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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, August 3, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

EQT PRODUCTION COMPANY  
625 LIBERTY AVE., SUITE 1700

PITTSBURGH, PA 15222

Re: Permit approval for WEU4H12  
47-095-02510-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

A handwritten signature in blue ink, appearing to read 'James A. Martin', is positioned to the right of the printed name and title.

Operator's Well Number: WEU4H12  
Farm Name: DONNA J. PETER  
U.S. WELL NUMBER: 47-095-02510-00-00  
Horizontal 6A New Drill  
Date Issued: 8/3/2018

# PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

## CONDITIONS

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1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

## PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to [DEPOOGNotify@wv.gov](mailto:DEPOOGNotify@wv.gov).

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

1) Well Operator: EQT Production Company 306686 Tyler Centerville West Union  
Operator ID County District Quadrangle

2) Operator's Well Number: WEU4H12 Well Pad Name: WEU4

3) Farm Name/Surface Owner: Donna J Peter Public Road Access: WW-18

4) Elevation, current ground: 1079 Elevation, proposed post-construction: 1079

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No Yes

*DmH*  
*7-31-18* *QEP*  
*7/31/2018*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target formation is Marcellus at a depth of 6680' with the anticipated thickness to 54 feet and anticipated target pressure of 2747 PSI

8) Proposed Total Vertical Depth: 6680

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 11046

11) Proposed Horizontal Leg Length: 3291

12) Approximate Fresh Water Strata Depths: 132, 175, 186, 204

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

14) Approximate Saltwater Depths: 1128, 1219, 1222

15) Approximate Coal Seam Depths: 230, 281, 696

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

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

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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 <sup>3</sup> / CTS
Fresh Water	13 3/8	New	J-55	54.5	750	750	728 ft <sup>3</sup> / CTS
Coal							
Intermediate	9 5/8	New	P-110	40	2865	2865	1126 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	11046	11046	500' above top producing zone
Tubing	2 3/8		J-55	4.7		May not be run, if run set 40' above top perf or 80° inclination	
Liners							

*JCB*  
*7/31/2018*      *DmH*  
*7-31-18*

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	1378	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	See Variance	1.19
Coal							
Intermediate	9 5/8	12 3/8	.395	3950	6320	Class H	1.07
Production	5 1/2	8 1/2	.361	12640	10112	Class A/H	1.123/2.098
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and complete a new horizontal well in the Marcellus Formation. Drill the vertical to an approximate depth of 4097'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

*JEB*  
*7/31/2018*

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 10000 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 400,000 pounds of proppant per stage.

*DMH*  
*7-31-18*

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): No Additional

22) Area to be disturbed for well pad only, less access road (acres): No Additional

23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.
- Production: One solid body cent 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 (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. 25% Flake Loss Circulation Material (LCM)  
 Intermediate (Class H Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. 0.25% flake Loss Circulation Material (LCM) 8% Super FL-300 (fluid loss/lengthens thickening time)  
 Production:  
 Lead (Class A Cement): 0.2% CD-20 (dispersant makes cement easier to mix). 15% Super-FL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50-50 POZ (extender)  
 Tail (Class H Cement): 0.2% Super CR-1 (Retarder) Lengthens thickening time. 3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of cement required for formation. 60 % Calcium Carbonate. Acid solubility.

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25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
 Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.  
 Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

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\*Note: Attach additional sheets as needed.

