERM ENERGY	-80.8137	39.1677		895.0000	-4065.0000	4960
4701704033	GAS	9/15/1993		04033	TERM ENERGY	-80.7975	39.1646		970.0000	-4030.0000	5000
4701704710	GAS	1/22/2003		04710	KEY OIL	-80.7932	39.1675		1206.0000	-4137.0000	5343
4701704711	GAS	1/20/2003		04711	KEY OIL	-80.8018	39.1676		1215.0000	-4126.0000	5341
4701704728	GAS	4/30/2004		04728	DOMINION	-80.7836	39.1668		1135.0000	-1585.0000	2720
4701704740	GAS	10/15/2003		04740	KEY OIL	-80.7835	39.1578		1215.0000	-4132.0000	5347
4701704741	GAS	10/4/2003		04741	KEY OIL	-80.7809	39.1617		1202.0000	-4145.0000	5347
4701704818	GAS	2/20/2005		04818	KEY OIL	-80.7754	39.1472		959.0000	-1721.0000	2680
4701704935	GAS	2/25/2005		04935	KEY OIL	-80.7880	39.1666		1203.0000	-1559.0000	2762
4701704936	GAS	5/13/2005		04936	KEY OIL	-80.7892	39.1638		1257.0000	-1550.0000	2807
4701704938	GAS	5/25/2005		04938	KEY OIL	-80.7919	39.1665		1028.0000	-1555.0000	2583
4701704939	GAS	6/2/2005		04939	KEY OIL	-80.7914	39.1686		1204.0000	-1567.0000	2771
4701704942	GAS	10/14/2005		04942	DOMINION	-80.7875	39.1653		1171.0000	-1591.0000	2762
4701704943	GAS	12/5/2005		04943	DOMINION	-80.7842	39.1623		984.0000	-1526.0000	2510

4701704946	GAS	11/29/2005	04946	DOMINION	-80.7883	39.1606	1123.0000	-1597.0000	2720
4701705031	GAS	6/24/2004	05031	SPENCER ENTERPRISES	-80.8070	39.1557	0.0000	-2070.0000	2070
4701705032	GAS	6/22/2004	05032	SPENCER ENTERPRISES	-80.8035	39.1582	0.0000	-2730.0000	2730
4701705037	GAS	6/30/2004	05037	SPENCER ENTERPRISES	-80.8088	39.1592	0.0000	-1950.0000	1950
4701705058	GAS	8/31/2005	05058	SPENCER ENTERPRISES	-80.7831	39.1593	0.0000	-2285.0000	2285
4701705161	GAS	6/28/2006	05161	KEY OIL	-80.7948	39.1698	1100.0000	-1531.0000	2631
4701705162	GAS	6/28/2006	05162	KEY OIL	-80.7983	39.1668	1201.0000	-1554.0000	2755
4701705301	GAS	2/2/2007	05301	EPC	-80.7979	39.1488	986.0000	-4416.0000	5402
4701705629	GAS	9/4/2008	05629	EPC	-80.7950	39.1480	866.0000	-5466.0000	6332
4701730263	GAS	10/24/1918	30263	I H BEREN	-80.7889	39.1642	1159.0000	-895.0000	2054
4701730337	GAS	6/24/1917	30337	PGH & WV GAS	-80.8038	39.1553	1084.0000	-874.0000	1958
4701730729	GAS	5/17/1919	30729	HOPE NAT GAS	-80.7747	39.1461	979.0000	-1547.0000	2526
4701731052	GAS	1/8/1919	31052	HOPE NAT GAS	-80.7828	39.1450	885.0000	-872.0000	1757
4701731177	GAS	5/17/1919	31177	EPC	-80.8064	39.1700	1064.0000	-933.0000	1997
4701773316	UNK		73316	UNKNOWN	-80.7976	39.1517	0.0000	-99999.0000	99999

WW-6B
(04/15)

API NO. 47- 017 - 06884
OPERATOR WELL NO. OXF43H32
Well Pad Name: OXF43

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

1) Well Operator:	EQT Production Company	306686	Doddridge	Southwest/Cove	Oxford
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: OXF43H32 Well Pad Name: OXF43

3) Farm Name/Surface Owner: Cathy Jean Wetzel, et. al. Public Road Access: Rt. 20

4) Elevation, current ground: 1,229' (As-Built) Elevation, proposed post-construction: 1,229' (As-Built)

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, 6,647', 57', 2951 psi

8) Proposed Total Vertical Depth: 6,647'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21,399'

11) Proposed Horizontal Leg Length: 14,346'

12) Approximate Fresh Water Strata Depths: 70', 221', 307', 382'

13) Method to Determine Fresh Water Depths: By Offset Wells

14) Approximate Saltwater Depths: N/A

15) Approximate Coal Seam Depths: 321'-322'

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? Yes _____ No X

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

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Office of Oil and Gas
DEC 20 2019
WV Department of
Environmental Protection

DAF
12/16/19

WW-6B
(04/15)

API NO. 47- 017 - 06884
OPERATOR WELL NO. OXF43H32
Well Pad Name: OXF43

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

1) Well Operator:	EQT Production Company	306686	Doddridge	Southwest/Cove	Oxford
		Operator ID	County	District	Quadrangle

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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, 6,647', 57', 2951 psi

8) Proposed Total Vertical Depth: 6,647'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21,399'

11) Proposed Horizontal Leg Length: 14,346'

12) Approximate Fresh Water Strata Depths: 70', 221', 307', 382'

13) Method to Determine Fresh Water Depths: Offset wells: 017-01623, 017-03817, 017-03831, 017-03828, 017-03832

14) Approximate Saltwater Depths: None expected - if encountered will be below 945'

15) Approximate Coal Seam Depths: 321'-322'

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? Yes _____ No X

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

WW-6B
(04/15)

API NO. 47- 017 - 06884
OPERATOR WELL NO. OXF43H32
Well Pad Name: OXF43

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	26	New	A-500	85.6	40	40	49 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	532	532	546 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	P-110	40	5272	5272	2087 ft^3 / CTS
Production	5 1/2	New	P-110 CYHP	20	21399	21399	500' above intermediate casing
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	26	30	.312	1050	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2730	2184	Class A / Type 1	1.13 - 1.19
Coal							
Intermediate	9 5/8	12 3/8	.395	7900	3160	Class A / Type 1	1.13 - 1.19
Production	5 1/2	8 1/2	.361	14360	10112	Class A/H	1.04 - 2.098
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

RECEIVED
Office of Oil and Gas
DEC 20 2019
WV Department of
Environmental Protection

DAF
12/16/19

API NO. 47- 017 - 06884
OPERATOR WELL NO. OXF43H32
Well Pad Name: OXF43

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 1000'. 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 0.1%) of chemicals (including 15% Hydrochloric acid, 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 10,000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 350,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000-600,000 pounds of proppant per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): N/A - Site Built

22) Area to be disturbed for well pad only, less access road (acres): N/A - Site Built

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 joint from production casing shoe to KOP

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

Conductor: Class A no additives
Surface: Calcium Chloride. Used to speed the setting of cement slurries
Intermediate: Calcium Chloride. Used to speed the setting of cement slurries.
Production: Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

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: Perform a cleanup cycle by pumping 3-8 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.

DAF
12/16/19

Well 516241(OXF43H32)

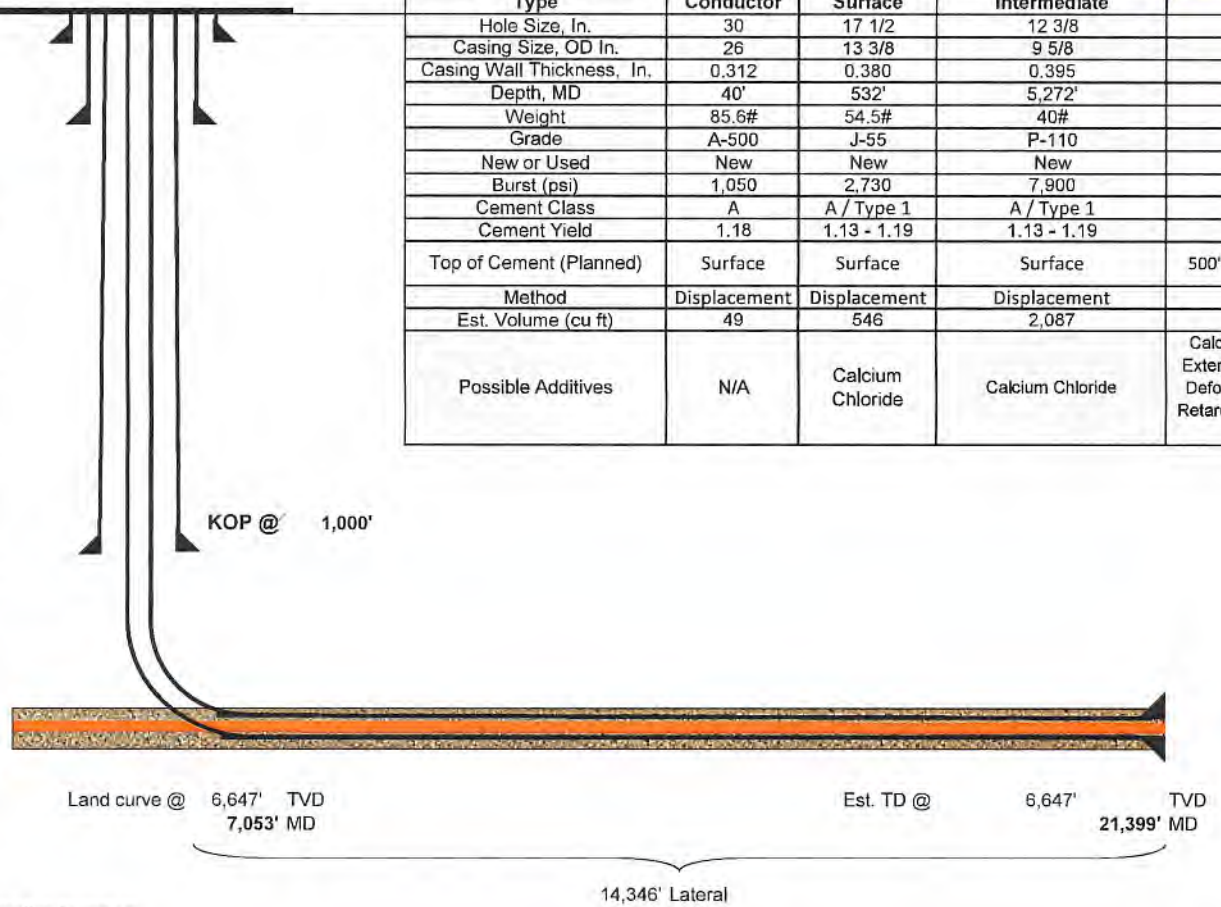
EQT Production

Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 15472
Enertia # 516241(OXF43H32)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing			Deepest Fresh Water: 382'	
Type	**Conductor**	**Surface**	**Intermediate**	**Production**
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	21,399'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,888
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

WEST VIRGINIA GEOLOGICAL PROGNOSIS

Horizontal Well

OXF43H30 **516238(OXF43H30)**

Drilling Objectives:	**Marcellus**						
County:	Doddridge						
Quad:	Oxford						
Elevation:	**1242 KB**			**1229 GL (As-Built)**			
Surface location	**Northing:**	**241902.39**	**Easting:**	**1633402.15**			
Landing Point	**Northing:**	**241820.78**	**Easting:**	**1629095.40**			
Toe location	**Northing:**	**250051.23**	**Easting:**	**1625527.70**	**TVD:**	**6647**	
Recommended Azimuth	**0**	Degrees			**Recommended LP to TD:**	**0,000'**	

Recommended Gas Tests: 1800, 2050, 2600, Intm Csg. Pt., 3400, 4900, 5250, KOP, (Gas test at any mine void)
Gas test during any trip or significant downtime while drilling the lateral section.

ESTIMATED FORMATION TOPS Determined from OXF43 and OXF45 Pilot Hole Logs

Formation	Top (TVD)	Base (TVD)	Lithology	Comments	Top RR	Base RR	
Fresh Water Zone	1	382		FW @ 70,221,307,382, ,	21	41	
Waynesburg A	321	322	Coal	No past, present, or permitted mining.	123	179	
Maxton	1084	1124	Sandstone	No SW present in shallow offset wells.	181	211	
Big Lime	1960	2028	Limestone		266	411	
Big Injun	2072	2104	Sandstone	Storage is NOT of concern at this location	361	451	
Weir	2246	2372	Sandstone		462	532	
Top Devonian	2446				561	716	
Gantz	2446	2528	Silty Sand		706	829	
Fifty foot	2528	2585	Silty Sand		956	1073	Base of Red Rock
Thirty foot	2626	2662	Silty Sand				
Gordon	2668	2717	Silty Sand				
Forth Sand	2768	2835	Silty Sand				
Bayard	2948	3019	Silty Sand				
Warren	3282	3348	Silty Sand				
Speechley	3348	3853	Silty Sand				
Balltown A	3853	4211	Silty Sand				
Riley	4451	4827	Silty Sand				
Benson	4827	4921	Silty Sand				
Alexander	5129	5222	Silty Sand	**Base of Offset Well Perforations at 5207' TVD**			
Int. csg pt	5272						
Elks	5222	6305	Gray Shales and Silts				
Sonyea	6305	6455	Gray shale				
Middlesex	6455	6445	Shale				
Genesee	6445	6554	Gray shale interbedded				
Geneseo	6554	6596	Black Shale				
Tully	6596	6609	Limestone				
Hamilton	6609	6627	Gray shale with some				
Marcellus	6627	6683	Black Shale				
Purcell	6658	6661	Limestone				
-Lateral Zone	**6647**			**Start Lateral at 6647'**			
Cherry Valley	6667	6670	Limestone				
Onondaga	6683		Limestone				

Target Thickness	57	feet
Max Anticipated Rock Pressure	2951	PSI

Comments:

Note that this is a TVD prog for a horizontal well (azimuth of 0 degrees; target formation = Marcellus). All measurements taken from estimated KB elevation. Water and coal information estimated from surrounding well data.

Intermediate casing point is recommended 50' beneath the Alexander to shut off any water production from the Upper Devonian sands. Intermediate casing should be cemented into the surface string, per WV regulations.

The estimated landing point TVD is 6647', rig geologist may adjust landing point. After the well is landed, drill to reported bed dips/ geologists' recommendation. The geologic structure is unknown at this time.

RECOMMENDED CASING POINTS

Fresh Water/Coal	CSG OD	13 3/8	CSG DEPTH:	532	150' below freshwater
Intermediate 1:	CSG OD	9 5/8	CSG DEPTH:	5272	50' below Alexander
Production:	CSG OD	5 1/2	CSG DEPTH:	@ TD	

December 11, 2019

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

Re: Casing on OXF43H32

Dear Mr. Brewer,

The 13-3/8" surface casing will be set at 532' KB, 150' below the deepest fresh water. The 9-5/8" intermediate string will be set at 5,272' KB, 50' below the base of the Alexander formation.

If you have any questions, please do not hesitate to contact me at 724-746-9073.

Sincerely,

John Zavatchan
Landman - Permitting

Enc.

Where energy meets innovation.℠

Site Specific Safety and Environmental Plan

EQT

OXF43 Pad

West Union

Doddridge County, WV

For Wells:

516228	516229	516230	516231	516232	516233	516234
516235	516238	516240	OXF43H32	OXF43H34	OXF43H35	

Date Prepared: February 18, 2019

EQT Production

Project Specialist - Permitting
Title

12-16-19
Date

WV Oil and Gas Inspector

Oil + Gas Inspector
Title

12/16/19
Date

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TABLE OF CONTENTS

Attachments

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Site Specific Emergency Action Plan		
Rev #	**Rev Date**	**Rev Changes**
000	2/21/2018	Original
001	12/21/2018	Pg. 5: Change Plan Administrator Pg. 5: Change Final Approver Title Pg. 5: Remove Assistant Plan Administrator Pg. 7: Change Government Relations point of contact Pg. 22: Section III PPE. ADD protective glove requirement Pg. 22: Section III PPE. ADD specialty glove requirement Pg. 25: Section III ADD Plugging Operations Pg. 28. Section III ADD Plugging Operations
002	02/18/2019	Pg. 5: Change Plan Administrator Pg. 5: Change Approver Pg. 5: Change Final Approver Pg. 5: Remove Assistant Plan Administrator Pg. 7: Change EQT Environmental Contact

Plan Administrator: Scott M. Held Senior Safety Coordinator	Approval: Joseph Smetanka Director, Corporate Safety
	Final Approver: Charity Fleenor Director, Environmental Affairs

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Section I: Contacts, Schedules and Meetings

EMERGENCY SERVICES	
County Emergency Dispatch Center	**PHONE NUMBER**
Doddridge County 911	**EMERGENCY 9-1-1**
- For Police, Fire, Ambulance	**10-digit: 304-659-3770**
County Emergency Services/ Management (CES)	
Doddridge County Office of Emergency Management 108 Court Street, Suite 1 West Union, WV 26456 Director: George C. Eidel	**10-digit: 304-873-3253** Office: 304-281-7407 (cell)
Nearest Hospital	**ER Phone Number**
United Hospital Center of Bridgeport 327 Medical Park Dr. Clarksburg, WV 26330 Distance: 48.7 miles Travel Time: 1 hr 12 mins	**10-digit: 681-342-1000**
SEE ATTACHED MAP	

EQT EMERGENCY CONTACTS	
EQT 24-Hour	**1-800-926-1759**
EQT Environmental - Kim Gissy	C: 304-627-8347
EQT Health and Safety Department - Brian O'Neil	O: 724-743-4688 C: 412-463-6430
EQT Government and Community Relations Local Government - Joseph Dawley	O: 412-553-7708
EQT State Government, WV Government Relations Manager - Gregory Hoyer	O: 304-348-3886 C: 304-546-1923

OTHER EMERGENCY CONTACTS	
WVDEP Office of Oil & Gas – Pollution & Emergency Spills	**1-800-642-3074**
Local State Well Inspector: Daniel Fleck	304-545-0109 (cell)
USCG/National Response Center (NRC)	800-424-8802
CHEMTREC	Emergency **800-424-9300** Business: 800-262-8200
US DOT Pipeline & Hazardous Materials Safety Administration (PHMSA)	Pipeline: 202-366-4595 HazMat: 800-467-4922

Notification Methods

Notification of the public will be made in conjunction with EQT personnel listed above and emergency first responders listed above in the event that they are affected by an event such as hydrogen sulfide releases, blow-outs and flaring. The public list is attached to the map listed in Section II: Maps and Diagrams and the procedures for notification, isolation zones, and evacuations are also listed in Section II: Maps and Diagrams.

Flaring notification procedures are listed in Section V: BOP and Well Control.

Additional actions and precautions for the presence of hydrogen sulfide are listed in Section VI: Hydrogen Sulfide.

Pre-Drill Meeting

A Pre-Drill Meeting will be held on location with the following personnel in attendance:

- WV OOG Inspector and /or Supervisor
- EQT Land Agent
- EQT Construction Specialist
- EQT Drilling Contractor Personnel, i.e. Tool Pusher, Driller(s), Safety Manager
- EQT On-Site Drilling Specialist and/or Supervisor

Optional attendees may include:

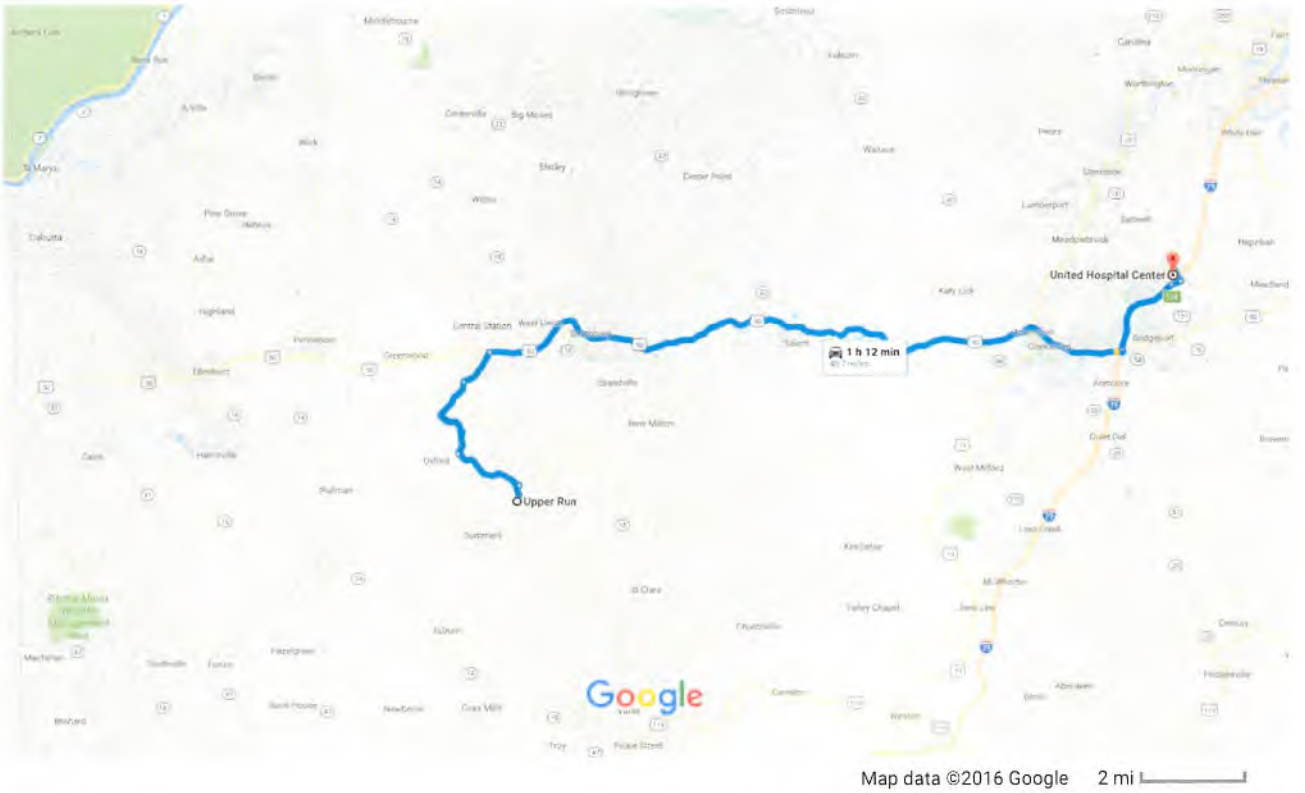
- EQT Safety and Health Coordinator or designee, if available
- EQT Environmental Coordinator or designee, if available
- EQT H2S Contractor representative, if in an H2S plan required zone.
- EQT Completions Personnel

Google Maps

Upper Run, Pullman, WV 26421 to United Hospital Center, Bridgeport, WV

Drive 48.7 miles, 1 h 12 min

WV Doddridge OXF43 Well Pad Hospital Directions



Upper Run

Pullman, WV 26421

Take S Fork of Hughes River and Co Rte 21 to US-50 E in Pine — 30 min (10.7 mi)

1. Head northeast on Upper Run toward S Fork of Hughes River — 0.8 mi
2. Turn left onto S Fork of Hughes River — 3.5 mi
3. Turn right onto Co Rte 21 — 4.5 mi
4. Turn right onto Old U.S 50 W/Sunnyside Rd — 1.9 mi

Continue on US-50 E to Bridgeport. Take exit 124 from I-79 N — 37 min (36.9 mi)

5. Turn right onto US-50 E — 31.9 mi

6. Use the right lane to merge onto I-79 N via the ramp to Fairmont

4.6 mi

7. Take exit 124 for WV-279 toward US-50 E/Jerry Dove Dr

0.4 mi

Continue on WV-279 W to your destination

3 min (1.1 mi)

8. Turn left onto WV-279 W

0.7 mi

9. Turn left at White Oaks Blvd

0.2 mi

10. Continue onto Medical Park Dr

351 ft

11. Turn left

Destination will be on the left

0.1 mi

United Hospital Center

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Safety Meetings

A completed and documented EQT Tailgate Safety Meeting (TSM) or Contractor Representative Tailgate Talk or Job Safety Analysis (JSA) is required prior to the beginning of each work shift during all phases of the operation. Copies of these forms should be logged and kept in a location on-site for periodic auditing by EQT or the contractor.