**Well (WEU4H12)**  
**EQT Production**  
**West Union Quad**  
**Tyler County, WV**

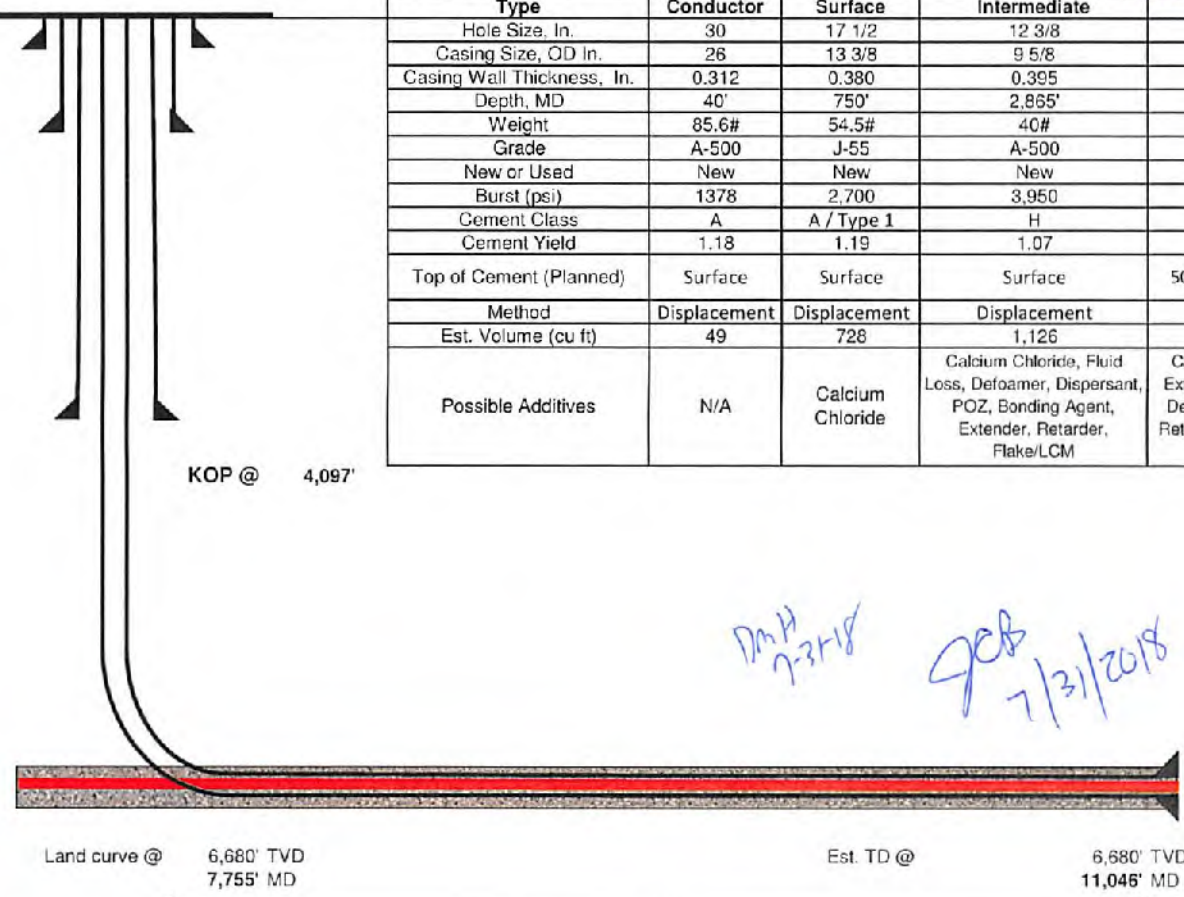
Azimuth 155  
 Vertical Section 4630  
 Enerlia # 516539

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Note: Diagram is not to scale

Formations	Top TVD	Base TVD
Conductor	40	
Base Fresh Water	204	
Surface Casing	750	
<b>Base Red Rock</b>	<b>1101</b>	
Maxton	1838 - 2037	
Big Lime	2111 - 2395	
Weir	2403 - 2450	
Gantz	2490 - 2507	
Fifty foot	2604 - 2659	
Thirty foot	2690 - 2744	
Gordon	2770 - 2815	
Intermediate Casing	2865	
Forth Sand	2841 - 2903	
Bayard	3011 - 3148	
Warren	3374 - 3440	
Speechley	3460 - 3574	
Balltown A	3976 - 4088	
Riley	4574 - 4864	
Benson	4995 - 5058	
Alexander	5242 - 5324	
Sonyea	6328 - 6449	
Middlesex	6449 - 6496	
Genesee	6496 - 6570	
Genesee	6570 - 6605	
Tully	6605 - 6626	
Hamilton	6626 - 6649	
Marcellus	6649 - 6702	
Production Casing	11046	MD
Onondaga	6702	