See the attached EQT Tailgate Safety Meeting (TSM) Form on the following pages.

EQT Tailgate Safety Meeting

Section 1: General Information

Date & Time:_____ Location/Physical Address:_____

Project Name: _____ GPS Coordinates: _____

Emergency Contact: _____ Emergency Notification #: _____

DIAL 911 FOR ALL EMERGENCIES – IF 911 IS NOT AVAILABLE, LIST AN ALTERNATIVE NUMBER: _____

Primary Assembly Point: _____ Secondary Assembly Point: _____

Nearest Medical Facility: _____ Nearest Fire Extinguisher: _____

Nearest First Aid Kit: _____ Nearest Eye Wash: _____

Do Cell Phones Work: ☐Yes ☐No Project Name: _____

Are other personnel on-site conducting tasks not related to this task? ☐Yes ☐No

If you answered YES to the question above, will the other personnel be affected by this task? ☐YES ☐NO

If you answered YES to the question above, have you included those personnel in this TSM? ☐YES ☐NO

Section 2: Task Information

Describe the task to be performed: _____

Are the employees working on a task out of sight of each other? If so, what communication method is being used? ☐ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ Other

Section 3: Hazard Identification & Control

Type of Work: ☐Hot Work ☐Lockout/Tagout ☐Excavation ☐Confined Space (If checked, additional permits/forms must be completed)

Mark An X On All Applicable Hazards For This Task:

☐ Hazardous Atmosphere	☐ Overhead Hazards	☐ Hydrates/Line Blockage	☐ Radiation
☐ Temperature Extremes (Heat & Cold)	☐ Chemical Exposure	☐ Lifting (Sprains & Strains)	☐ Asbestos/Lead Materials
☐ Safety Systems Bypassed/Disabled	☐ Weather Hazards	☐ Condensate/Flammability	☐ PCBs
☐ Trapped Pressure	☐ Heavy Loads	☐ Slips/Trips/Falls (Alternate Route)	☐ Dusty Environment
☐ Fall From Heights	☐ Noise	☐ Excavation Collapse	☐ Roadway Work (Traffic Control)
☐ Moving Machinery	☐ Electrical	☐ Adjacent Operations	☐ Wildlife (Snakes, Bears, etc.)
☐ Suspended Loads/Rigging	☐ Pinch Points	☐ Mobile Equipment	☐ Insects (Bees, Ticks, etc.)
☐ Ignition Sources	☐ Lone Worker	☐ Overexertion	☐ Poison Oak, Ivy, Sumac
			☐ Other _____

Describe location driving hazards (well heads, barriers, tanks, low hanging tree limbs, etc.) and parking location._____

Section 4: Personal Protective Equipment

Mark An X Next To Required PPE: HARD HAT, SAFETY GLASSES AND HARD TOE BOOTS ARE ALWAYS REQUIRED

GENERAL PPE		GLOVES	Fall Arrest	Personal Monitors	RESPIRATOR TYPE*
☐Face Shield	☐General Purpose	☐General Purpose	☐Harness	☐4-Gas Monitor	☐Dust Mask
☐FR Clothing	☐Chemical Resistant	☐Chemical Resistant	☐Lanyard	☐H_2S	☐½ Mask APR
☐Hearing Protection	☐Heat Resistant	☐Heat Resistant	☐Retrieval Line	☐O_2	☐SCBA
☐ Chainsaw Chaps	☐Other	☐Other	☐Other	☐LEL	☐Other
☐ Other _____	☐Snake Chaps				

*Note: (Employees/Contractors must be medically qualified and trained in order to wear a respirator)

Section 5: TSM Completion

EQT TSM Leader: Print:_____ Signature:_____

List EQT Employees conducting the tasks and participating in the TSM: (Attach a separate page if additional space is needed or use back of sheet)

Print:_____ Print:_____ Print:_____

Print:_____ Print:_____ Print:_____

Contractor Name (if applicable):_____

List all contract employees conducting the task: (Attach a separate page if additional space is needed or use back of sheet)

Print:_____ Print:_____ Print:_____

Print:_____ Print:_____ Print:_____

Note: All personnel arriving after initial TSM shall be tailgated: (Attach a separate page if additional space is needed or use back of sheet)

Comments:_____

EQT Tailgate Safety Meeting

List EQT Employees conducting the tasks and participating in the TSM:

Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____
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Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____

Contractor Name (if Applicable):_____

List contract employees conducting the task and participating in TSM:

Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____
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Print:_____	Print:_____	Print:_____
Print:_____	Print:_____	Print:_____

Note: Retain document for 2 years

Section II: Maps and Diagrams

General Information Pertaining to well pad location:

WV – Doddridge – West Union Site State, County and Municipality	EQT OXF43 Pad Site Location Designation
3731 Grove Summers Rd. West Union, WV 26456 Site Address assigned by County 9-1-1	S Fork of Hughes River Nearest cross road(s)
39.180296, -80.797064 Access Road Coordinates	39.157175, -80.792576 Pad Site Coordinates

Directions:

SEE ATTACHED EQT Traffic Control Plan Reference use only. See current EQT Traffic Control Plan for updated directions and restrictions.

Maps:

Maps are included on the following pages for reference for the above described well location. The two types of maps included are:

1. Plan View Map
2. Topographical map with 1-mile safety radius

Site Evacuation Plan:

Assembly areas:

- Each Site is responsible for identifying a designated assembly area for personnel to safely evacuate to in the event of an emergency.
- Evacuation in place may be most suitable for inclement weather but that decision shall be made by the On-Site Specialist or Emergency Coordinator (Examples: Near the access road, Site Location Sign, On-Site Specialist trailer).
- Assembly points should be determined so as to be upwind in consideration of the prevailing wind at the site.
- At a minimum, a secondary assembly area shall be determined. Secondary assembly points should be located to be 90 degrees to the prevailing wind.
- Each determined assembly area shall be communicated to all personnel on the site.

Affected and Unaffected areas:

- The Emergency Coordinator, or their representative, will establish the emergency area as the affected area and order the evacuation of all non-essential personnel to the primary assembly area.
- The purpose is to minimize the risk of exposure to all personnel.
- On-site rescuers and equipment should be staged in areas unaffected by the emergency.
- Off-site services and equipment summoned to the scene should be staged in areas unaffected by the emergency.
- Only essential personnel, as determined by the Emergency Coordinator, shall be granted entry into the affected area(s) after an emergency has occurred.

Evacuation:

- In the event of an emergency all non-essential personnel shall immediately evacuate their work areas and report to the Assembly Area.
- Evacuation must be quick as life safety may be of the essence.
- Personnel should evacuate to the assembly area via the quickest route. If that route is blocked or hazardous, another route should be taken.
- Personnel should make sure that their co-workers heard the call for evacuation and assure that no one is left behind.
- Only essential personnel required for process critical jobs can stay behind, all others shall evacuate. This decision shall be at the sole discretion of the Emergency Coordinator and in no means should life safety be jeopardized.
- Should the primary assembly area be unsuitable for evacuation, the alternate location shall be communicated to all personnel. The Emergency Coordinator or their designee is responsible for determining the safest assembly area.
- Accountability shall be verified as soon as possible by the Emergency Coordinator or their designee. Those who are unaccounted for shall be immediately reported to the Emergency Coordinator
- If evacuation is required for the surrounding areas, notifications to all personnel listed on the attached Topographical and One-Mile Safety Buffer Map and contact list shall be made by the On-Site Emergency Coordinator or their designee with the assistance of the emergency first responders and the county LEPC or CES.
- Evacuation locations and assembly areas will be made with the coordination of local emergency first responders.

Scene Access:

- Access to the scene should be controlled at all times by the Emergency Coordinator or their representative.
- Access needs to be controlled to reduce life safety concerns as well as preserve evidence for investigation and root cause analysis.
- Access should never be restricted in a way as to impede those who are evacuating in an emergency.
- The scene needs to be secured to prevent unauthorized entry by posting signs, tape, personnel, or other means at any and all access points.
- Unauthorized access into the affected area(s) is prohibited and calls for immediate removal from the site.

Accountability:

- The daily TSM or JSA shall be used to verify accountability for all personnel as soon as possible after an incident has occurred.
- A sign in and out sheet shall be used to account for personnel entering and exiting the area after an incident has occurred.
- All personnel unaccounted for shall be immediately reported to the Emergency Coordinator as well as emergency first responders.

Plan View (Aerial) Map:

See the attached West Virginia Rec Plans on the following pages for each well number listed on the permit cover page.

Plan View map notes:

This is a basic map of the site which shows the access road(s), nearby dwellings, and true north direction.

The prevailing wind direction for this area is from the southwest unless otherwise noted.
Flare lines, if needed, will be run and installed as per procedure.

Topographical map with 1-mile safety radius

See the attached topographical map on the following pages along with the attached list with emergency contact information.

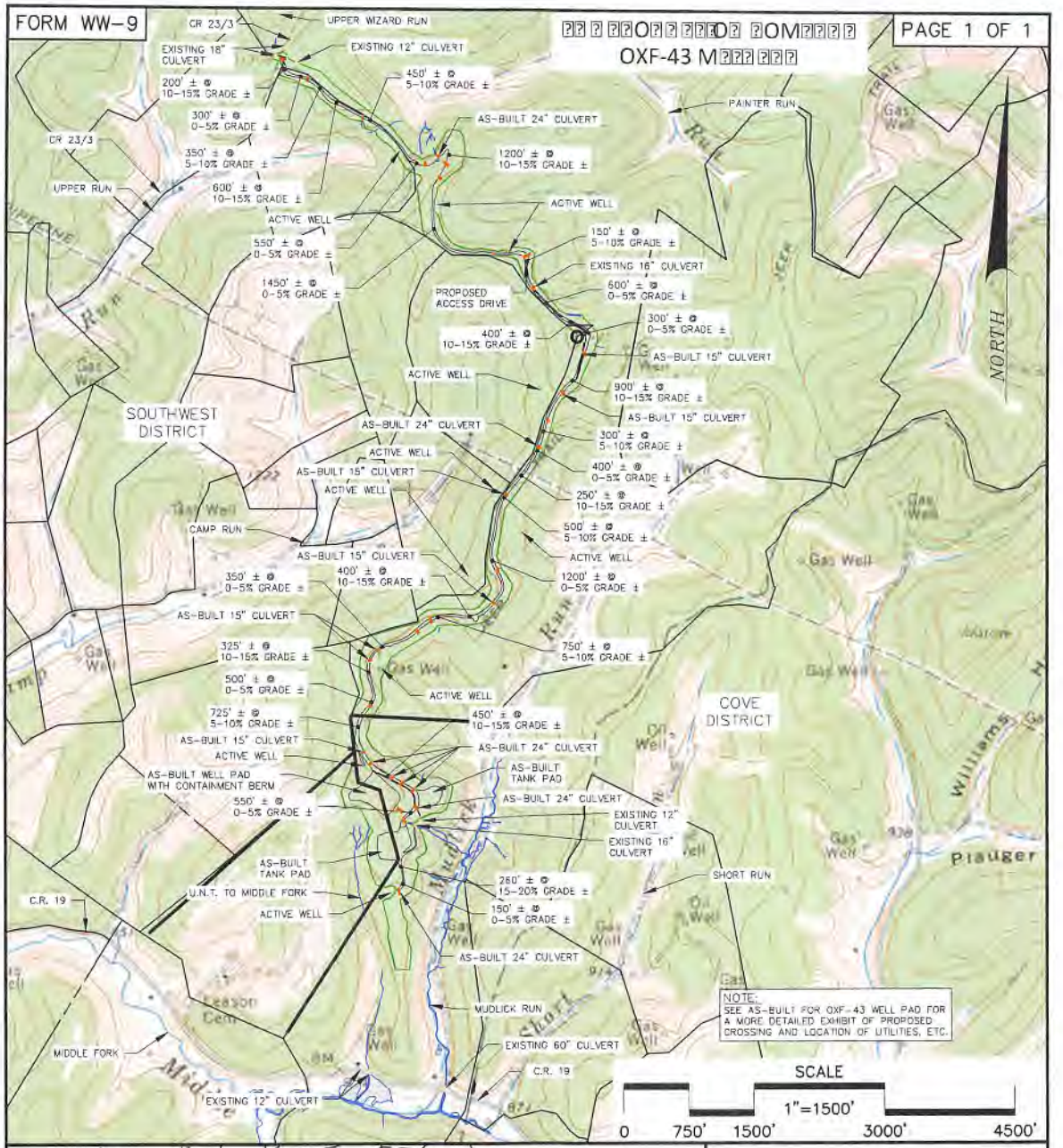
Topographical map with 1-mile safety radius map notes:

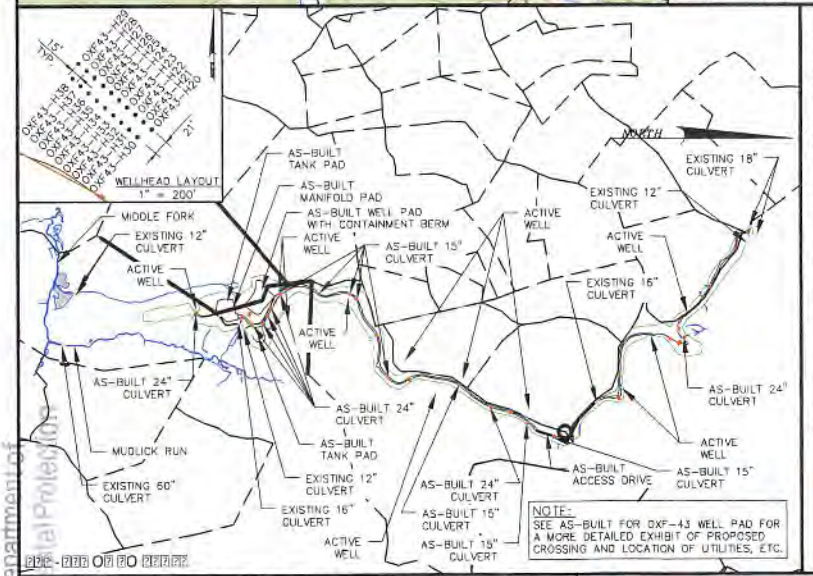
This is a basic map of the site which shows the topography of the area.
A defined 1-mile safety radius is shown on the map along with an attached list, if available, of the names, addresses and telephone numbers of residents, churches, schools and emergency facilities located within that one mile radius.
The map shows the nearby public route numbers and/or names

FORM WW-9

PAGE 1 OF 1

??? ???O?????D? ?OM???? OXF-43 M???????





ALL ROADS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV DEP OIL AND GAS BMP MANUAL. ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV DOT REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY DOT.

APPROPRIATE EROSION CONTROL BARRIERS ARE TO BE CONSTRUCTED AT ALL CULVERT AND CROSS DRAIN INLETS AND OUTLETS AS REQUIRED IN THE WV DEP OIL AND GAS BMP MANUAL. FIELD CONDITIONS (ROCK OUTCROPS AND BEDROCK) MAY PROHIBIT TRAPS BEING INSTALLED. WHEN THESE CONDITIONS EXIST ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION FROM THIS PLAN.

TEMPORARY SEED AND MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT AND STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PLC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

= AS-BUILT CULVERT 18" MIN UNLESS OTHERWISE NOTED

= EXISTING CULVERT

= APPROXIMATE LIMIT OF DISTURBANCE

CONSTRUCTION AND RECLAMATION PLAN

OXF-43 WELL PAD

SOUTHWEST TAX DISTRICT

DODDRIDGE COUNTY, WV

EQT Where energy meets innovation

RETTEW Associates, Inc.
One Robinson Plaza,
Suite 200
6800 Steubenville Pike,
Pittsburgh, PA 15205

DRAWN BY: DAW

DATE: 4/27/18

SCALE: AS NOTED

C:_RETTEWVAULTWIP\092612027-OXF 43\SHEETS\LD\WW-9 EXHIBIT\092612027-FORM WW-9 EXHIBIT AS-BUILT.DWG

TRAFFIC CONTROL CHECKLIST

SELECT SITE

Oxford 43

SITE INFORMATION

State	WV
County	Doddridge
Township	
School District	Doddridge County
CB Channel	TBD

DIRECTIONS

Continue on US Rt. 50 West and go 31.8 miles - Turn left onto Sunnyside Road (Rt. 50/30) and go 1.9 miles - Turn left onto Oxford Road (Rt. 21) and go 4.5 miles - Turn left onto S. Fork of Hughes River (Rt. 19/11) and go 3.5 miles - Turn right onto Upper Run Road (Rt. 22/3) and go to 0.8 mile to the beginning of proposed access road on the left with coordinates of 39.18032/-80.79694 - Continue south, along the ridge (some of which is existing access) for 2.4 miles to the OXF-43 Well Site with coordinates of 39.15518/-80.79214

ACCESS ROAD COORDINATES

39.14828	-80.79399

CHECKLIST

AFFECTED ROADS

Hughes River Road (CR 19/11) (speed limit only, no bus curfew)
Sunnyside Road (CR 50/30), Oxford Road, Upper Run Rd,

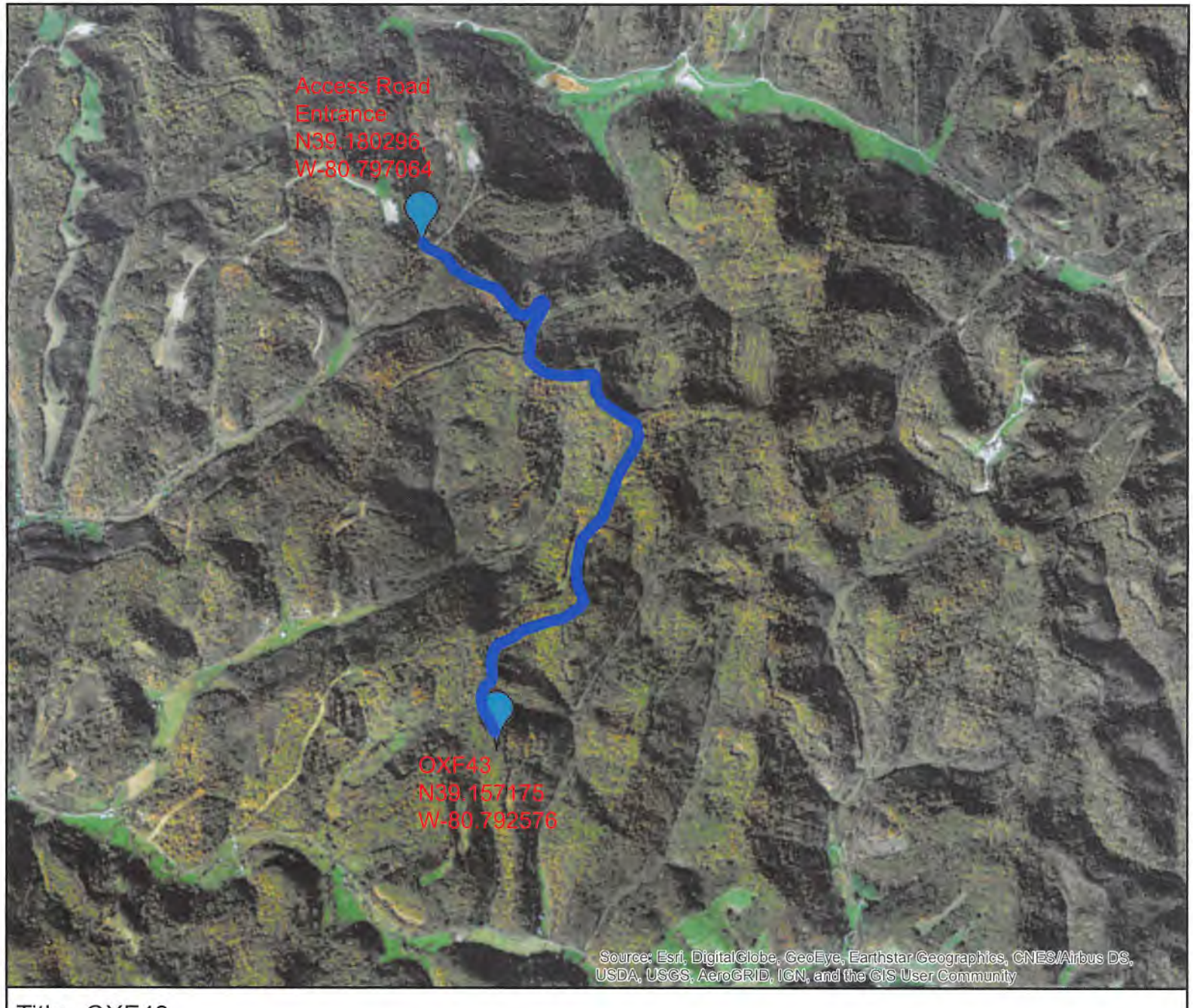
SPEED LIMIT	20 MPH	
BUS AM CURFEW BEGINS	6:30:00 AM	
BUS AM CURFEW ENDS	7:30:00 AM	
BUS PM CURFEW BEGINS	3:15:00 PM	
BUS PM CURFEW ENDS	4:30:00 PM	
SCHOOL START DATE	8/14/2017	
SCHOOL END DATE		

CHECK LIST COMPLETED

Submitted by (DRIVER) Date

EQT Corporation
625 Liberty Ave.
Pittsburgh, PA 15222

Legend



1:36,112

0 0.175 0.35 0.7 Miles

N
W E
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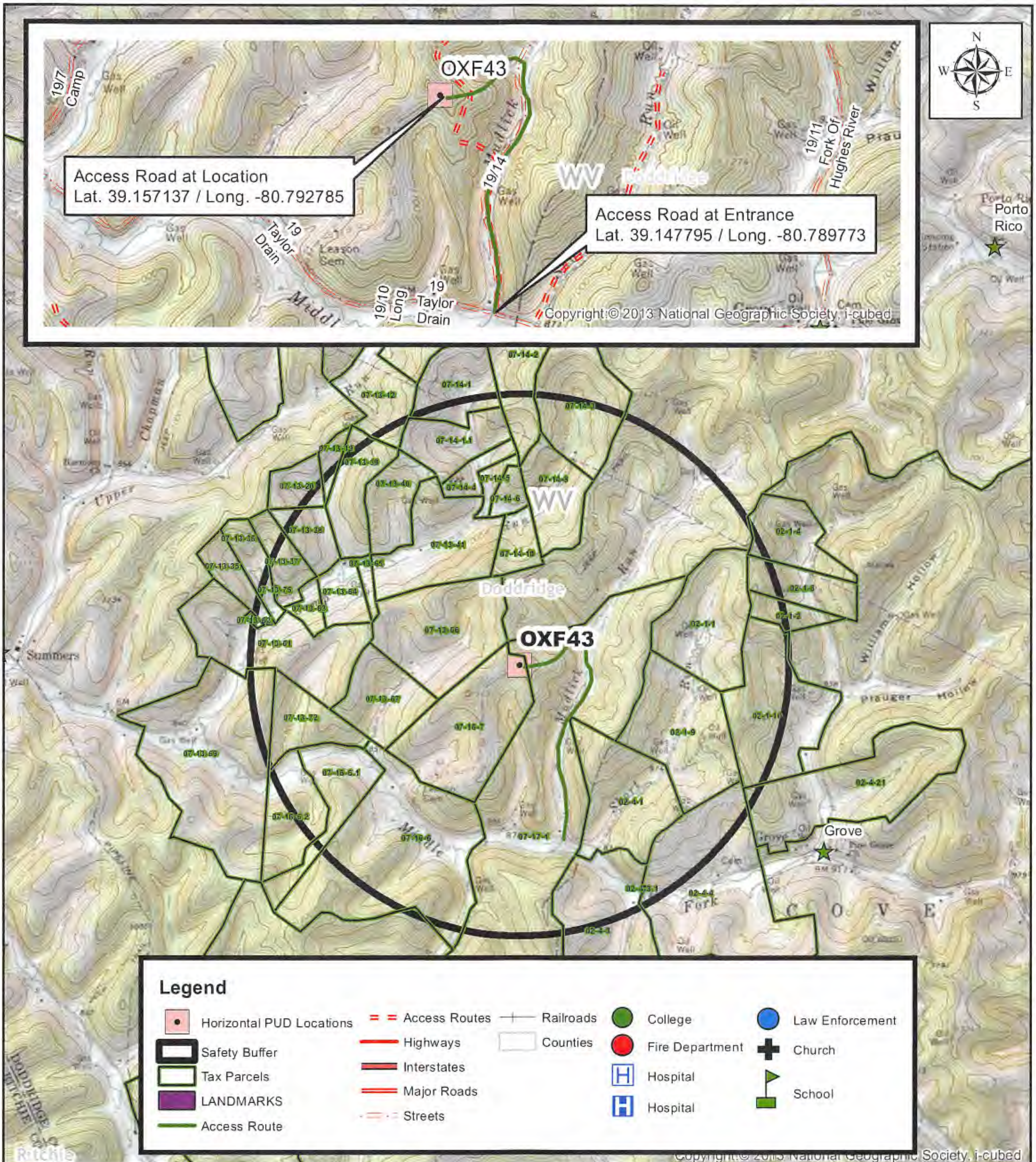
Title: OXF43



EQT

EQT Production
White Oaks Office
120 Professional Place
Bridgeport, WV 26330

Site Safety Plan

OXF43
One Mile Safety Buffer
Doddridge County, WV

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WV DODDRIDGE COUNTY OXF43 SITE SAFETY PARCEL LIST

MAP #	TM/PARCEL	NAME - OXF43 Site Safety Parcels	ADDRESS	PHONE
9	2-4-3.1	ARMSTRONG TELEPHONE COMPANY	600 EAST NORTH ST HARRISVILLE WV 26362	304-643-2921

Section III: Well Work

This Attached Plan will be reviewed with all employees on the work site prior to beginning their work. Any required changes will be inserted into this Plan and made a part of the Plan after being approved by WVOOG.

Documentation

A documented EQT Tailgate Safety Meeting (TSM) Form must be completed for each shift which describes the activities occurring, possible hazards and emergency contact information. Originals must be maintained and kept with the EQT OSR and filed with the well documents to serve as verification of the meeting and communication of the shift activities.

Plan Assimilation and Dissemination

The Supervisor of Environmental and Safety - Drilling, or their designee, shall be responsible for providing a copy of this plan to the local emergency planning committee (LEPC) or county emergency services (CES) office within at least 7 days from land disturbance or well work. The LEPC or CES representative will sign a receipt (See Appendices) documenting this.

A copy of this Plan will be available in the following locations:

- In the on-site mailbox
- In the On-Site Drilling or Completions Specialist office.
- West Virginia DEP Office of Oil and Gas
- LEPC or CES
- Office of the assigned Environmental and Safety Coordinators
- Electronically in EQT *Well File Library* (as part of the permit document).

Personal Protective Equipment (PPE)

At a minimum, all personnel on-site shall wear the following PPE:

- Flame Resistance Clothing (FRC)
- Hardhat
- Safety glasses with side shields
- Hard toe boots
- Gloves, Leather, Mechanic or Tight –fitting Knit
  (Cut Resistance ANSI Level 3 or greater for EQT employees)

Additional PPE may be required based on unique job hazards such as:

- High visibility vest
- Hearing Protection
- Welding/Cutting/Burning
- Electrical
- Fueling Diesel equipment
- Handling hazardous chemicals/substances

***Note*:** Additional PPE may be assigned dependent on the site conditions and shall be the discretion of the on-site specialist and the Environmental and Safety Department. All additional PPE requirements will be communicated to all personnel.

Well Pad Construction Sequence

Basic Construction Sequence

1. Mobilization
2. Erosion & Sediment Control Install

3. Clear & Grub
4. Top soiling
5. Bulk Earthwork (Keyways to finish grade)
6. Stoning & Stabilization
7. Sound wall install (If applicable)
8. Cellar & Conductor install
9. Containment & AST install
    - 9.1. Potential Construction Hazards (29CFR 1926 OSHA Construction Industry Regulations & Standards, July 2017)
    - 9.2 Fire Protection
        - 9.2.1. Fire prevention – burning on-site
    - 9.3. Material Handling, Storage, Use and Disposal
        - 9.3.1. Disposal of waste material – coal, spill clean-up (hydraulic fluid, fuel)
    - 9.4. Tools- Hand and Power (i.e. chainsaw for clearing)
    - 9.5. Welding and Cutting
    - 9.6. Motor Vehicles & Mechanized Equipment
        - 9.6.1. Material handling equipment – limited visibility
        - 9.6.2. Site clearing equipment – limited visibility
        - 9.6.3. Traffic control – off-loading equipment; cutting in entrance to new site
        - 9.6.4. Pile driving equipment
        - 9.6.5. Equipment rollovers
    - 9.7. Excavations
        - 9.7.1. Sloping and benching
        - 9.7.2. Shoring for trenches
        - 9.7.3. Fall protection
    - 9.8. Blasting and Use of explosives
    - 9.9. Electrical
        - 9.9.1. Temporary power run to man camps
        - 9.9.2. Proper grounding
    - 9.10. Confined Spaces
    - 9.11. Cranes and Derricks
    - 9.12. Other General Hazards (i.e. weather conditions, extreme terrain, slips, trips, etc.)

MARCELLUS/ UPPER DEVONIAN REGION:

Detail of Well Work, Drilling Operations

1. Review pertinent well data.
2. MIRU drilling rig.
3. Install riser and air bowl.
4. Drill surface or mine string hole to required depth on air / foam / water based mud.
    a. Surface casing must be set at least 50' and no more than 150' below the deepest freshwater unless necessary to cover workable coal seams.
    b. Mine string hole will not be drilled more than 100' below base of the mine. Casing will be set below the mine and a cement basket will be placed above the mine to allow cement to be placed from the basket to surface.
5. Run casing to program depth. Centralize per requirements.
6. Cement to surface per regulation.
7. WOC 8 hrs.
8. Pressure test casing to 20% over Maximum Anticipated Surface Pressure (MASP).

9. If separate mine string was required, prepare riser for the drilling of fresh water protective hole section as follows:
    a. TIH with drilling assembly.
    b. Drill out mine string and to section TD.
    c. Run water protective string (surface casing) to prescribed depth per regulation.
    d. Cement casing to surface per regulation.
    e. Pressure test casing to 20% over MASP.
    f. WOC 8 hrs.
10. Install and test wellhead per manufacturer's specification.
11. Install BOP stack.
12. Test BOP's
    a. Annular Preventer to 70% of rated capacity
    b. Ram Preventers to 80% of rated capacity
13. MU drilling assembly
14. Drill out surface casing and to planned section TD.
15. Run intermediate casing to programmed depth.
16. Cement intermediate casing to surface per regulation.
17. Pressure Test casing 20% over MASP.
18. WOC 8 hrs.
19. MU drilling assembly
20. Drill out casing. Perform formation integrity test to adequate pressure gradient.
21. Drilling a pilot hole:
    a. If drilling a pilot hole to tag the Onondaga:
        i. Drill the pilot hole to tag the Onondaga but no more than 100'.
        ii. Trip out of hole and run open hole logs per geology.
        iii. Trip in hole with drill pipe and plug back with solid cement plug to approximately 200' above KOP.
        iv. Proceed to step 22.
    b. If not drilling a pilot hole to tag the Onondaga:
        i. Drill pilot hole to KOP.
        ii. Trip for directional drilling assembly.
        iii. Proceed to step 22.
22. MU directional assembly, TIH and drill curve and lateral section of production hole with drilling assembly changes as necessary to achieve the planned wellbore trajectory.
23. Run production casing to programmed depth.
24. Cement production casing per regulation. Planned TOC will be 500' above top producing zone.
25. WOC 8 hrs.
26. Nipple down BOP's and install tubing head. Test tubing head voids per manufacturers recommendation.
27. Install dry hole flange. RDMO drilling rigs.

First Stage Completion Work

1. Install containment as required.
2. Move in and rig up to run bond log from attainable total depth to above cement top and marker joint.

Fracture Stimulation

1. Install or expand containment as required.
2. Install two 10K frac valves with a flow cross between them, and a goathead with frac iron. Rig up frac iron and test surface equipment.
3. Open well and test production casing; open the toe popper.
4. Rig up wire line and pump down plug and guns to perforate Stage one. Pump down operations are run under lubricator and pressure control.
5. Frac stage one.
6. Rig up wire line and pump down plug and guns to perforate subsequent stages. Pump down operations are run under lubricator and pressure control.
7. Set plug, perforate and frac subsequent stages.
8. Rig down frac equipment and secure location. Lubricate Back Pressure Valve into B section. Remove one 10K frac valve and flow cross. Install dry hole tree as second barrier.

Frac Isolation Plug Drill Out & Completions Flow Back Procedure

1. Install annular bop, pipe and blind rams. Rig up Snubbing unit and service rig, or coiled tubing unit. Install flow cross and flow back equipment and pressure test. Remove back pressure valve.
2. Run in hole with tubing and bottomhole assembly and drill all plugs. Returns are taken to the gas separator, gas buster and/or tanks/pits. Gas is sent down sales line or flared. Pressures are maintained at levels below the operating pressure of snubbing unit components.
3. Rig down snubbing unit and rig or coiled tubing unit.
4. Flow back well with gas to sales or flare until well is stabilized.
5. Install Back pressure valve and remove frac valves. Install production tree and lubricate out Back pressure valve. Turn over to production.

Production Operations

1. Install containment, production equipment, metering equipment, and tankage per program.
2. Test safety systems.
3. Turn well to sales.

Plugging Operations

1. Notify inspector 24 hrs. prior to commencing operations
2. Check pressure on all casings.
3. Bleed off pressure to tank with secured lines.
4. Nipple up BOP and JU Head Assembly.
5. Hook pump up, load 5 ½" casing with bentonite gel from TD to 50' below the lowest strata bearing oil, gas, or water.
6. RIH w/wireline and set a CIBP 50' below the lowest strata bearing oil, gas, or water if achievable. Consult with WVDNR if cannot get to desired depth for permission to set as deep as possible. Load casing with freshwater and pressure test casing and CIBP to 1500 psi for 20 minutes.
7. If pressure holds, continue to step #8. If pressure does not hold contact EQT's site supervisor and ODNR oil and gas inspector.

8. TIH and tag CIBP and run a CBL on 5.5" casing to surface to determine freepoint.
9. TIH with tubing to CIBP and set a 500' C1A cement plug. Check fluid levels prior to all cement jobs.
10. Cement across all gas, oil or water bearing zones with a nonporous material in between cement plugs up to the freepoint of the 5.5".
11. Free point 5 ½" casing, cut casing @ free point. TOOH 5 ½" casing.
12. TIH with tubing and set a 100' C1A cement plug 50' in/out of casing cut. TOOH tubing.
13. Run bond log on 9 5/8" casing from 5 ½" casing cut plug to surface.* *Note, other perforations and cement plugs or casing cuts may be deemed necessary after review of 9 5/8" casing bond log.*
14. TIH with 9 5/8" CIBP to top of 5 ½"casing cut plug. Set CIBP.
15. TIH tubing to 9 5/8" CIBP set a 500' C1A cement plug.
16. Cement across all gas, oil or water bearing zones with a nonporous material in between cement plugs up to the freepoint of the 5.5".
17. Erect monument with API#, date plugged, & company name.
18. Reclaim location and road to WVDNR specifications.

UTICA REGION:

Detail of Well Work, Drilling Operations

1. Review pertinent well data.
2. MIRU drilling rig.
3. Install riser and air bowl.
4. Drill surface hole to required depth on air / foam / water based mud.
   a. Surface casing must be set at least 50' below the deepest fresh water.
5. Run casing to programed depth. Centralize per requirements.
6. Cement to surface per regulation.
7. WOC 8 hrs.
8. Pressure test casing to 20% over Maximum Anticipated Surface Pressure (MASP).
9. TIH with drilling assembly.
10. Drill out surface casing string and drill to Intermediate 1 TD.
11. Run intermediate 1 casing string to prescribed depth per regulation.
12. Cement casing to surface per regulation.
13. Pressure test casing to 20% over MASP.
14. WOC 8 hrs.
15. Install and test wellhead per manufacturer's specification.
16. Install BOP stack.
17. Test BOP's
    a. Annular Preventer to 70% of rated capacity
    b. Ram Preventers to 80% of rated capacity
18. MU drilling assembly
19. Drill out intermediate 1 casing and to Intermediate 2 TD.
20. Run intermediate 2 casing to programmed depth.
21. Cement intermediate 2 casing to 500' above shallowest producing zone per regulation.
22. Pressure Test casing 20% over MASP.
23. WOC 8 hrs.
24. MU drilling assembly
25. Drill out casing. Perform formation integrity test to adequate pressure gradient.

26. Drill pilot hole to 200' below Trenton formation.
27. TOOH and run logs per geology.
28. TOOH with logging tools and TIH with drill pipe. Set cement plug back to KOP.
29. TOOH for directional drilling assembly.
30. MU directional assembly, TIH and drill curve and lateral section of production hole with drilling assembly changes as necessary to achieve the planned wellbore trajectory.
31. Run production casing to programmed depth.
32. Cement production casing 1000' above KOP per regulation.
33. WOC 8 hrs.
34. Nipple down BOP's and install tubing head. Test tubing head voids per manufacturers recommendation.
35. Install dry hole flange. RDMO drilling rigs.

First Stage Completion Work

1. Install containment as required.
2. Install 15K frac valve
3. Move in and rig up WL to run bond log from attainable total depth to above cement top and marker joint.

Fracture Stimulation

1. Install or expand containment as required.
2. Install two 15K frac valves with a flow cross between them, and a goathead with frac iron. Rig up frac iron and test surface equipment.
3. Open well and test production casing; open the toe popper (if toe popper is run).
4. Rig up wire line and pump down plug and guns to perforate Stage one, or use WL tractor or CT. Pump down operations are run under lubricator and pressure control.
5. Frac stage one.
6. Rig up wire line and pump down plug and guns to perforate subsequent stages. Pump down operations are run under lubricator and pressure control.
7. Set plug, perforate and frac subsequent stages.
8. Rig down frac equipment and secure location. Lubricate Back Pressure Valve into B section. Remove one 15K frac valve and flow cross. Install dry hole tree as second barrier.

Frac Isolation Plug Drill Out & Completions Flow Back Procedure

1. Install annular bop, pipe and blind rams. Rig up Snubbing unit and service rig, or coiled tubing unit. Install flow cross and flow back equipment and pressure test. Remove back pressure valve.
2. Run in hole with tubing and bottomhole assembly and drill all plugs. Returns are taken to the gas separator, gas buster and/or tanks/pits. Gas is sent down sales line or flared. Pressures are maintained at levels below the operating pressure of snubbing unit components.
3. Rig down snubbing unit and rig or coiled tubing unit.
4. Flow back well with gas to sales or flare until well is stabilized.
5. Install Back pressure valve and remove frac valves. Install production tree and lubricate out Back pressure valve. Turn over to production.

Production Operations

1. Install containment, production equipment, metering equipment, and tankage per program.
2. Test safety systems.
3. Turn well to sales.

Plugging Operations

1. Notify inspector 24 hrs. prior to commencing operations
2. Check pressure on all casings.
3. Bleed off pressure to tank with secured lines.
4. Nipple up BOP and JU Head Assembly.
5. Hook pump up, load 5 ½" casing with bentonite gel from TD to 50' below the lowest strata bearing oil, gas, or water.
6. RIH w/wireline and set a CIBP 50' below the lowest strata bearing oil, gas, or water if achievable. Consult with WVDNR if cannot get to desired depth for permission to set as deep as possible. Load casing with freshwater and pressure test casing and CIBP to 1500 psi for 20 minutes.
7. If pressure holds, continue to step #8. If pressure does not hold contact EQT's site supervisor and ODNR oil and gas inspector.
8. TIH and tag CIBP and run a CBL on 5.5" casing to surface to determine freepoint.
9. TIH with tubing to CIBP and set a 500' C1A cement plug. Check fluid levels prior to all cement jobs.
10. Cement across all gas, oil or water bearing zones with a nonporous material in between cement plugs up to the freepoint of the 5.5".
11. Free point 5 ½" casing, cut casing @ free point. TOOH 5 ½" casing.
12. TIH with tubing and set a 100' C1A cement plug 50' in/out of casing cut. TOOH tubing.
13. Run bond log on 9 5/8" casing from 5 ½" casing cut plug to surface.* *Note, other perforations and cement plugs or casing cuts may be deemed necessary after review of 9 5/8" casing bond log.*
14. TIH with 9 5/8" CIBP to top of 5 ½"casing cut plug. Set CIBP.
15. TIH tubing to 9 5/8" CIBP set a 500' C1A cement plug.
16. Cement across all gas, oil or water bearing zones with a nonporous material in between cement plugs up to the freepoint of the 5.5".
17. Erect monument with API#, date plugged, & company name.
    Reclaim location and road to WVDNR specifications

Section IV: Chemical Inventory & SDS

Safety Data Sheets (SDS):

SDS for all materials and chemicals on-site will be maintained and readily available at the well site. Copies of these SDS will be kept in the EQT On-site Offices, or be available on-line and be the responsibility of the EQT On-site Specialist. An electronic copy of the Anticipated SDS will be submitted to the Department as well.

Mud Information

There will be one induction style mud hopper on location for mixing the fluid.

Mud Usage Marcellus/Upper Devonian Region	
Mix Mud Amount	2000 – 3500 bbls
Mud Weights	8.5 – 14.8 ppg
Volume Mixing Water	275 – 2750 bbls

Mud Usage Utica Region	
Mix Mud Amount	2000 – 3500 bbls
Mud Weights	8.5 – 18.5 ppg
Volume Mixing Water	275 – 2750 bbls

Below table contains the inventory of on-site materials for mixing mud.