Casing and Cementing			Deepest Fresh Water: 204'	
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'	750'	2,865'	11,046'
Weight	85.6#	54.5#	40#	20#
Grade	A-500	J-55	A-500	P-110
New or Used	New	New	New	New
Burst (psi)	1378	2,700	3,950	12,540
Cement Class	A	A / Type 1	H	A / H
Cement Yield	1.18	1.19	1.07	1.123 / 2,098
Top of Cement (Planned)	Surface	Surface	Surface	500' above top Producing Zone
Method	Displacement	Displacement	Displacement	Displacement
Est. Volume (cu ft)	49	728	1,126	1,762
Possible Additives	N/A	Calcium Chloride	Calcium Chloride, Fluid Loss, Defoamer, Dispersant, POZ, Bonding Agent, Extender, Retarder, Flake/LCM	Calcium Carbonate, Fluid Loss, Extender, Dispersant, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder, Anti-Settling/Suspension Agent



*DMH 7-31-18*  
*JOB 7/31/2018*

Proposed Well Work:  
 Drill and complete a new horizontal well in the Marcellus formation.  
 Drill the vertical to an approximate depth of 4097'.  
 Kick off and drill curve. Drill lateral in the Marcellus. Cement casing.

3,291' Lateral

4709302510

EQT Production  
Hydraulic Fracturing Monitoring Plan  
Pad ID: WEU4  
County Tyler

4/01/18

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Page 1 of 2  
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## Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near EQT hydraulic fracturing in **Tyler County, WV** prior to hydraulic fracturing at the following EQT wells on **WEU4 pad: WEU4H5, WEU4H6, WEU4H10, WEU4H11, WEU4H12, WEU4H13, WEU4H14, WEU4H15.**

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.