Product Name	General Description	Possible Inventory	Package Size
ALDACIDE G	Bacteria prevention	0 – 32	5 gallon can
BARABLOK	Fluid loss additive	0 – 100	50 lbs. sack
BARACARB 50, 150, 600	Lost circulation material	0 – 150	50 lbs. sack
BARACOR 700	Corrosion inhibitor	0 – 4	55 gallon drum
BARA-DEFOAM W300	Mud defoamer	0 – 32	5 gallon can
BARAZAN-D PLUS	Viscosifier	0 – 80	25 lbs. sack
BAROFIBRE	Lost circulation material	0 – 100	25 lbs. sack
BAROID 41	Weighting agent	0 – 80	Bulk tons
BARO-SEAL COARSE	Lost circulation material	0 -100	50 lbs. sack
Bicarbonate of soda	Calcium control	0 – 49	50 lbs. sack
Calcium chloride powder	Salinity control	0 – 160	50 lbs. sack
Caustic soda	pH/alkalinity control	0 – 25	50 lbs. sack
Citric acid	pH/alkalinity control	0 – 25	50 lbs. sack
DEXTRID LT	Fluid loss additive	0 – 100	50 lbs. sack
DRILTREAT	Wetting agent/emulsifier	0 – 16	5 gallon can
EZ-MUD	Shale inhibitor	0 – 10	5 gallon can
GELTONE V	Viscosifier	0 – 50	50 lbs. sack
LE SUPERMUL	Emulsifier	0 – 16	55 gallon drum
Lime	pH/alkalinity control	0 – 50	50 lbs. sack
N-SEAL	Lost circulation material	0 – 100	50 lbs. sack
NXS-LUBE	Lubricant	0 – 16	5 gallon can
OMC 42	Mud conditioner	0 – 4	55 gallon drum
PAC-L	Fluid loss additive	0 – 80	50 lbs. sack
QUIK-THIN PLUS	Mud thinner	0 – 100	50 lbs. sack
RHEMOD I	Mud conditioner	0 – 8	55 gallon drum
RM 63	Mud conditioner	0 – 8	55 gallon drum
Soda Ash	Calcium control	0 – 25	50 lbs. sack
Sodium chloride	Salinity control	0 – 30	2,000 lbs. sack
STEELSEAL 400	Lost circulation material	0 – 200	50 lbs. sack
SUSPEMTONE	Suspension agent	0 – 100	50 lbs. sack
SynOil	Base oil	0 – 150	bbls (42 gal)
WALL-NUT MEDIUM	Lost circulation material	0 – 150	50 lbs. sack
ZEOGEL	Viscosifier	0 - 100	50 lbs. sack

Section V: BOP and Well Control

BOP equipment and assembly installation schedule

BOP Equipment – Marcellus/Upper Devonian Region						
Size (in)	Operation	Hole Section	Type	Pressure Class	Test Pressure (psi)	Test Frequency
13-5/8"	Drilling	Intermediate	Annular	3M	2,100	Initial
13-5/8"	Drilling	Pilot	Annular	3M	2,100	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Annular	5M	3,500	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Blind	5M	4,000	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Pipe	5M	5,000	Initial, Weekly, Trip
7-1/16"	Completions	Production	Cameron U's	5M	5,000	Initial
13-5/8"	Drilling	Pilot (Onondaga Tag)	Annular	5M	4,000	Initial, Weekly, Trip

Wellhead Detail – Marcellus/Upper Devonian		
Size (in)	Type	M A W P (psi)
13-3/8" SOW x 13 5/8" 5M	Multi-bowl Well Head	5,000
13-5/8" 5M x 7-1/16" 10M	Tubing Head	10,000
2-1/16" 5M	Christmas Tree	5,000

Utica Region

Test BOPs as follows:

- Annular to 250 psi low/2,100 psi high for 30 mins each
- All ram, choke/kill valves, TIW, IBOP and all choke manifold valves to 250 psi low/4,000 psi high for 30 mins each
- Annular to 250 psi low/3,500 psi high for 30 mins each
- All ram, choke/kill valves, TIW, IBOP and all choke manifold valves to 250 psi low/8,000 psi high for 30 mins each

BOP Equipment – Utica Region						
Size (in)	Operation	Hole Section	Type	Pressure Class	Test Pressure (psi)	Test Frequency
13 5/8"	Drilling	Intermediate	Annular	3M	2,100	Initial, Weekly, Trip
13 5/8"	Drilling	Intermediate	Pipe	5M	4,000	Initial, Weekly, Trip
13 5/8"	Drilling	Intermediate	Blind	5M	4,000	Initial, Weekly, Trip
13 5/8"	Drilling	Pilot/Production	Annular	5M	3,500	Initial, Weekly, Trip
13 5/8"	Drilling	Pilot/Production	Pipe	10M	8,000	Initial, Weekly, Trip
13 5/8"	Drilling	Pilot/Production	Blind	10M	8,000	Initial, Weekly, Trip

Wellhead Detail – Utica		
Size (in)	Type	M A W P (psi)
13-3/8" SOW x 13-5/8" 10M	Multi-bowl Well Head	10,000
13 5/8" 10M x 7 1/16" 15M	Tubing Head	15,000
2 9/16" 10M	Christmas Tree	15,000

Well Control Trained Personnel:

Drilling

- EQT On-Site Specialist – 2 on rotating hitches.
- Contract Group's – Tool Pusher & Drillers

Completions & Production

- EQT On-Site Specialist or Consultant

Notification Procedure

Significant Event Notifications

- A detailed record of significant drilling events will be recorded in the EQT Production Well Log Book.
- In addition to the record above, the local inspector of the WV DEP Office of Oil and Gas and Supervisor of EH&S will be notified by the EQT On-Site Specialist for the following events:
  - Lost Circulation
  - Encounter of Hydrogen Sulfide Gas
    - *Immediate notification is required of any reading of Hydrogen Sulfide Gas greater than 10ppm*
  - Fluid Entry
  - Abnormal Pressures
  - Blow-outs
  - Significant kicks
- Contact information can be found in Section II

Emergency Notifications

- In the event emergency response personnel and residents surrounding the work site are affected by specific events during the operation they must be notified as soon as possible by the On-site Specialist or their designee.

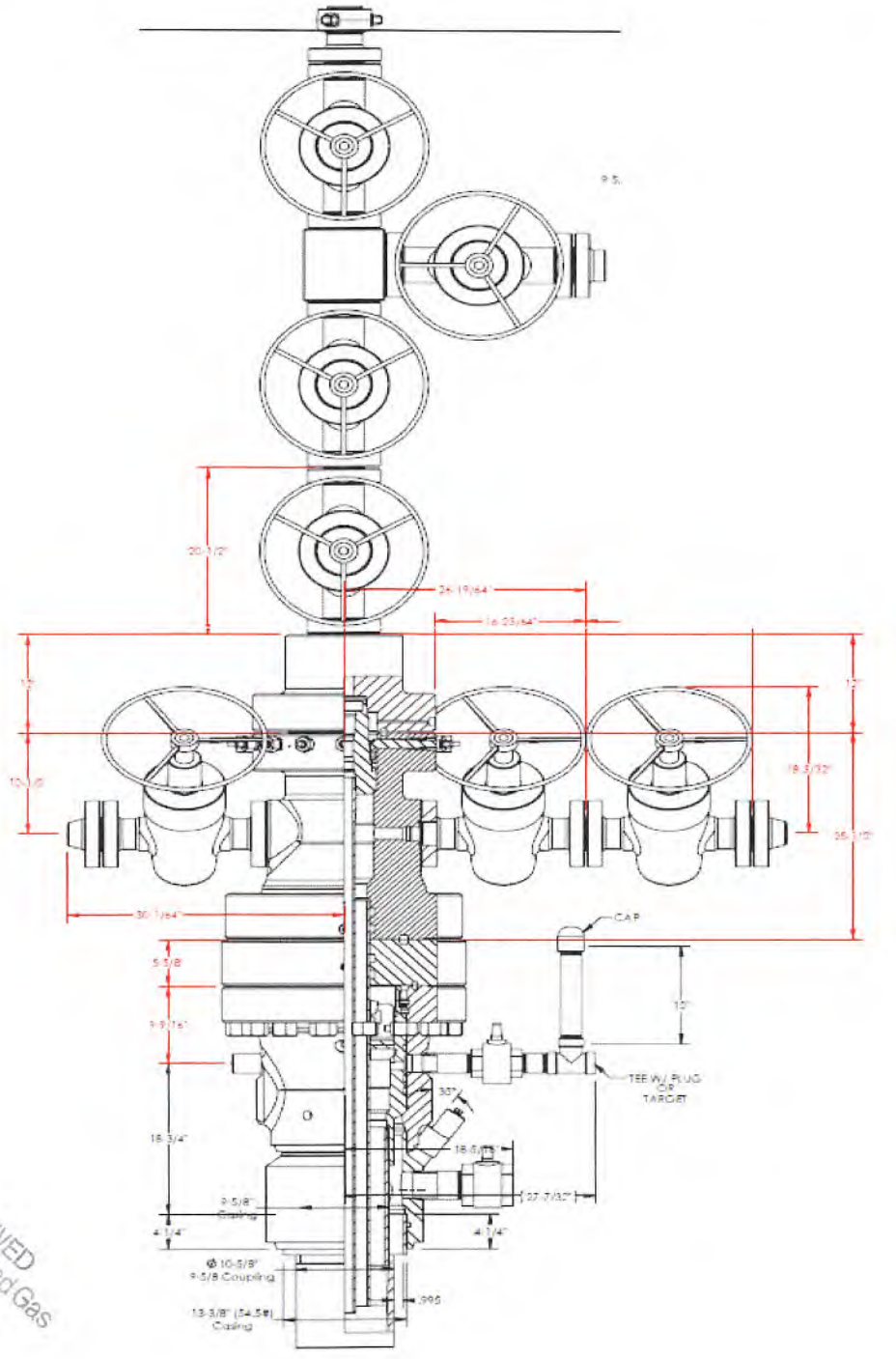
Flaring Notifications

- The local fire department(s) and/or county dispatch centers must be notified immediately prior to the ignition of a flare.

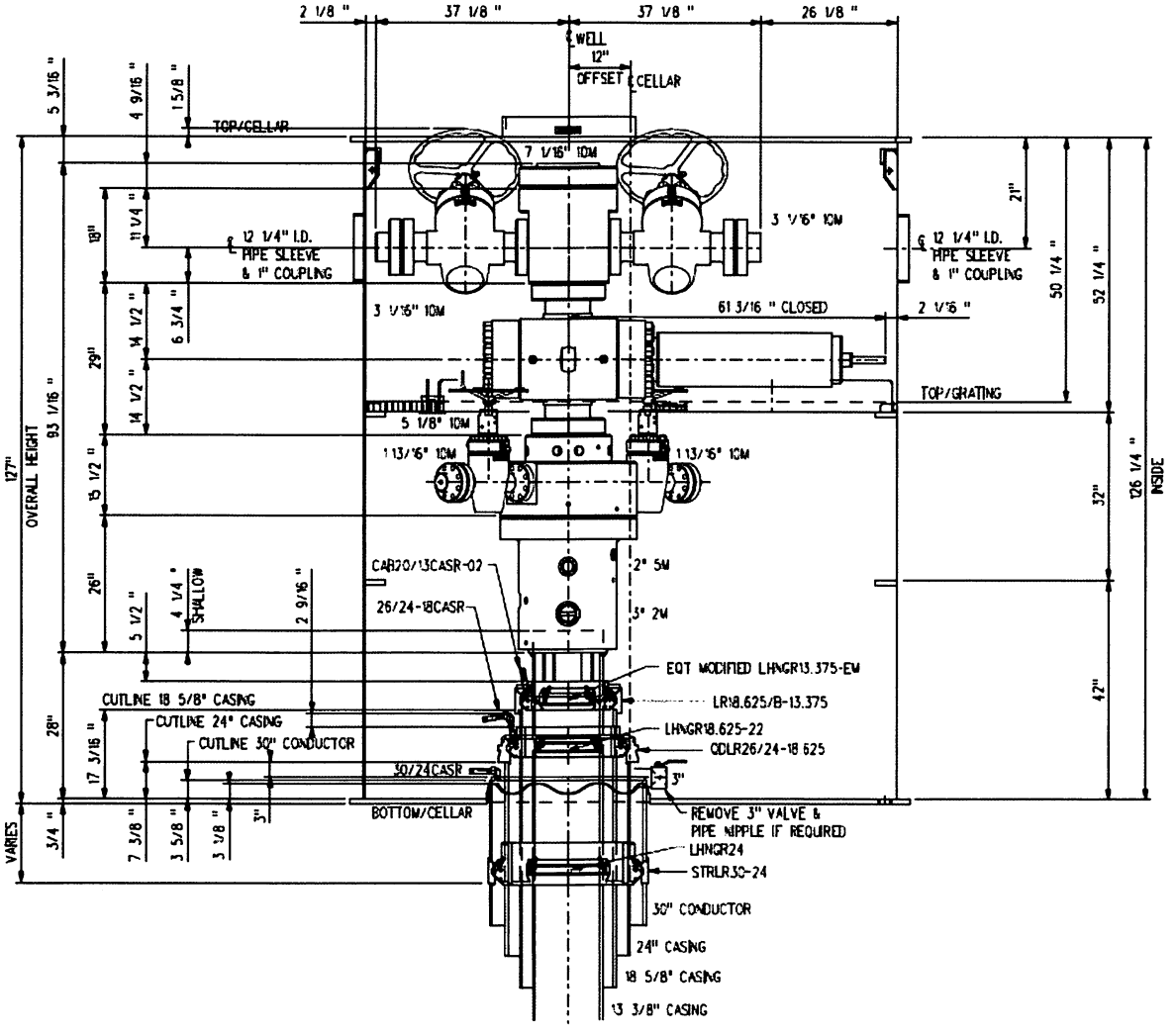
Marcellus/Upper Devonian Region Well Head Assembly Design, version 1.

Written Description:

Multi-bowl wellhead assembly with a 13 3/8" 5M x 13 3/8" SOW wellhead. A 13 5/8" 5M x 11" 5M DSA is used between the wellhead and tubing head. The tubing head is 11" 5M x 7 1/16" 10M. The tree is 2 1/16" 5M. Picture of stack up below.



Marcellus/Upper Devonian Region Well Head Assembly Design, version 2.



SECTION THRU CELLAR

REV.	DATE	BY	DESCRIPTION
A	11/08/17	REC	ISSUED FOR REFERENCE

DRAWING ISSUED
DATE: 11/08/17
☐ REFERENCE
☐ PROGRESS
☐ PRELIMINARY
☐ APPROVAL
☐ BIDDING
☐ MATERIAL
☐ CONSTRUCTION
☐ REVISED
☐ AS BUILT
11/08/17 REF

DATE: 11/08/17 APPR.: JR
SCALE: 3/4"=1'-0" CHKD.:
BY: REC CODE: CT-057

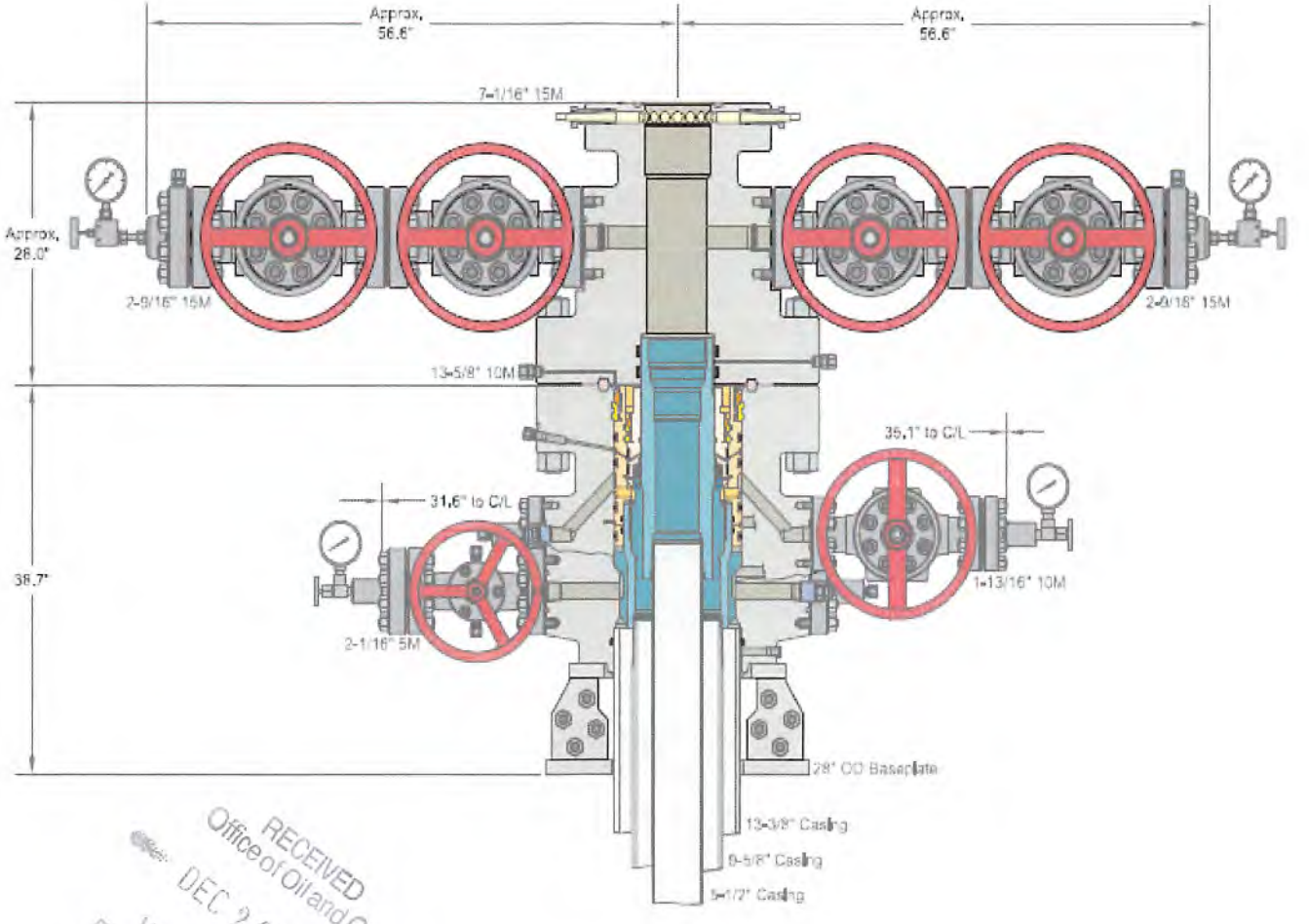
CELLAR TECH
CONTAINMENT WELL CELLAR SYSTEMS

EQT PRODUCTION
MODEL: EQT - 10872127-26-12
CELLAR TECH 30 x 24 x 18 5/8 x 13 3/8 HANGER SYSTEM
GENERAL ARRANGEMENT & HANGER MAKE-UP
SECTION & ENLARGED DETAIL

CELLAR TECH JOB NUMBER	CELLAR TECH DRAWING NUMBER
HNGR. MAKE-UP	EQT-SK-110817-1

Utica Region Well Head Assembly Design

Written Description:
Multi-bowl wellhead assembly with a 13 5/8" 10M x 13 3/8" SOW wellhead. A 13 5/8" 10M x 7 1/16" 15M DSA is used between the wellhead and tubing head. The tubing head is 7 1/16" 15M x 7 1/16" 15M. The tree is 2 9/16" 15M. Picture of stack up below.



CACTUS WELLHEAD LLC	EQT PRODUCTION NORTHEAST		
13-3/8" X 9-5/8" X 5-1/2" MBU-2LR Wellhead Assembly With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS Tubing Head & 2-9/16" 15M Tubing Head Valves	DRAWN	DLE	04NOV15
	APPRV		
	DRAWING NO.	DNE0000013	

Well Kill Killing Operations

In a well control situation, all influxes are to be handled using the Wait-and-Weight Method or the Driller's Method. With the Wait-and-Weight Method, the influx is circulated out while kill weight mud is simultaneously circulated down the drill pipe and up the annulus. The heavy mud is circulated to the bit at a slow kill rate, and the drill pipe pressure is maintained according to a prepared table that gives drill pipe pressure for the corresponding strokes of kill mud pumped.

The Driller's Method is accomplished in two circulations using constant drill pipe pressure and maintaining constant pump speed. The drill pipe pressure is kept constant by adjusting the choke. Once the annulus is clear of the influx, the mud weight is adjusted to kill-weight. The kill-weight mud is then circulated to the bit using constant pump speed and drill pipe pressure step-down plan. When kill-weight mud has reached the bit, the FCP is maintained until the heavy mud has reached the surface.

Section VI: Hydrogen Sulfide

Purpose

The purpose of this plan is to insure the safety of the all on-site personnel as well as those residents in close proximity. Hazards associated with the possibility of H2S encounters and the warning signs of H_2S exposure will be covered.

Scope

The policy is to consider every encounter with H_2S as potentially lethal until proven otherwise. Upon encountering H_2S, EQT employees or contractors(s) will determine the concentration of H_2S.

General Information

Immediately upon suspicion or odor of H_2S on location, the concentration shall be determined using properly functioning single or multi-gas detection devices which have a sensor calibrated to detect the presence of H_2S gas.

- All readings should be documented along with the time they were obtained
- All areas having a reading of greater than 10 ppm H_2S shall be evacuated until the area has been cleared of H_2S, or properly trained personnel equipped with appropriate PPE arrive on location.
- H_2S deadens the sense of smell; the presence or absence of H_2S odor is not an acceptable means for determining the presence of gas.
- Never walk upwind or uphill towards any suspected source of H_2S; approach using a cross wind approach.

Identify wind direction and evacuate personnel upwind and uphill of the leak; H_2S is heavier than air and will settle in low-lying areas.

If necessary, the well will be shut in and the work will be stopped until adequate safety personnel and equipment have arrived on site.

No work will take place until the appropriate personnel and equipment are in place.

The primary considerations at this time will be:

- H_2S concentration
- Gas Volume
- Weather Conditions
- Dwellings in the area.

Personal Protective Equipment

1. The EQT H_2S contractor will have an emergency trailer with SCBA's, additional gas detection equipment and other instrumentation and PPE required for appropriate response.
2. All personnel on location; all personnel monitoring adjacent to the location; or all personnel associated with the operation, will be equipped with personal H_2S monitors.
3. There will be a H_2S monitor located at the flow line exit, during the drilling of this well, as well as on the Rig Floor.
4. This PPE shall be in addition to the PPE requirements listed in EQT's General Safety Policies and Procedures.

Training

Only personnel whom have been properly trained; or are qualified in the hazards of H_2S, will be allowed on location during operations that have encountered, or projected to encounter H_2S.

- There will be a safety briefing prior to start of each shift or tower and hazards and currently readings of H_2S will be documented on a TSM or JSA.