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MAY 09 2018  
Page 2 of 2

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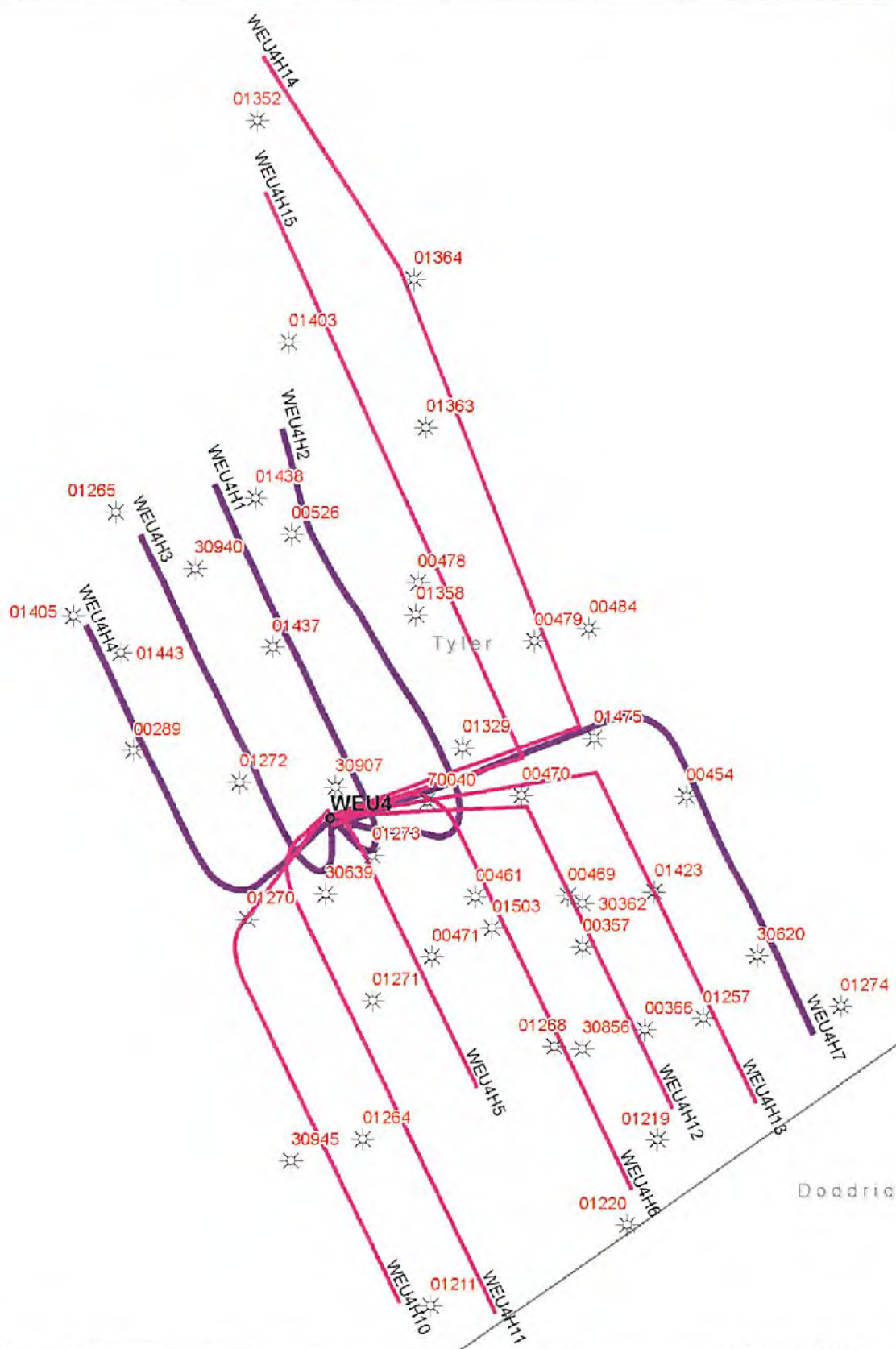
API Number	Abandoned Date	Completion Date	Current Operator	Elevation	Elevation Refere	Final Status	Lat	Long	Well Name	Permit Date	SPUD Date	TD Formation	Total Depth	Permit
47095309070000	11/8/1959	2/16/1902	HOPE NATURAL GAS			UNKWVN	39.3675	-80.8207	406 J L ASH 1	1/2/1902	1/17/1902			30907
47095303620000	9/2/1944	12/6/1910	HOPE NATURAL GAS	1022	GR	ABD-GW	39.3640	-80.8112	1963 HAMMETT HEIRS 1	10/10/1910	10/25/1910	HURON LOWER	2661	30362
47095306200000	4/27/1950	3/10/1911	HOPE NATURAL GAS	905	GR	ABD-GW	39.3624	-80.8044	2085 E M B KEYS	12/28/1910	1/12/1911	GORDON	2565	30620
47095308560000	5/19/1955	6/20/1911	HOPE NATURAL GAS	968	GR	ABD-GW	39.3596	-80.8112	2202 JACOB C SMITH	5/4/1911	5/19/1911	POCONO	2091	30856
47095306390000	6/14/1950	8/12/1911	HOPE NATURAL GAS	956	GR	ABD-GW	39.3643	-80.8211	2261 S M JONES	6/2/1911	6/17/1911	POCONO	1999	30639
47095004540000	10/28/1949	6/27/1913	HOPE NATURAL GAS	1007	GR	ABD-GW	39.3672	-80.8072	2958 HATTIE B KEYS	5/1/1913	5/16/1913	HURON LOWER	2886	00454
47095309450000	12/7/1968	5/21/1914	CONSOLIDATED GAS SUPPLY CORPORATION			UNKWVN	39.3563	-80.8224	3420 KEYS HEIRS	4/6/1914	4/21/1914			30945
47095002890000	10/24/1962	6/18/1960	STONESTREET LANDS	830	GR	ABDOGW	39.3686	-80.8285	1 J L ASH	5/10/1960	5/25/1960	BIG INIUN /SD/	1908	00289
47095003570000	10/23/1974	9/1/1962	LENNOX OIL & GAS	947	GR	ABD-GW	39.3627	-80.8112	2 W A BRITTON	7/18/1962	8/2/1962	POCONO	2010	00357
47095004610001		9/21/1973	EQUITABLE GAS COMPANY	919	GR	SWDOP	39.3642	-80.8153	5488/1 LUCY DAVIS	8/10/1973	8/20/1973	DEVONIAN /SD/	2556	00461
47095004700001		8/28/1974	EQUITABLE GAS COMPANY	1027	GR	GSTGW	39.3672	-80.8135	1 LUCY DAVIS	3/24/1974	4/3/1974	GORDON	2657	00470
47095004690001		1/17/1975	EQUITABLE GAS COMPANY	999	GR	SWDOP	39.3642	-80.8117	5491 CARL PERKINS	6/2/1974	6/12/1974	DEVONIAN /SD/	2659	00469
47095004710001		8/26/1975	EQUITABLE GAS COMPANY	933	GR	SWDOP	39.3624	-80.8169	5495 R E MOORE	8/2/1974	8/12/1974	GORDON /SD/	2576	00471