Personnel Accountability and Briefing (Assembly) Areas

The sign in sheet of the EQT Tailgate Safety Meeting (TSM) Form shall be used for Accountability of on-site personnel as well as visual confirmation with the current supervisor of the site. Personnel should not leave the site without first informing their immediate supervisor, Emergency Coordinator, and/or On-Site Representative (OSR).

- The sign in roster is located at: **EQT Company Trailer**
- Primary Assembly Area: **EQT Company Trailer**
- Secondary Assembly Area: **Access road intersection with pad entry**
- Tertiary Assembly Area: **Start of the access road or a safe location chosen based on conditions**.

Specific considerations for H_2S should include:

- Windsocks or streamers for indication of wind direction.
- Being upwind of harmful levels of H_2S
- Avoiding low lying areas

Signage will be utilized along the location road, or any other entrances to the location, if H_2S is encountered.

H_2S Response Team Contractors

- The designated EQT Hydrogen Sulfide Emergency Response Company will be determine based on availability, location of the incident and master service agreements maintained by EQT.

Emergency numbers

- See Section I for emergency contact information.

Site Access

- See Section II: Site Access for information.

Notifications

The EQT H_2S Contractor will be notified at the following intervals if operations are occurring on a suspected H_2S location:

- Pre-Spud Meeting
- Spud Date
- Bottom of 9 5/8"
- 1000' Above Onondaga

Protection Zone Plans

Emergency Protection Zone Plan

In the event of an emergency on the well site, the Emergency Coordinator, or his designee, shall determine protective zones to limit the risk of exposure to workers, local responders, and residents surrounding the work area.

- The attached Safety Zone Map and Parcel Owners listed in Section II of this plan can be utilized.

Life safety, impacts to the environment, and property conservation are priorities.

The Emergency Coordinator shall determine these zones based on the following information on the scene:

- Magnitude of the incident
- Wind Direction
- MSDS of applicable materials
- Current and forecasted weather conditions
- Topography and land conditions
- Other influences specific to the incident

Once established, these zones will be maintained until a determination is made by the Emergency Coordinator to alter or discontinue them.

Flowback Condensate Protection Zone Plan

A pre-job meeting or contact will be performed with all parties prior to startup.

Equipment and operational guidelines are:

- Permit entry only 30' radius around gas buster tanks.
- Signs posted around well site.
- Gas detectors and condensate sticks will be on location and used.
- Approved vendors only for condensate transfer to pre-approved sites.
- Emergency response plan reviewed for either WV or PA operations.
- EQT On-Site Completion Specialist (OCS) will be notified immediately of any liquids on the ground.
- Only approved companies and vacuum trucks to be used to pick up fluids.
- LEL meter usage verified and to be checked.
- All ignition sources around well site will be reviewed.

Section VII: Flaring

Flaring Operations

Drilling

Flare Line Installation

The BOP equipment will all be located on the surface. The choke line coming off the stack will lead into a 5,000 psi choke manifold with 2 adjustable chokes. The 7" blooie line will divert any gas 50-75' away from rig substructure. Blooie line will be properly anchored with stakes or buried and will be set up so that gas can be vented. There will be a clearing of 25' for the gas to be vented. Duration of flare is expected to be ~ 7 days, depending on actual test results.

Ignition Methods

1. Primary – Vent
2. Backup – Marine flare pistol

Notification

Notification of a Flare will be given to the local Fire Department and/or 911 center, if possible. Refer to Section 3.0 for contact information.

Completions

Flare Line Installation – Marcellus/ Upper Devonian Region

The Flare Stacks will be positioned in a safe area at least 25' away from pit liners, trees and any other hazardous sites. The Flowback configuration consist of in order: 7 and1/16" 10m frac valve; Flow Cross with 4 and 1/16" wing valve ; junk catcher; choke manifold; 1440 psi or 2000 psi horizontal test separator and 2" 206 pipe to Flare Stack. Flowline will be properly anchored and tethered. Duration of flare is expected to be ~ 7 days, depending on actual test results.

Ignition Methods

1. Primary –Pilot Light

Flare Line Installation – Utica Region

The Flare Stacks will be positioned in a safe area at least 25' away from pit liners, trees and any other hazardous sites. The Flowback configuration consist of in order: 7 and1/16" 10m frac valve; Flow Cross with 4 and 1/16" wing valve ; junk catcher; choke manifold; 1440 psi or 2000 psi horizontal test separator and 2" 206 pipe to Flare Stack. Flowline will be properly anchored and tethered. Duration of flare is expected to be ~ 7 days, depending on actual test results

Ignition Methods

1. Primary –Pilot Light

Notification

Notification of a Flare will be given to the local Fire Department and/or 911 center, if possible. Refer to Section II for contact information.

LEGEND	REVISED BY:	DATE:
= Existing Wells	Chris Harmon	10/30/2019
= Future Wells		
= Pad & Berm		
= Access Road		

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OXF43 Flare Diagram

Southwest Twp, Doddridge Co., WV

Scale: 1" = 50' | 1 of 1

Section VIII: Collision Avoidance

Collision avoidance is managed by utilizing gyro tools, downhole steering tools (MWD/EM), and anti-collision software by engineers. Two drilling scenarios that occur are normal pad drilling and return to pad drilling. EQT categorizes these two scenarios as such because the two scenarios utilize very different mitigation plans.

Normal pad drilling is defined when a top hole rig drills each well on the pad down to kick off point (KOP) and then a bottom hole rig moves onto the pad after the top-hole rig moves off and drills the curve and lateral sections. Normal pad drilling can also be defined when a bottom hole rig moves to a pad and drills each well on the pad from surface to TD (Grassroots Well). Normal pad drilling carries much less risk and thus does not require frequent surveying and collision avoidance maneuvers because no producing wells are present and risk of unexpected pressure or well control events are not present.

Return to pad drilling is a scenario where a top-hole rig or a bottom hole rigs returns to a pad to drill additional well(s) that currently have producing (live) wells on the pad. Return to pad drilling requires more frequent surveying and anti-collision avoidance management because producing wells are present. By utilizing good engineering well design, anti-collision software and frequent surveys, wells can safely be drilled while existing or producing wells exist on the pad.

With both normal and return to pad drilling operations, every well planned to be drilled has a surface plot diagram, 2-D plot diagram, and a pad plot diagram prepared. (Plots attached under "Collision Avoidance Diagrams") In each scenario, a continuous north seeking gyro tools, MWD/EM tools, and anti-collision processes are utilized to mitigate the risk of downhole collisions. Anti-collision processes include conformation of gyro accuracy, evaluation of anti-collision software (Compass or equivalent program), and 2-D/3-D model plotting. In both scenarios, it is EQT's standard operating procedure (SOP) for the on-site supervisor of EQT and the directional drilling company supervisor to confirm the orientation of the directional tools and ensure that the tools are orientated consistent with the directional motor's high side. When anti-collision is a risk and directional assemblies are required to navigate utilizing a gyro tool, it is EQT's SOP to use the Gyro company's muleshoe to ensure the accuracy of the gyro seat in the muleshoe. In addition, when using this muleshoe, it is EQT's SOP to have the EQT's on-site supervisor, directional drilling company supervisor, and gyro company supervisor confirm the alignment and orientation of the tool and ensure that the tools are orientated consistent with the directional motor's high side. This ensures the azimuthal direction is correct when steering the well.

Normal Pad Drilling

In this scenario, there are no existing wells on the pad. A top-hole rig will move on to the pad and drill each well to KOP and then a bottom hole rig will move on after the top hole rig finishes and drill the each well to horizontal TD. At times, the bottom hole rig may drill each well from surface to horizontal TD.

During this scenario, if two wells come within 10 feet or a separation factor of 1.5, each survey is monitored closely and anti-collision is run after each survey until the wells are clear of a collision risk. The frequency of surveys can vary from 30-500' depending on the trajectory of the wells, hole walk, and risk of collision. If a SF ≤ 1.0 or ≤ 5' separation is encountered or a collision occurs, an email notification will be sent by the EQT on-site drilling supervisor to the appropriate state inspector. In the event the proximity of wells get to a point where a collision cannot be avoided or a collision occurs, EQT will properly secure each well and evaluate the most prudent plan forward while communicating plans with the state inspector.

Vertical Section:

Each hole is drilled to KOP by either the top-hole rig or bottom hole rig. Once KOP is achieved then a gyro survey is run. No nudges are planned.

- Each gyro is analyzed and certified accurate by the gyro company before it is used for any directional planning or modeling. Each tool is roll tested on location and if all surveys are within tolerances the gyro survey is sent to the gyro company's office to be further analyzed and certified accurate.

Horizontal Section:

After the top-hole section of the well is complete and the well is at KOP, anti-collision is run on each well and the most efficient well path with the lowest risk of collision is selected by engineers. Directional bottom hole assemblies (BHA) are run in the hole and used to drill the well from vertical to horizontal. Gyros or MWD/EM surveys are taken as needed to steer the well until the well is away from the other wells and the risk of collision is eliminated. Surveys utilizing MWD/EM tools are taken from that point on to the total depth of the well is achieved. After each survey is taken, the surveys are analyzed by both EQT engineers and the directional drilling well planning technicians and anti-collision is run to ensure current well path is not in the direction of a producing well(s) and consistent with the permitted well path.

- Anti-Collision is a software program into which gyro surveys or MWD/EM surveys are uploaded. The software runs 2-D and 3-D well paths of all wells within the vicinity of the well being drilled.
- Surveys are taken every 30-100'.
- While directionally drilling the well, anti-collision software is constantly updated and separation factors (SF) are analyzed.
- Each survey is analyzed and certified accurate by the directional company before it is used for any directional planning or modeling.

Return to Pad Drilling

In this scenario a top-hole rig or bottom hole rig will move on a pad that currently has producing (live) wells on the pad. Prior to drilling additional wells on the pad, the gyro from the existing wells on the pad are analyzed by engineers to evaluate how the existing wells walk in the vertical part of the well. Then preliminary directional plans are prepared to mitigate downhole collisions. EQT plans to drill and develop the pad while producing existing offset wells. However, additional well path management (more frequent surveying and anti-collision modeling) is performed by engineers during the drilling process both in the vertical and horizontal sections of each well.

During this scenario, the well is surveyed from surface to TD as it is drilled and if two wells come within 14 feet or a SF of 2.0, each survey is monitored closely and anti-collision is run after each survey until the wells are clear of a potential collision. The frequency of surveys can vary from 30-500' depending on the trajectory of the wells, hole walk, and risk of collision. If a SF ≤ 1.0 or ≤ 5' separation is encountered, an email notification will be sent by the EQT on-site drilling supervisor to the appropriate state inspector. In the event the proximity of wells get to a point where a collision cannot be avoided, EQT will properly secure each well and evaluate the most prudent plan forward while communicating plans with the state inspector.

Vertical Section:

After the rig moves on the pad and starts drilling, gyro surveys are taken several times from surface to KOP. After each gyro is taken, the surveys are analyzed by both EQT engineers and the directional drilling well planning technicians and anti-collision is run to ensure current well path is not in the direction of a producing well(s). All of these steps are completed prior to the resumption of drilling. Actual frequency of gyros is determined by engineers and the position of the hole as it relates to existing wells on the pad. No nudges are planned.

- Anti-Collision is a software program into which gyro surveys or MWD/EM surveys are uploaded. The software runs 2-D and 3-D well paths of all wells within the vicinity of the well being drilled.
- While vertically drilling the well, anti-collision software is constantly updated and separation factors (SF) are analyzed.
- Each gyro is analyzed and certified accurate by the gyro company before it is used for any directional planning or modeling. Each tool is roll tested on location and if all surveys are within tolerances the gyro survey is sent to the gyro company's office to be further analyzed and certified accurate.

Horizontal Section:

Directional BHAs are run in the hole and used to drill the well from vertical to horizontal. Gyros or MWD/EM surveys are taken as needed to steer the well until the well is away from the other wells and the risk of collision is eliminated. Surveys utilizing MWD/EM tools are taken continuously until the total depth of the well is achieved. After each survey is taken, the surveys are analyzed by both EQT engineers and the directional drilling well planning technicians and anti-collision is run to ensure current well path is not in the direction of a producing well(s) and consistent with the permitted well path.

- Anti-Collision is a software program into which gyro surveys or MWD/EM surveys are uploaded. The software runs 2-D and 3-D well paths of all wells within the vicinity of the well being drilled.
- Surveys are taken every 100'.
- While directionally drilling the well, anti-collision software is constantly updated and separation factors (SF) are analyzed.
- Each survey is analyzed and certified accurate by the directional company before it is used for any directional planning or modeling.

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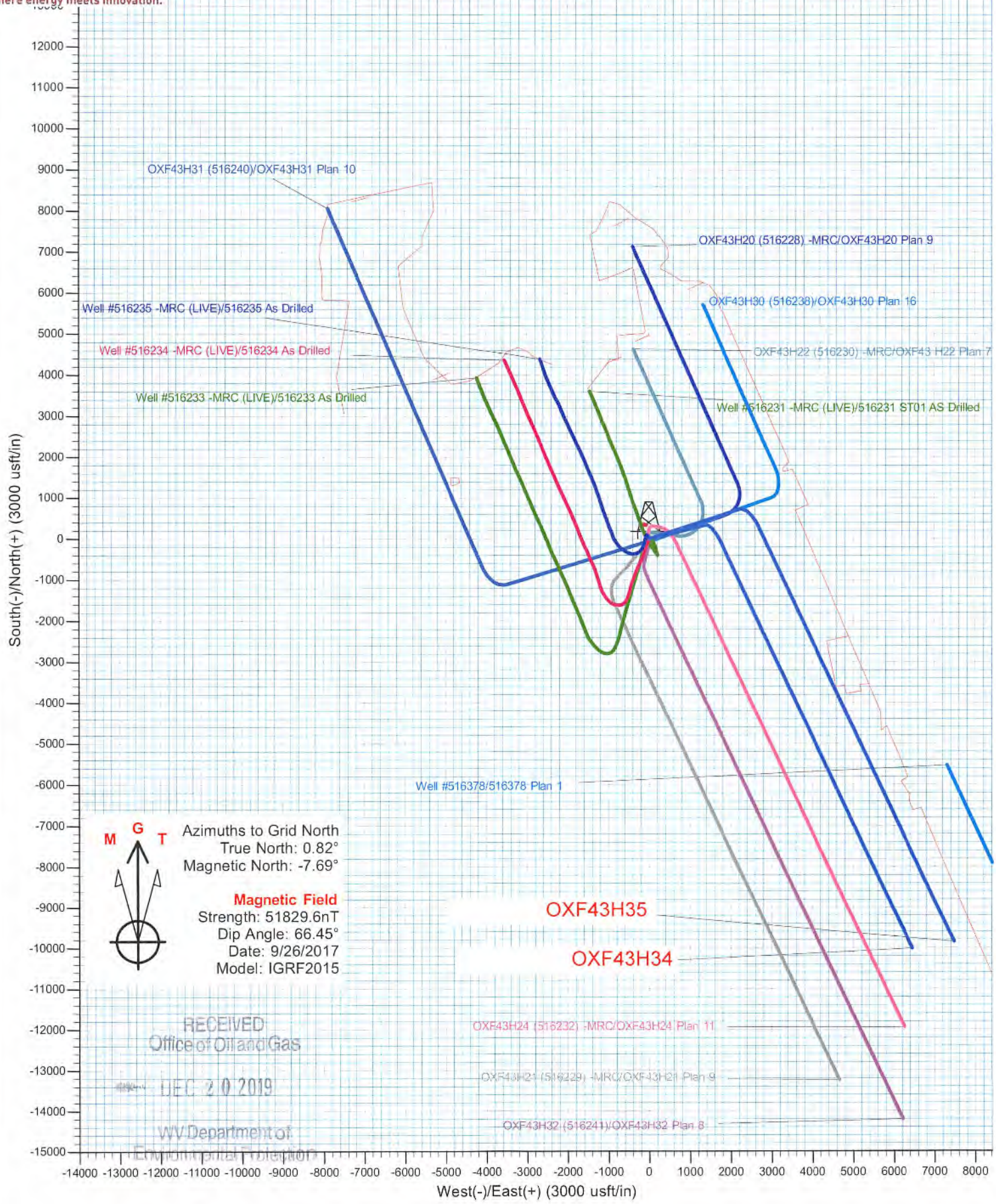
EQT PRODUCTION



M G T

Azimuths to Grid North
True North: 0.82°
Magnetic North: -7.69°

Magnetic Field
Strength: 51829.6nT
Dip Angle: 66.45°
Date: 9/26/2017
Model: IGRF2015

Section IX: Deep Well Additional Requirements (IF APPLICABLE)

Formations

See the attached WV Geological Prognosis on the following pages for each well listed on the permit cover page which lists anticipated freshwater, saltwater, oil and gas, hydrogen sulfide, thief zones, high pressure and volume zones and their expected depths

Casing and Cementing

SEE ATTACHED DOCUMENTS FOR EACH WELL

Casing and Cementing notes:

1. All cement volumes are typical, actual conditions may dictate changes in geometry.
2. All casing and cement meet API standards, but are not API monogrammed.
3. Mine strings will be run as required by geologic conditions.
4. Full BOP pressure tests on installation, function test daily, blind ram test on trips.

Flaring Activities

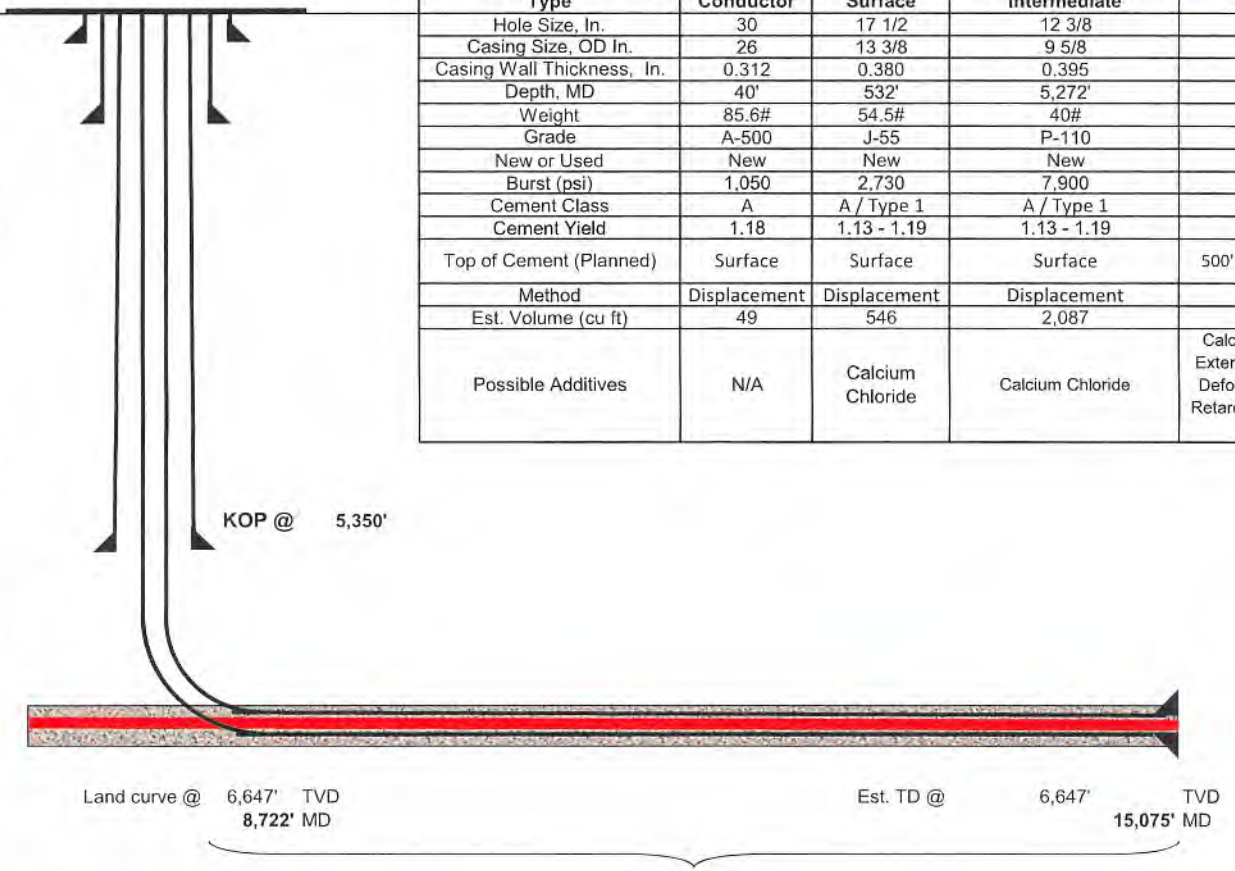
See also Section VII: Flaring for additional information and details.

Well 516228(OXF43H20)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 336
Vertical Section 7199
Enertia # 516228(OXF43H20)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing	Deepest Fresh Water: 382'			
Type	Conductor	Surface	Intermediate	Production
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	15,075'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	3,294
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

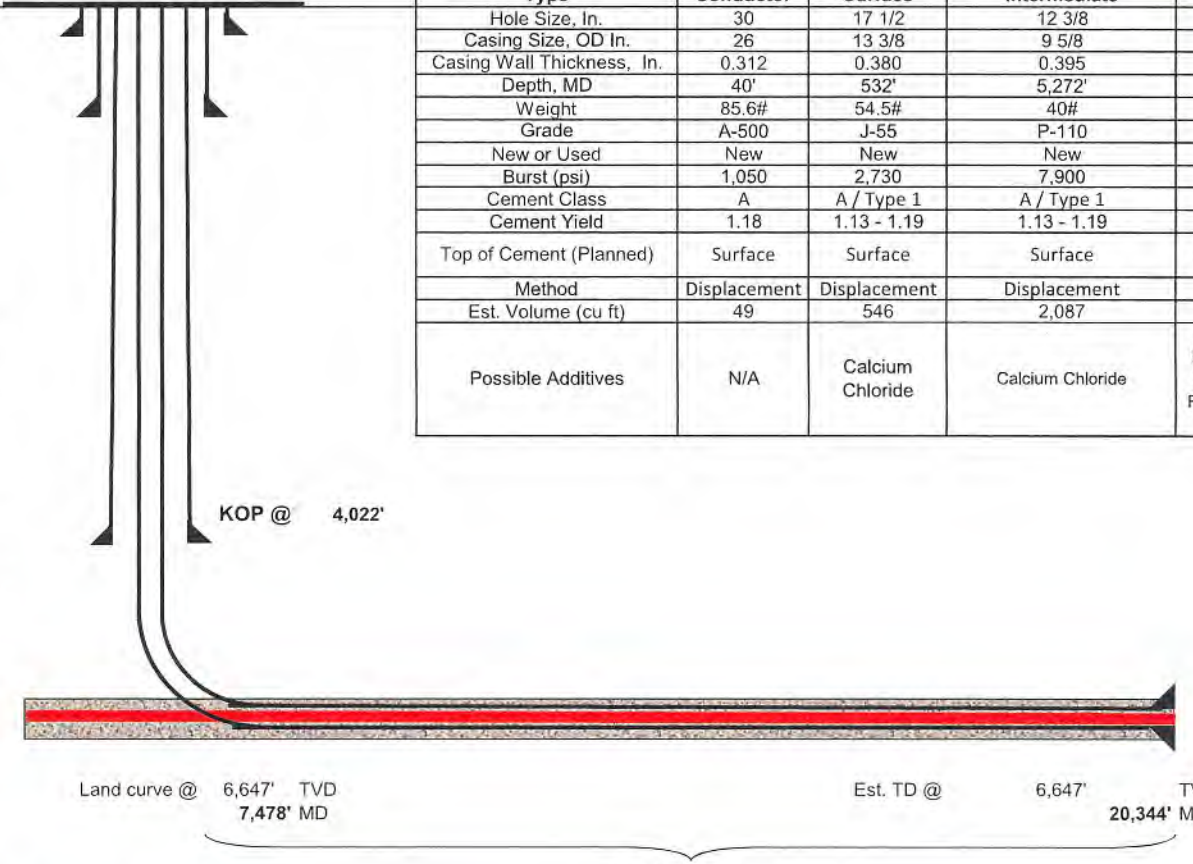
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 5350'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516229(OXF43H21)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 13989
Enertia # 516229(OXF43H21)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing	Conductor	Surface	Intermediate	Production
			Deepest Fresh Water: 382'	
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	20,344'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,622
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

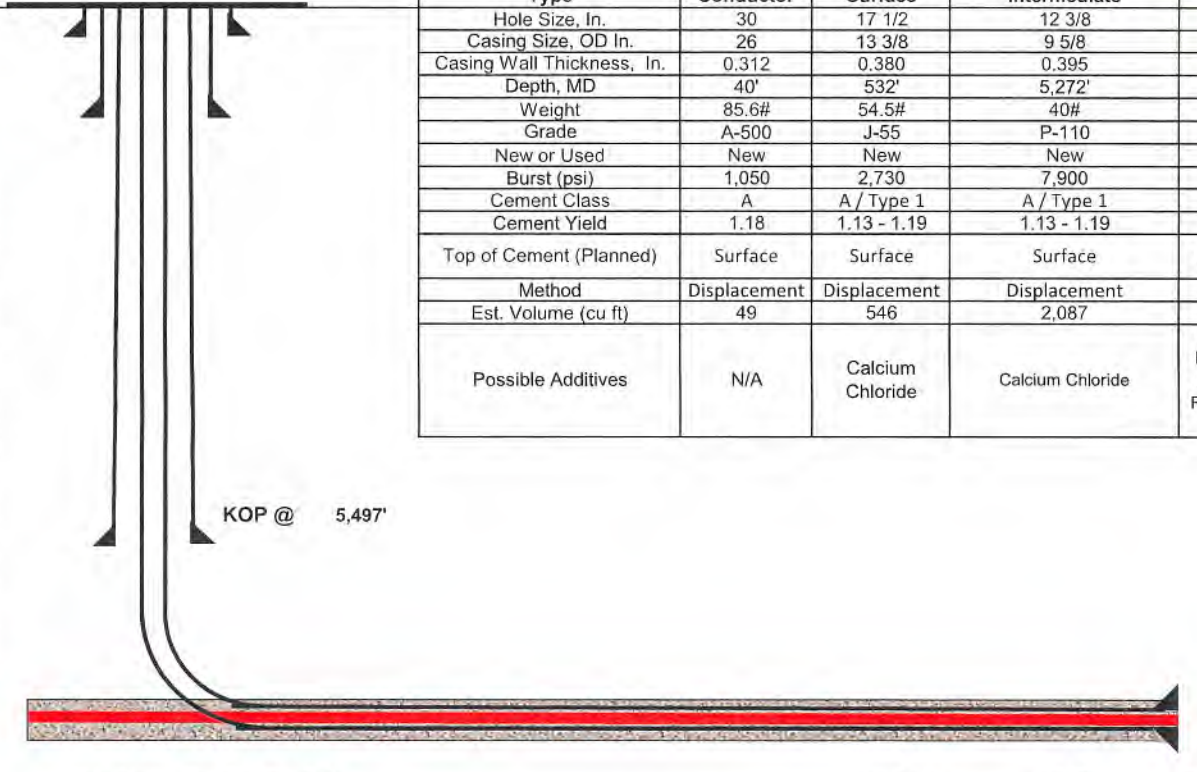
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 4022'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516230(OXF43H22)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 336
Vertical Section 4681
Enertia # 516230(OXF43H22)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing			Deepest Fresh Water: 382'	
Type	Conductor	Surface	Intermediate	Production
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	12,057'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	2,533
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

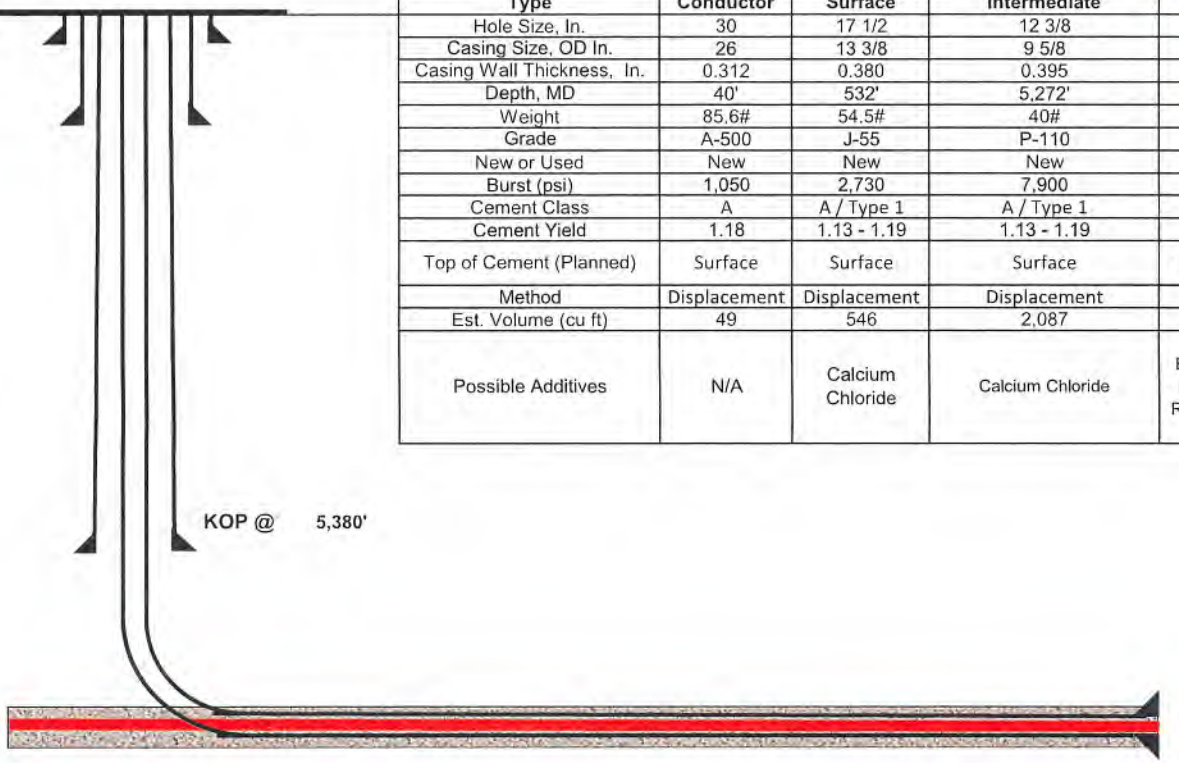
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 5497'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516232(OXF43H24)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 13472
Enertia # 516232(OXF43H24)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	**1084**	**1124**
Big Lime	**1960**	**2028**
Big Injun	**2072**	**2104**
Weir	**2246**	**2372**
Gantz	**2446**	**2528**
Fifty foot	**2528**	**2585**
Thirty foot	**2626**	**2662**
Gordon	**2668**	**2717**
Forth Sand	**2768**	**2835**
Bayard	**2948**	**3019**
Warren	**3282**	**3348**
Speechley	**3348**	**3853**
Balltown A	**3853**	**4211**
Riley	**4451**	**4827**
Benson	**4827**	**4921**
Alexander	**5129**	**5222**
Intermediate Casing	5272	
Sonyea	**6305**	**6455**
Middlesex	**6455**	**6445**
Genesee	**6445**	**6554**
Geneseo	**6554**	**6596**
Tully	**6596**	**6609**
Hamilton	**6609**	**6627**
Marcellus	**6627**	**6683**
Production Casing	6647	
Onondaga	**6683**	



Casing and Cementing			Deepest Fresh Water: 382'	
Type	**Conductor**	**Surface**	**Intermediate**	**Production**
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	20,116'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,564
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

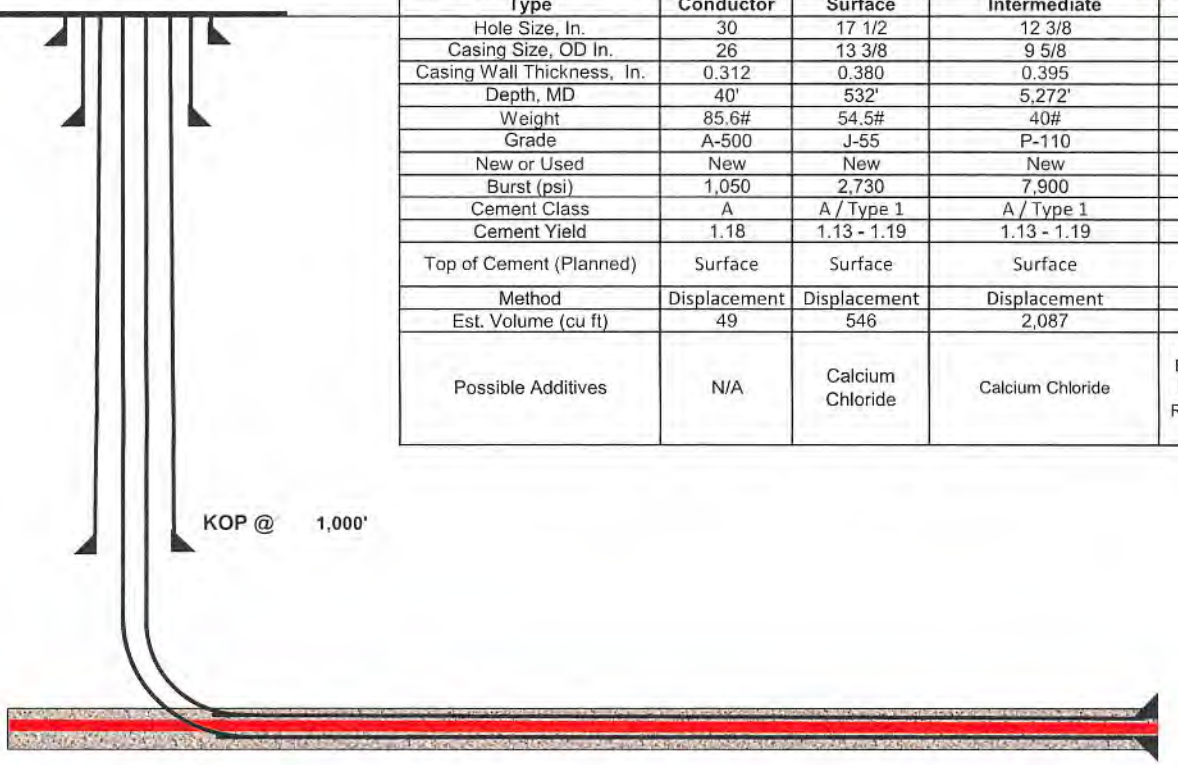
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 5380'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516238(OXF43H30)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 336
Vertical Section 5905
Enertia # 516238(OXF43H30)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing	Conductor	Surface	Intermediate	Production
			Deepest Fresh Water: 382'	
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	12,421'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	2,625
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

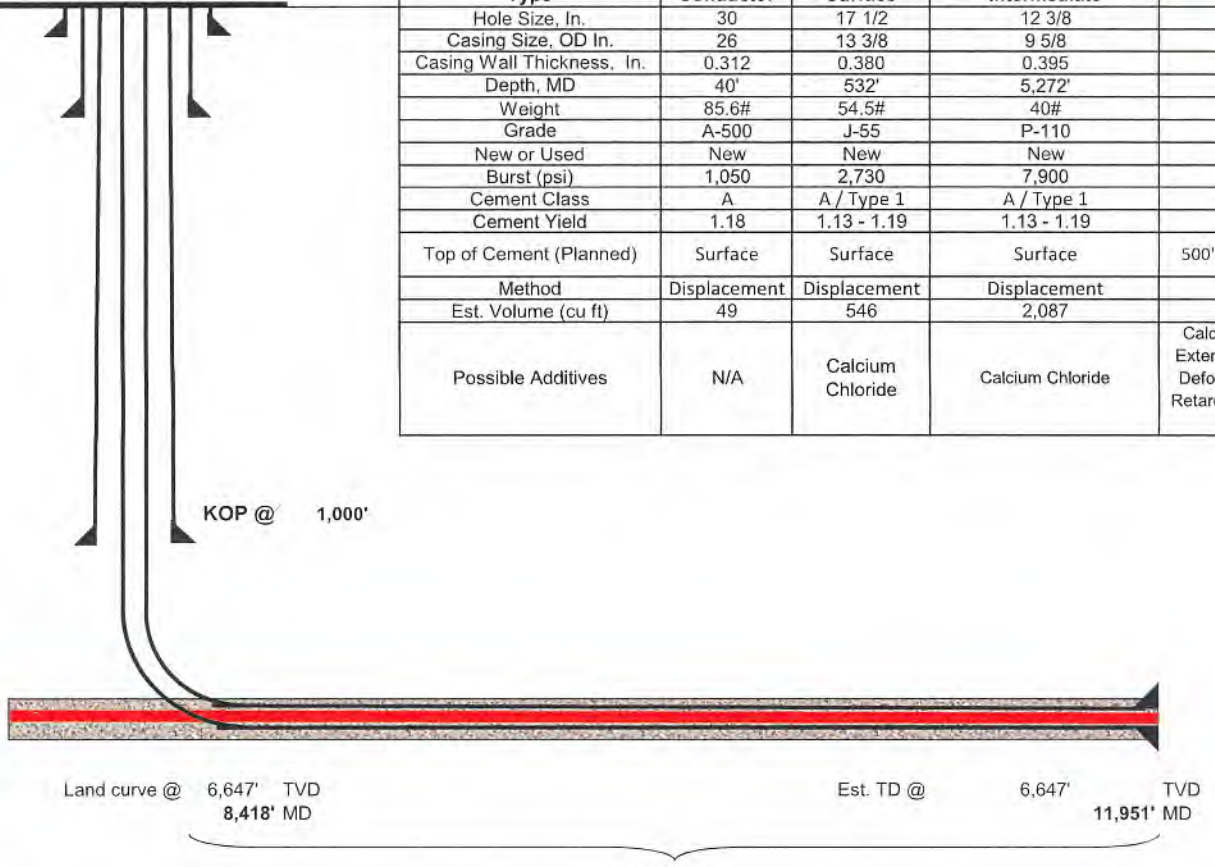
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516240(OXF43H31)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 336
Vertical Section 11341
Enertia # 516240(OXF43H31)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing	Conductor	Surface	Intermediate	Production
			Deepest Fresh Water: 382'	
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	11,951'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	2,507
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

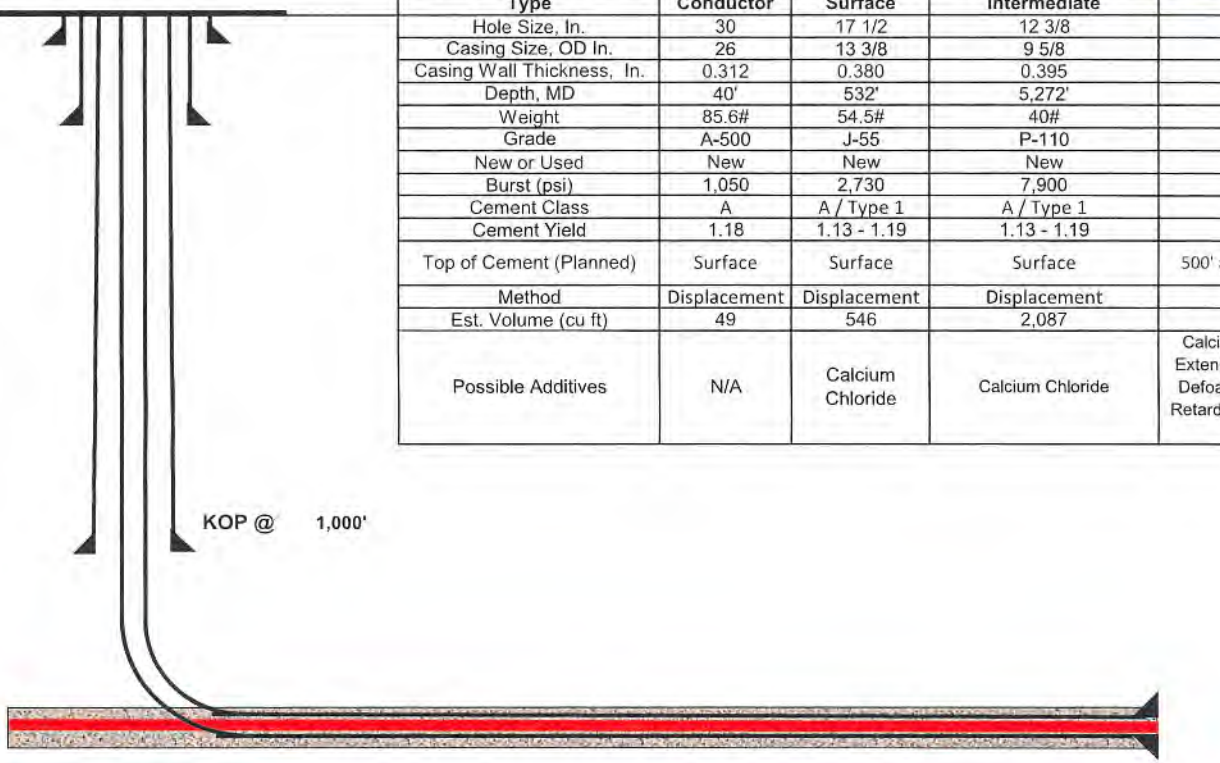
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516241(OXF43H32)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 15472
Enertia # 516241(OXF43H32)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	**1084**	**1124**
Big Lime	**1960**	**2028**
Big Injun	**2072**	**2104**
Weir	**2246**	**2372**
Gantz	**2446**	**2528**
Fifty foot	**2528**	**2585**
Thirty foot	**2626**	**2662**
Gordon	**2668**	**2717**
Forth Sand	**2768**	**2835**
Bayard	**2948**	**3019**
Warren	**3282**	**3348**
Speechley	**3348**	**3853**
Balltown A	**3853**	**4211**
Riley	**4451**	**4827**
Benson	**4827**	**4921**
Alexander	**5129**	**5222**
Intermediate Casing	5272	
Sonyea	**6305**	**6455**
Middlesex	**6455**	**6445**
Genesee	**6445**	**6554**
Geneseo	**6554**	**6596**
Tully	**6596**	**6609**
Hamilton	**6609**	**6627**
Marcellus	**6627**	**6683**
Production Casing	6647	
Onondaga	**6683**	



Casing and Cementing			Deepest Fresh Water: 382'	
Type	**Conductor**	**Surface**	**Intermediate**	**Production**
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	21,399'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,888
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

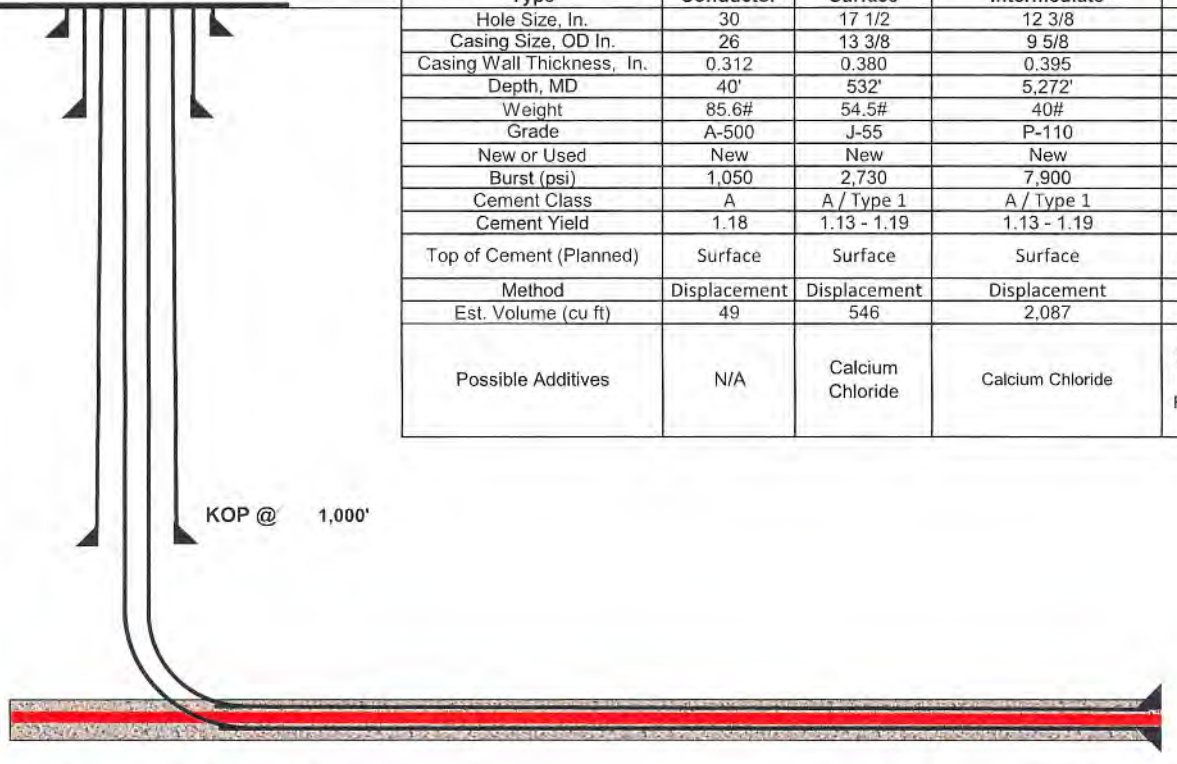
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516243(OXF43H34)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 11900
Enertia # 516243(OXF43H34)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	**1084**	**1124**
Big Lime	**1960**	**2028**
Big Injun	**2072**	**2104**
Weir	**2246**	**2372**
Gantz	**2446**	**2528**
Fifty foot	**2528**	**2585**
Thirty foot	**2626**	**2662**
Gordon	**2668**	**2717**
Forth Sand	**2768**	**2835**
Bayard	**2948**	**3019**
Warren	**3282**	**3348**
Speechley	**3348**	**3853**
Balltown A	**3853**	**4211**
Riley	**4451**	**4827**
Benson	**4827**	**4921**
Alexander	**5129**	**5222**
Intermediate Casing	5272	
Sonyea	**6305**	**6455**
Middlesex	**6455**	**6445**
Genesee	**6445**	**6554**
Geneseo	**6554**	**6596**
Tully	**6596**	**6609**
Hamilton	**6609**	**6627**
Marcellus	**6627**	**6683**
Production Casing	6647	
Onondaga	**6683**	