47095003660001		3/19/1975	EQUITABLE GAS COMPANY	914	KB	SWDOP	39.3602	-80.8087	3/5493/ CARL PERKINS	9/9/1974	9/19/1974	MISSISSIPPIAN	1942	00366
47095004780000		9/1/1976	EQUITABLE GAS COMPANY	1049	GR	GAS	39.3736	-80.8175	6229 CARRIE ROBINSON	7/18/1976	8/2/1976	BIG INIUN /SD/	2126	00478
47095004790000		7/1/1977	EQUITABLE GAS COMPANY	1010	GR	GSTG	39.3718	-80.8130	5503 ADDIE KEYS	5/17/1977	6/1/1977	GANTZ /SD/	2417	00479
47095005260000		4/23/1980	EQUITABLE GAS COMPANY	1045	GR	GSTG	39.3750	-80.8224	5507 B W PIESON	8/2/1979	8/17/1979	POCONO	2170	00526
47095012110000		10/10/1987	CONSOL GAS COMPANY	970	KB	GAS	39.3519	-80.8170	2 KEYS AUSTIN I	9/16/1987	9/26/1987	DEVONIAN /SH/	5150	01211
47095012190000		12/14/1987	CONSOL GAS COMPANY	937	KB	GAS	39.3569	-80.8082	1 BAGLEY W M	11/15/1987	11/25/1987	DEVONIAN /SH/	5020	01219
47095012200000		1/7/1988	CONSOL GAS COMPANY	827	KB	GAS	39.3543	-80.8094	1 MORRIS BURKE	12/18/1987	12/28/1987	DEVONIAN /SH/	4916	01220
47095012570000		10/24/1988	CONSOL GAS COMPANY	1030	KB	2GAS	39.3605	-80.8065	1 FREEMAN	10/8/1988	10/18/1988	DEVONIAN /SD/	5150	01257
47095012650000		11/8/1988	CONSOL GAS COMPANY	993	KB	GAS	39.3757	-80.8292	1 DAVIS GARY W	10/15/1988	10/25/1988	DEVONIAN /SD/	4992	01265
47095012640000		11/15/1988	CONSOL GAS COMPANY	936	KB	GAS	39.3569	-80.8196	2 KEYS AMOS	10/22/1988	11/1/1988	DEVONIAN /SD/	5022	01264
47095012720000		2/2/1989	CONSOL GAS COMPANY	1024	KB	GAS	39.3676	-80.8244	2 ASH HENRY & WILLIAM	1/10/1989	1/20/1989	DEVONIAN /SD/	5200	01272
47095012710000		2/11/1989	CONSOL GAS COMPANY	953	KB	GAS	39.3611	-80.8192	1 LORKOVICH LEONA	1/17/1989	1/27/1989	DEVONIAN /SD/	5102	01271
47095012730000		2/17/1989	CONSOL GAS COMPANY	1130	KB	GAS	39.3654	-80.8193	3 ASH HENRY & WILLIAM	1/23/1989	2/2/1989	DEVONIAN /SD/	5300	01273
47095012700000		2/23/1989	CONSOL GAS COMPANY	1072	KB	GAS	39.3635	-80.8241	1 SMITH WILLIAM	1/29/1989	2/8/1989	DEVONIAN /SD/	5200	01270
47095012680000		2/26/1989	CONSOL GAS COMPANY	1020	KB	GAS	39.3597	-80.8122	1 CUMBERLEDGE ASIA DELL	2/3/1989	2/13/1989	DEVONIAN /SD/	5100	01268
47095013290000		12/9/1989	CONSOL GAS COMPANY	1086	KB	GAS	39.3686	-80.8158	1 STONEKING L B	11/7/1989	11/17/1989	BENSON /SD/	5200	01329
47095013580000		1/25/1990	CONSOL GAS COMPANY	1034	KB	GAS	39.3726	-80.8176	2 KEYS ADDIE	12/20/1989	12/30/1989	DEVONIAN /SD/	5100	01358