Casing and Cementing			Deepest Fresh Water: 382'	
Type	**Conductor**	**Surface**	**Intermediate**	**Production**
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	18,157'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,071
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

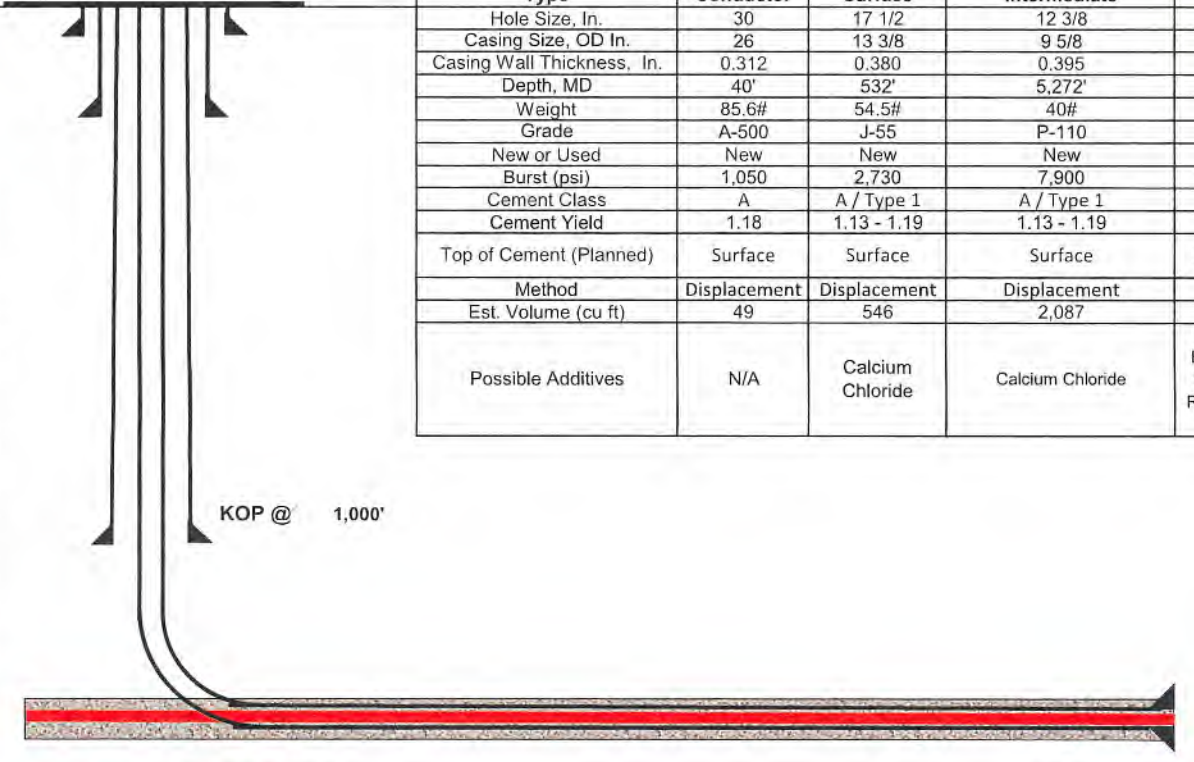
Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

Well 516244 (OXF43H35)
EQT Production
Oxford Quad
Doddridge County, WV

Azimuth 155
Vertical Section 12368
Enertia # 516244 (OXF43H35)

Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	382	
Surface Casing	532	
Base Red Rock	1073	
Maxton	1084	1124
Big Lime	1960	2028
Big Injun	2072	2104
Weir	2246	2372
Gantz	2446	2528
Fifty foot	2528	2585
Thirty foot	2626	2662
Gordon	2668	2717
Forth Sand	2768	2835
Bayard	2948	3019
Warren	3282	3348
Speechley	3348	3853
Balltown A	3853	4211
Riley	4451	4827
Benson	4827	4921
Alexander	5129	5222
Intermediate Casing	5272	
Sonyea	6305	6455
Middlesex	6455	6445
Genesee	6445	6554
Geneseo	6554	6596
Tully	6596	6609
Hamilton	6609	6627
Marcellus	6627	6683
Production Casing	6647	
Onondaga	6683	



Casing and Cementing Deepest Fresh Water: **382'**

Type	Conductor	Surface	Intermediate	Production
Hole Size, In.	30	17 1/2	12 3/8	8 1/2
Casing Size, OD In.	26	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.312	0.380	0.395	0.361
Depth, MD	40'	532'	5,272'	18,794'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	P-110	P-110 CYHP
New or Used	New	New	New	New
Burst (psi)	1,050	2,730	7,900	14,360
Cement Class	A	A / Type 1	A / Type 1	A / H
Cement Yield	1.18	1.13 - 1.19	1.13 - 1.19	1.04 - 2.098
Top of Cement (Planned)	Surface	Surface	Surface	500' above intermediate casing
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	546	2,087	4,231
Possible Additives	N/A	Calcium Chloride	Calcium Chloride	Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
Drill the vertical to an approximate depth of 1000'.
Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

WEST VIRGINIA GEOLOGICAL PROGNOSIS

Horizontal Well

OXF43H30 **516238(OXF43H30)**

Drilling Objectives:	**Marcellus**					
County:	Doddridge					
Quad:	Oxford					
Elevation:	**1242** KB			**1229** GL (As-Built)		
Surface location	**Northing:**	**241902.39**	**Easting:**	**1633402.15**		
Landing Point	**Northing:**	**241820.78**	**Easting:**	**1629095.40**		
Toe location	**Northing:**	**250051.23**	**Easting:**	**1625527.70**	**TVD:**	**6647**
Recommended Azimuth	**0** Degrees				**Recommended LP to TD:**	**0,000'**

Recommended Gas Tests: 1800, 2050, 2600, Intm Csg. Pt., 3400, 4900, 5250, KOP, (Gas test at any mine void)
Gas test during any trip or significant downtime while drilling the lateral section.

ESTIMATED FORMATION TOPS Determined from OXF43 and OXF45 Pilot Hole Logs

Formation	Top (TVD)	Base (TVD)	Lithology	Comments	Top RR	Base RR	
Fresh Water Zone	1	382		FW @ 70,221,307,382. .	21	41	
Waynesburg A	321	322	Coal	No past, present, or permitted mining	123	179	
Maxton	1084	1124	Sandstone	No SW present in shallow offset wells	181	211	
Big Lime	1960	2028	Limestone		266	411	
Big Injun	2072	2104	Sandstone	Storage is NOT of concern at this location	361	451	
Weir	2246	2372	Sandstone		462	532	
Top Devonian	2446				561	716	
Gantz	2446	2528	Silty Sand		706	829	
Fifty foot	2528	2585	Silty Sand		956	1073	Base of Red Rock
Thirty foot	2626	2662	Silty Sand				
Gordon	2668	2717	Silty Sand				
Forth Sand	2768	2835	Silty Sand				
Bayard	2948	3019	Silty Sand				
Warren	3282	3348	Silty Sand				
Speechley	3348	3853	Silty Sand				
Balltown A	3853	4211	Silty Sand				
Riley	4451	4827	Silty Sand				
Benson	4827	4921	Silty Sand				
Alexander	5129	5222	Silty Sand	**Base of Offset Well Perforations at 5207' TVD**			
Int. csg pt	5272						
Elks	5222	6305	Gray Shales and Silts				
Sonyea	6305	6455	Gray shale				
Middlesex	6455	6445	Shale				
Genesee	6445	6554	Gray shale interbedded				
Geneseo	6554	6596	Black Shale				
Tully	6596	6609	Limestone				
Hamilton	6609	6627	Gray shale with some				
Marcellus	6627	6683	Black Shale				
Purcell	6658	6661	Limestone				
-Lateral Zone	6647			**Start Lateral at 6647'**			
Cherry Valley	6667	6670	Limestone				
Onondaga	6683		Limestone				

Target Thickness	57	feet
Max Anticipated Rock Pressure	2951	PSI

Comments:

Note that this is a TVD prog for a horizontal well (azimuth of 0 degrees; target formation = Marcellus). All measurements taken from estimated KB elevation. Water and coal information estimated from surrounding well data.

Intermediate casing point is recommended 50' beneath the Alexander to shut off any water production from the Upper Devonian sands. Intermediate casing should be cemented into the surface string, per WV regulations.

The estimated landing point TVD is 6647', rig geologist may adjust landing point. After the well is landed, drill to reported bed dips/ geologists' recommendation. The geologic structure is unknown at this time.

RECOMMENDED CASING POINTS

Fresh Water/Coal	CSG OD	13 3/8	CSG DEPTH:	532	150' below freshwater
Intermediate 1:	CSG OD	9 5/8	CSG DEPTH:	5272	50' below Alexander
Production:	CSG OD	5 1/2	CSG DEPTH:	@ TD	

Where energy meets innovation.SM

WELL SITE SAFETY PLAN RECEIPT ACKNOWLEDGMENT

This form letter is to be signed by the LEPC or CES representative to indicate they have received the Site Safety Plan for the following well site location and understand its use.

Site Location:

WV – Doddridge – West Union
Site State, County and Municipality

EQT OXF43 Pad
Site Location Designation

3731 Grove Summers Rd. West Union, WV 26456
Site Address assigned by County 9-1-1

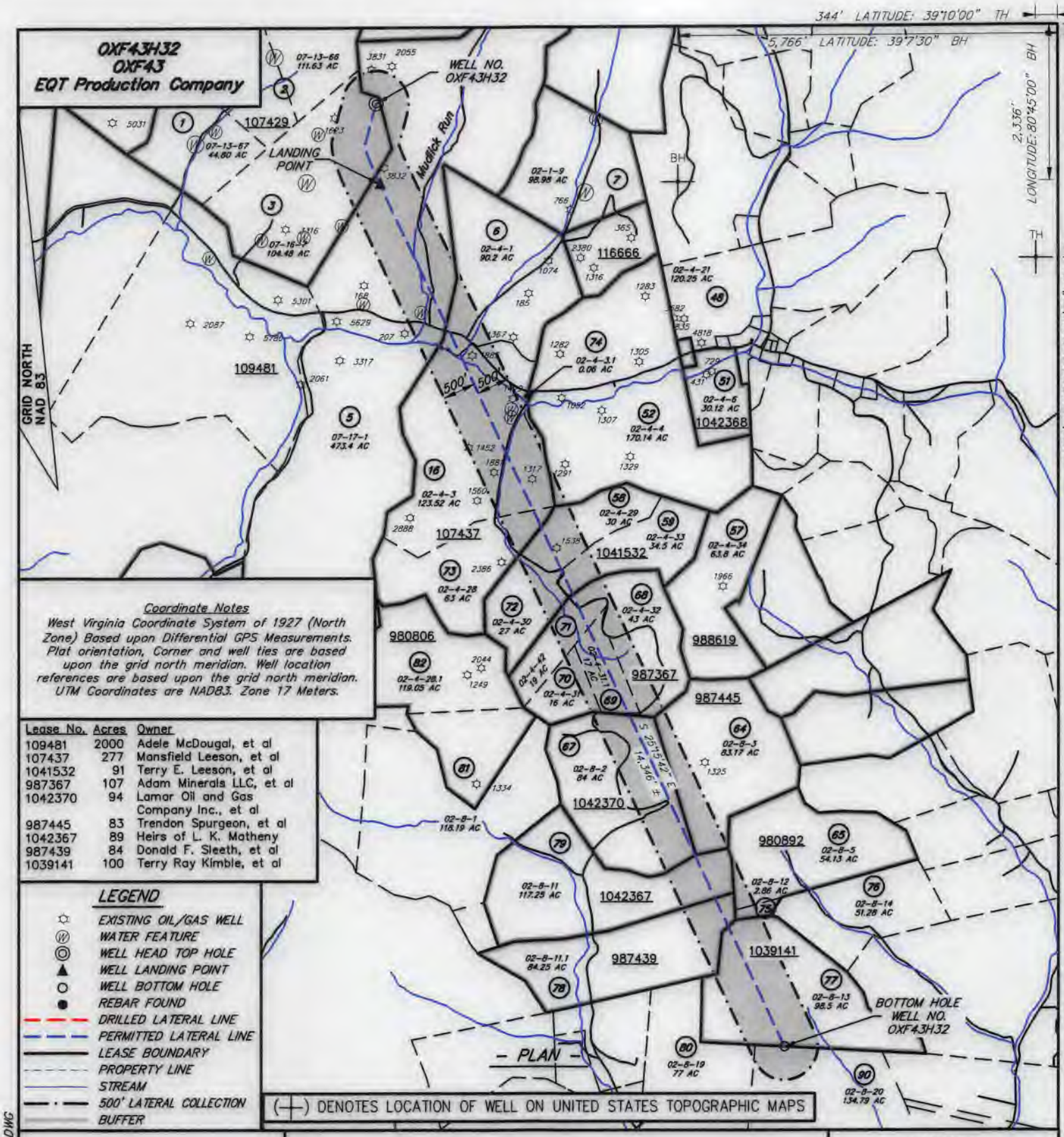
S Fork of Hughes River
Nearest cross road(s)

39.180296, -80.797064
Access Road Coordinates

39.157175, -80.792576
Pad Site Coordinates

I have received my copy of the *Well Site Safety Plan* for the above described location. I understand that this is a reference tool for emergency response and it is my responsibility to read and understand the Plan.

LCEP or CES Representative (printed)	EQT Representative (printed)
Representative Affiliation and Title	EQT Representative Title
Representative Signature	EQT Representative Signature
Date	Date



Coordinate Notes

West Virginia Coordinate System of 1927 (North Zone) Based upon Differential GPS Measurements. Plat orientation, Corner and well ties are based upon the grid north meridian. Well location references are based upon the grid north meridian. UTM Coordinates are NAD83. Zone 17 Meters.

Lease No.	Acres	Owner
109481	2000	Adele McDougal, et al
107437	277	Mansfield Leeson, et al
1041532	91	Terry E. Leeson, et al
987367	107	Adam Minerals LLC, et al
1042370	94	Lamar Oil and Gas Company Inc., et al
987445	83	Trendon Spurgeon, et al
1042367	89	Heirs of L. K. Matheny
987439	84	Donald F. Sleeth, et al
1039141	100	Terry Ray Kimble, et al

LEGEND

- EXISTING OIL/GAS WELL
- WATER FEATURE
- WELL HEAD TOP HOLE
- WELL LANDING POINT
- WELL BOTTOM HOLE
- REBAR FOUND
- DRILLED LATERAL LINE
- PERMITTED LATERAL LINE
- LEASE BOUNDARY
- PROPERTY LINE
- STREAM
- 500' LATERAL COLLECTION
- BUFFER

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

encompass

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

WILLIAM J. WHITMAN, II LICENSED No. 2005 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

FILE NO.: EES-60635
DRAWING NO.: OXF43_Well Plat
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: ±3'
PROVEN SOURCE OF ELEVATION: GPS

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

DATE DECEMBER 15, 2019
OPERATORS WELL NO. OXF43H32
API WELL NO. MOD 47 017 06884
STATE COUNTY PERMIT

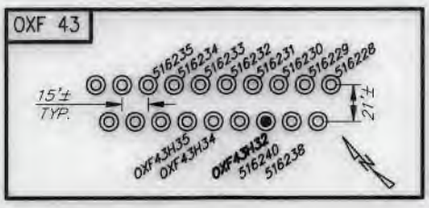
WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL ☒ (IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION, ELEVATION: 1229' (As-Built Pad) WATERSHED: Middle Fork Hughes River QUADRANGLE: OXFORD
DISTRICT: SOUTH WEST / COVE COUNTY: DODDRIDGE
SURFACE OWNER: Cathy Jean Wetzel, ET AL ACREAGE: 104.48± AC
ROYALTY OWNER: Franklin Maxwell Heirs L. P. LEASE NO.: 107429 ACREAGE: 255± AC
PROPOSED WORK: ☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☒ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☐ OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,647'

WELL OPERATOR: EQT Production Company
ADDRESS: 400 Woodcliff Drive, Canonsburg, PA 15317

DESIGNATED AGENT: Joseph C. Mallow
ADDRESS: 115 Professional Pl. P.O. Box 280, Bridgeport, WV 26330

WWW.ENCOMPASSSERVICES.COM PLOT DATE: 12/15/2019 CAD FILE: OXF 43_WELL PLAT-2019-11-27.DWG

OXF43H32
OXF43
EQT Production Company



OXF43H32 Well Point Coordinates

Top Hole Coordinates

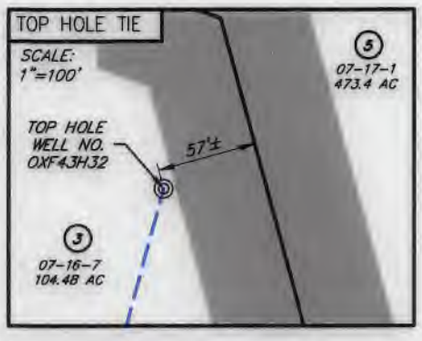
NAD 27 S.P.C. (Ft.)	N: 241,922.437	E: 1,633,379.830
NAD 27 GEO	LAT: 39.156976	LONG: 80.792883
NAD 83 UTM 17N (M)	N 4,334,226.6	E: 517,909.9
NAD 83 S.P.C. (Ft.)	N 241,957.8	E: 1,601,939.0

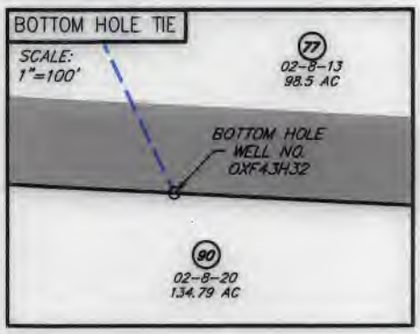
Landing Point Coordinates

NAD 27 S.P.C. (Ft.)	N: 240,712.373	E: 1,633,438.978
NAD 27 GEO	LAT: 39.153656	LONG: 80.792613
NAD 83 UTM 17N (M)	N 4,333,858.3	E: 517,934.1
NAD 83 S.P.C. (Ft.)	N 240,747.7	E: 1,601,998.2

Bottom Hole Coordinates

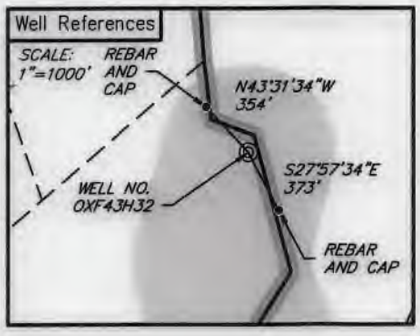
NAD 27 S.P.C. (Ft.)	N: 227,738.421	E: 1,639,560.876
NAD 27 GEO	LAT: 39.118278	LONG: 80.770382
NAD 83 UTM 17N (M)	N 4,329,937.0	E: 519,865.0
NAD 83 S.P.C. (Ft.)	N 227,774.0	E: 1,608,120.2





NO.	SURFACE OWNER
3	CATHY JEAN WETZEL, ET AL
5	RANDY E. & WILLIAM LEE HUFF
6	WILMA LEE LEESON
16	MANSFIELD LEESON
58	TERRY E. LEESON
59	JANNETTE CONLEY
67	TRENDON & MARY JANE SPURGEON
68	SLEETH TIMBER CORP
69	TERRY E. LEESON
71	TERRY E. LEESON
72	TERRY E. LEESON
73	WM & RANDY HUFF DECEDENTS
77	BRUCE D. & GLADYS L. ROTH
78	COASTAL FOREST RESOURCES CO.
79	COASTAL FOREST RESOURCES CO.

NO.	ADJACENT OWNER
64	DONNA C. MATTHEWS
65	DAVID E. BOWYER
70	TERRY E. LEESON
75	DAVID E. BOWYER
80	ALBERT L. LOAR
90	GALLIEN PROPERTIES INC.



LEGEND

- EXISTING OIL/GAS WELL
- WATER FEATURE
- WELL HEAD TOP HOLE
- WELL LANDING POINT
- WELL BOTTOM HOLE
- REBAR FOUND
- DRILLED LATERAL LINE
- PERMITTED LATERAL LINE
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- 500' LATERAL COLLECTION
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encompass

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WILLIAM J. WHITMAN, II LICENSED No. 2005 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

FILE NO.: EES-60635
DRAWING NO.: OXF43_Well Plat
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: ±3'
PROVEN SOURCE OF ELEVATION: GPS

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

DATE DECEMBER 15, 2019
OPERATORS WELL NO. OXF43H32
API WELL NO. M.O.D 47 017 06884
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL ☒ (IF GAS) PRODUCTION: ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION, ELEVATION: 1229' (As-Built Pad) WATERSHED: Middle Fork Hughes River QUADRANGLE: OXFORD
DISTRICT: SOUTH WEST / COVE COUNTY: DODDRIDGE
SURFACE OWNER: Cathy Jean Wetzel, ET AL ACREAGE: 104.48± AC
ROYALTY OWNER: Franklin Maxwell Heirs L. P. LEASE NO.: 107429 ACREAGE: 255± AC
PROPOSED WORK: ☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☒ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☐ OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,647'

WELL OPERATOR: EQT Production Company
ADDRESS: 400 Woodcliff Drive, Canonsburg, PA 15317

DESIGNATED AGENT: Joseph C. Mallow
ADDRESS: 115 Professional Pl. P.O. Box 280, Bridgeport, WV 26330

WW-6A1
(5/13)

Operator's Well No. OXF43H32

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

See Attached

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: John Zavatchan
Its: Project Specialist - Permitting

RECEIVED
Office of Oil and Gas
DEC 20 2019
WV Department of
Environmental Protection

WW-6A1 attachment

Operator's Well No. 516241 OXF43H32

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
107429	**Franklin Maxwell Heirs L.P. (current royalty owner)**		**	
	W. Brent Maxwell, et al (original lessor)	Fisher Oil Co.		LB23/337
	Fisher Oil Co.	The Philadelphia Company of West Virginia		LB32/120
	The Philadelphia Company of West Virginia	Pittsburgh & West Virginia Gas Company		DB87/90
	Pittsburgh & West Virginia Gas Co.	Equitable Gas Company		DB121/303
	Equitable Gas Company	Equitrans, Inc.		LB154/475
	Equitrans, Inc.	Equitrans, L.P.		DB329/645
	Equitrans, L.P.	Equitable Production-Eastern States, Inc.		LB 192/19
	Equitable Production-Eastern States, Inc.	Equitable Production Company		CB281/346
	Equitable Production Company	EQT Production Company		CB281/346
109481	**Adele McDougal, et al (current royalty owner)**		**	
	Jackson Leeson, et al (original lessor)	The Philadelphia Co. of West Virginia		LB21/76
	The Philadelphia Co. of West Virginia	Pittsburgh & West Virginia Gas Co.		DB87/90
	Pittsburgh & West Virginia Gas Co.	Equitable Gas Company		DB121/303
	Equitable Gas Company	Equitrans, Inc.		LB154/475
	Equitrans, Inc.	Equitrans, L.P.		DB329/645
	Equitrans, L.P.	Equitable Production-Eastern States, Inc.		LB 192/19
	Equitable Production-Eastern States, Inc.	Equitable Production Company		CB281/346
	Equitable Production Company	EQT Production Company		CB281/346
107437	**Mansfield Leeson, et al (current royalty owner)**		**	
	F. L. Lodge (original lessor)	Fisher Oil Co.		LB22/277
	Fisher Oil Co.	The Philadelphia Oil Co.		LB24/64
	The Philadelphia Oil Co.	Pittsburgh and West Virginia Gas Company		DB87/90
	Pittsburgh and West Virginia Gas Company	Equitable Gas Co.		DB121/303
	Equitable Gas Co.	Equitrans, Inc.		LB154/475
	Equittrans, Inc.	Equitable Production-Eastern States, Inc.		LB192/19
	Equitable Production-Eastern States, Inc.	Equitable Production Company		CB281/346
	Equitable Production Company	EQT Production Co.		CB281/346
1041532	**Terry E. Leeson, et al. (current royalty owner)**		**	
	Joshua Adams and Satah E. Adams (original lessor)	J. W. Stuck		LB 28/172
	J. W. Stuck	Hope Natural Gas Company		LB 26/186
	Hope Natural Gas Company	Consolidated Gas Supply Corporation		DB 143/345
	Consolidated Gas Supply Corporation et al.	Conolidated Gas Transmission Corporation		LB 135/583
	Consolidated Gas Transmission Corporation	CNG Transmission Corporation		DB 332/563
	CNG Transmission Corporation	Dominion Transmission, Inc.		DB 332/570
	Dominion Transmission, Inc.	CONSOL Energy Holidngs LLC XVI		LB 245/1
	CONSOL Energy Holidngs LLC XVI/CONSOL Gas Co.	CNX Gas Company LLC		DB 292/469
	CNX Gas Company LLC	Noble Energy Inc.		LB 260/39
	CNX Gas Company and Noble Energy, Inc.	Antero Resource Corporation		LB 400/565
	Antero Resources Corporation	EQT Production Company		LB 486/476
987367	**Adam Minerals LLC, et al (current royalty owner)**			
	Alice M. Brummage	EQT Production Company		LB 253/603

1042370	**Lamar Oil and Gas Company Inc., et al (current royalty owner)**		**	
	Lamar Oil and Gas Company Inc.	Antero Resources Corporation		LB 413/395
	Antero Resources Corporation	EQT Production Company		LB 488/41
987445	**Trendon Spurgeon, et al (current royalty owners)**		**	
	Trendon Spurgeon	Antero Resources Corporation		LB 417/91
	Antero Resources Corporation	EQT Production Copmpany		LB 486/476
1042367	**Heirs of L. K. Matheny (current royalty owner)**		**	
	Lyle Matheny and Lissette Matheny	Optimist Oil and Gas Company		LB 73/263
	Optimist Oil and Gas Company	Big A Oil Company		LB 129/601
	Big A Oil Company	Lamar Oil and Gas Company		LB 150/344
	Lamar Oil and Gas Company	Antero Resouces Corporation		LB 405/339
	Antero Resources Corporation	EQT Production Company		LB 488/13
987439	**Donald F. Sleeth, et al (current royalty owner)**		**	
	Donald F. Sleeth	EQT Production Company		LB 393/652
1039141	**Terry Ray Kimble, et al (current royalty owner)**		**	
	Terry Ray Kimble et al.	EQT Production Company		LB 487/62

** Per West Virginia Code Section 22-6-8.

EQT Production Company
400 Woodcliff Drive
Canonsburg, PA 15317
www.eqt.com

John Zavatchan
Landman - Permitting
O:724-746-9073
jzavatchan@eqt.com

December 11, 2019

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

Re: OXF43H32 Gas Well
Southwest District, Doddridge County

Dear Mr. Brewer,

EQT Production Company is applying for a modification to a well work permit for the well referenced above. Upon information and belief, the 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,

John Zavatchan
Landman - Permitting

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Byrd E. White, III
Secretary of Transportation/
Commissioner of Highways

Jimmy Wriston, P. E.
Deputy Secretary/
Deputy Commissioner

November 7, 2019

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

Subject: DOH Permit for the OXF43 Well Site, Doddridge County

OXF43H20	OXF43H21	OXF43H22	OXF43H23	OXF43H24
OXF43H25	OXF43H26	OXF43H27	OXF43H28	OXF43H29
OXF43H30	OXF43H31	OXF43H32	OXF43H33	OXF43H34
OXF43H35	OXF43H36	OXF43H37		

Dear Mr. Martin,

This well site will be accessed from Permit # 04-2015-0394 has been issued to EQT Production Company for access to the State Road for a well pad located off County Rt. 23/3 SLS in Doddridge County.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

Gary K. Clayton

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: John Zavatchan
EQT Production Company
CH, OM, D-4
File

OXF43 AS-BUILT SITE PLAN
EQT PRODUCTION COMPANY

PERMITTED WELLS: API# 47-017-06739, 47-017-06740, 47-017-06741, 47-017-06742, 47-017-06743, 47-017-06744, 47-017-06745, 47-017-06746, 47-017-06747, 47-017-06748, 47-017-06884, 47-017-06885, 47-017-06886, 47-017-06882, & 47-017-06883.
PROPOSED WELL NUMBERS: OXF43H33

SITUATE ON WATERS OF MIDDLE FORK OF THE SOUTH FORK OF HUGHES RIVER IN SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA

PROJECT INFORMATION

PROJECT NAME: 8452 OXF 43 ASBUILT

SURFACE OWNERS:

RANDY E. HUFF DECEDENTS TRUST B, ET. AL
LOT 4
APN 7-17-1
D.B. 247 PG. 295

WETZEL, CATHY JEAN, ET. AL
APN 07-16-7
D.B. 277 PG. 165

GREATHOUSE, CHARLES R. & EVELYN G.
APN 07-13-66
D.B. 322 PG. 340

MORRIS, I. L.
APN 07-10-2
D.B. 230 PG. 307

COPELAND, MATHEW H.
APN 07-10-1
D.B. 357 PG 5

OIL AND GAS ROYALTY OWNER:

FRANKLIN MAXWELL HEIRS L.P.
DISTRICTS(S): SOUTHWEST / COVE
DODDRIDGE COUNTY, WV
TOTAL PROPERTY AREA: 259± ACRES

LOCATION COORDINATES

OXF-43 SITE ENTRANCE
LATITUDE: 39.180202 LONGITUDE: -80.797044 (NAD 83)
NORTHING: 4,336,793.7 EASTING: 517,529.7 (UTM NAD 83 METERS)

OXF-43 CENTER OF WELL PAD
LATITUDE: 39.157175 LONGITUDE: -80.792570 (NAD 83)
NORTHING: 4,334,239.2 EASTING: 517,921.4 (UTM NAD 83 METERS)

SITE DISTURBANCE COMPUTATIONS

MAIN ACCESS ROAD = 39.93± ACRES
WELL PAD AND ACCESS ROAD = 11.16± ACRES
AST PAD A AND ACCESS ROAD = 6.37± ACRES
AST PAD B AND WELL RELOCATION ROAD = 9.00± ACRES

GENERAL DESCRIPTION

THE OXF 43 PAD AND AST PADS ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS

RECEIVED
Office of Oil and Gas

DEC 20 2019

WV Department of
Environmental Protection

SURVEY NOTE

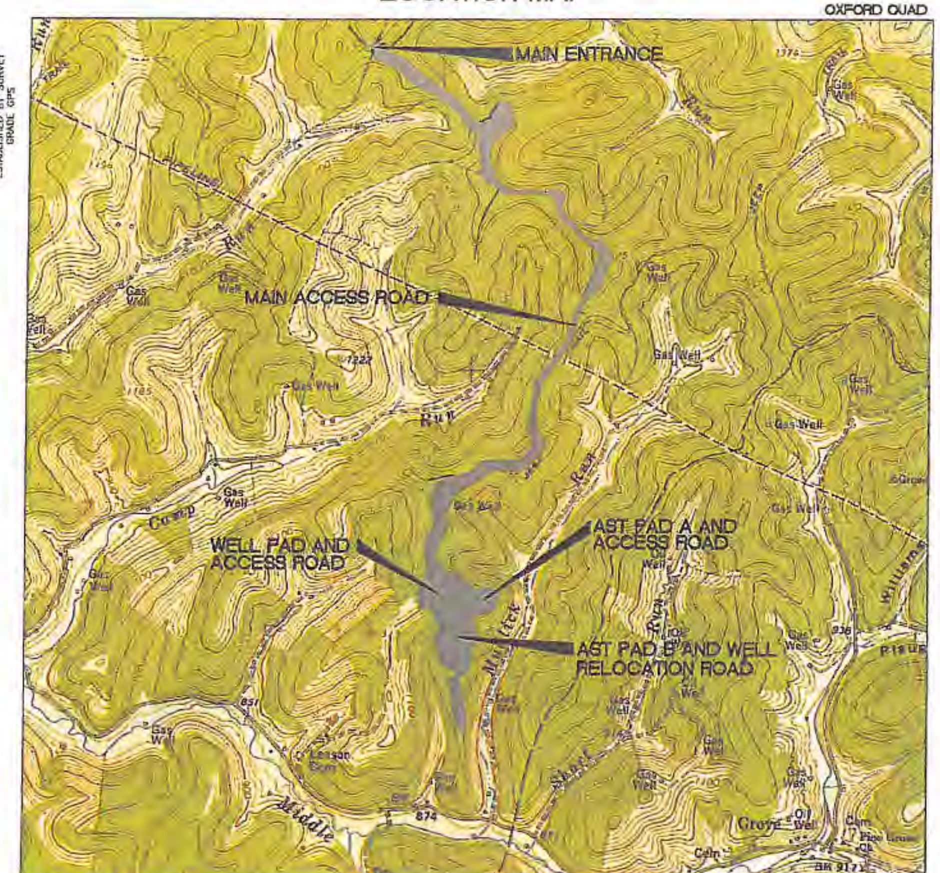
1. THE CERTIFICATION OF THIS DRAWING APPLIES ONLY TO THE TOPOGRAPHIC MAPPING AS GENERATED FROM THE FIELD DATA OBTAINED AT THE TIME OF THE FIELD SURVEY ON 11-17-15, 11-25-15, 12-12-15, 12-14-15, 12-13-15, 12-20-15, 01-11-16, 02-05-16, 02-11-16, 02-26-16, 02-10-17, 07-05-17, 07-06-17, 07-18-17, 08-01-17, 08-08-17, AND 03-09-18.

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!!

LOCATION MAP

OXFORD QUAD

GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS



0 1000' 2000' 3000'
SCALE: 1"=1000'

LIST OF DRAWINGS

LOD by property owner

Property Owner	Parcel #	LOD (Acres)	Wooded Area (Acres)
Randy E. Huff Decedents Trust B (owns half)	7-17-1	23.56	21.3
William Lee Huff (owns half)			
Wetzel, Cathy Jean; ET AL	7-16-7	8.12	7.8
Morris, I.L.	7-10-2	41.66	34.7
Copeland, Mathew H.	7-10-1	4.33	3.7
Total Area		77.67	67.5

LOD by project area

Description	LOD (Acres)	Wooded Area (Acres)
Main Access Road, Sta. 0+00 to 134+44.27	45.99	38.4
Pit Access Road Sta. 0+00 to 16+00	5.05	4.8
Existing Well Road Relocation 0+00 to 4+69, 18+69 to 24+27	3.32	2.9
Well Pad	8.34	7.7
Tank Pad A	3.27	3.2
Tank Pad B	4.47	3.5
Waste and Spoil	7.23	7.0
Total Area	77.67	67.5

LEGEND

PROPERTY LINES
LIMITS OF DISTURBANCE
EX. ROAD EDGE OF GRAVEL/DIRT
EX. ROAD CENTERLINE
EX. DITCHLINE
EX. CULVERT
EX. GASLINE
RIG FOOTPRINT
EDGE OF GRAVEL PAD
EDGE OF BERM
ORANGE CONSTRUCTION FENCE
12" COMPOST FILTER SOCK
18" COMPOST FILTER SOCK
24" COMPOST FILTER SOCK
TOP BERM
GRAVEL
RIP RAP
ROCK CONSTRUCTION ENTRANCE
ORIGINAL GROUND 2' CONTOURS
AS BUILT 2' CONTOURS
AS-BUILT WELL LOCATIONS
PROPOSED WELL LOCATIONS
ADJACENT WELL LOCATIONS
MATCHLINE
EX. FENCELINE
EX. GATE
EX. STRUCTURE
EX. PIPELINE MARKER
EX. OVERHEAD UTILITY
EX. POWER POLE
EX. GUY WIRE
EX. GASLINE

REVISION	DATE	DESCRIPTION	BY
1	04/23/18	AS BUILT UPDATE	KLH
2	12/03/19	ADDITION OF AST'S, UPDATE API NUMBERS AND PAD DETAIL	KLH

EQT Where energy meets innovation.

SLS Land & Energy Development

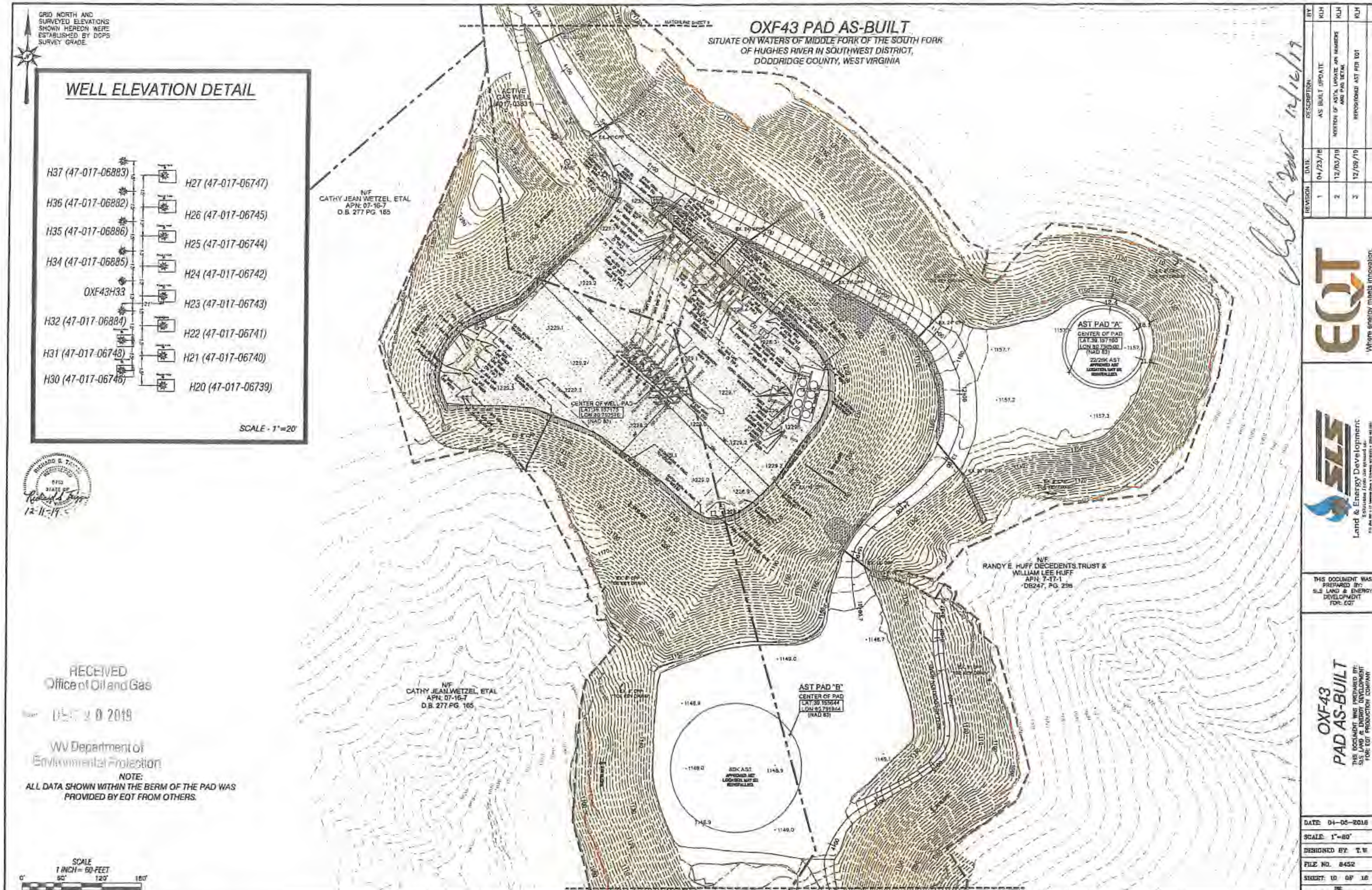
THIS DOCUMENT WAS PREPARED BY: SLS LAND & ENERGY DEVELOPMENT FOR: EQT

RICHARD S. TRIGGS REGISTERED 0712 STATE OF WEST VIRGINIA
12-11-19

OXF43 AS-BUILT SITE PLAN

THIS DOCUMENT WAS PREPARED BY: SLS LAND & ENERGY DEVELOPMENT FOR: EQT PRODUCTION COMPANY

DATE:	10/03/2017
SQY:	
SCALE:	1"= 1000'
DESIGNED BY:	T.W.
FILE NO.	8452
SHEET:	1 OF 16



OXF43 PAD AS-BUILT
SITUATE ON WATERS OF MIDDLE FORK OF THE SOUTH FORK OF HUGHES RIVER IN SOUTHWEST DISTRICT, DODDRIDGE COUNTY, WEST VIRGINIA
GRID NORTH AND SURVEYED ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY DGPS SURVEY GRADE.
WELL ELEVATION DETAIL
H37 (47-017-06883)
H27 (47-017-06747)
H36 (47-017-06882)
H26 (47-017-06745)
H35 (47-017-06886)
H25 (47-017-06744)
H34 (47-017-06885)
H24 (47-017-06742)
OXF43H33
H23 (47-017-06743)
H32 (47-017-06884)
H22 (47-017-06741)
H31 (47-017-06748)
H21 (47-017-06740)
H30 (47-017-06746)
H20 (47-017-06739)
SCALE - 1"=20'
ACTIVE GAS WELL
N/F CATHY JEAN WETZEL, ETAL APN: 07-16-7 D.B. 277 PG. 165
CENTER OF WELL PAD
AST PAD "A" CENTER OF PAD
N/F RANDY E. HUFF DECEDENTS TRUST & WILLIAM LEE HUFF APN: 7-17-1 DB247, PG. 298
AST PAD "B" CENTER OF PAD
RECEIVED Office of Oil and Gas
DEC 2 0 2019
WV Department of Environmental Protection
NOTE:
ALL DATA SHOWN WITHIN THE BERM OF THE PAD WAS PROVIDED BY EQT FROM OTHERS.
SCALE 1 INCH = 60-FEET
0' 60' 120' 180'
REVISION | DATE | DESCRIPTION | BY
1 | 04/23/18 | AS BUILT UPDATE | KLH
2 | 12/03/19 | MOTION OF AST'S, UPDATE API NUMBERS AND PAD DETAIL | KLH
3 | 12/09/19 | REPOSITIONED AST PER EQT | KLH
EQT Where energy meets innovation.
SLS Land & Energy Development
THIS DOCUMENT WAS PREPARED BY: SLS LAND & ENERGY DEVELOPMENT FOR: EQT
OXF43 PAD AS-BUILT
THIS DOCUMENT WAS PREPARED BY: SLS LAND & ENERGY DEVELOPMENT FOR: EQT PRODUCTION COMPANY
DATE: 04-05-2018
SCALE: 1"=60'
DESIGNED BY: T.W.
FILE NO. 8452
SHEET: 10 OF 16