47095013630000		1/30/1990	CONSOL GAS COMPANY	1107	KB	GAS	39.3782	-80.8172	1 ANN FAYE	12/30/1989	1/9/1990	DEVONIAN /SD/	5190	01363
47095014050000		8/1/1990	ALLIANCE PETROLEUM CORPORATION	986	KB	GAS	39.3726	-80.8308	1-A NICHOLS/DAVIS	7/9/1990	7/19/1990	BEREA	2136	01405
47095014030000		8/17/1990	CONSOL GAS COMPANY	1008	KB	GAS	39.3808	-80.8225	2 LEGRANDE MARVIN	7/23/1990	8/2/1990	DEVONIAN /SH/	5210	01403
47095014230000		9/7/1990	CONSOL GAS COMPANY	1166	KB	GAS	39.3643	-80.8084	1 SINGER	8/15/1990	8/25/1990	DEVONIAN /SD/	5225	01423
47095013640000		9/26/1990	CONSOL GAS COMPANY	1065	KB	GAS	39.3826	-80.8177	2 ANN FAYE	9/1/1990	9/11/1990	DEVONIAN /SD/	5200	01364
47095014370000		12/11/1990	CONSOL GAS COMPANY	982	KB	GAS	39.3716	-80.8231	1 DOAK CLARA ETAL & SMITH	10/23/1990	11/2/1990	DEVONIAN /SD/	5100	01437
47095014430000		1/2/1991	CONSOL GAS COMPANY	1054	KB	GAS	39.3715	-80.8290	CONRAD1 DAVIS FANNY ETAL	11/22/1990	12/2/1990	DEVONIAN /SD/	5150	01443
47095014380000		1/3/1991	CONSOL GAS COMPANY	1004	KB	GAS	39.3761	-80.8238	2 DOAK CLARA ETAL & SMITH	11/29/1990	12/9/1990	DEVONIAN /SD/	5100	01438
47095012740000		2/1/1991	CONSOL GAS COMPANY	1038	KB	GAS	39.3609	-80.8012	1 WEEKLEY ISAIAH	12/24/1990	1/3/1991	DEVONIAN /SD/	5100	01274
47095014750000		6/11/1992	CONSOL GAS COMPANY	1192	KB	GAS	39.3689	-80.8107	1 STONEKING BRUCE	5/10/1992	5/20/1992	DEVONIAN /SD/	5284	01475
47095015030000		12/8/1992	CONSOL GAS COMPANY	998	GR	GAS	39.3633	-80.8146	1 PURSLEY A A	10/4/1992	10/14/1992	DEVONIAN /SD/	5100	01503
47095309400000	7/5/1966		HOPE NATURAL GAS			PSEUDO	39.3740	-80.8261	1489 BOWERS & DAVIS					30940
47095700400000			CARTER OIL COMPANY			PSEUDO	39.3670	-80.8171	1 J L ASH					70040
4709500484		7/20/1977	EPC	1137	GR	STORAGE	39.3722	-80.8109					2226	00484
4709501352		12/1/1989	ANVIL OIL	1096	GR	GAS	39.3874	-80.8237					5170	01352

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Environmental Protection

95-02510



**EQT**  
 EQT Corporation  
 625 Liberty Avenue  
 Pittsburgh, PA 15222

**WEU4**

**Vertical Offsets and Foreign Laterals within 500'**

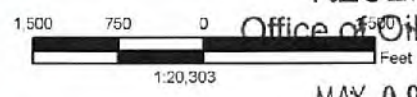
✱ Vertical Offsets

**SPUD**

— MR

**Planned Lateral**

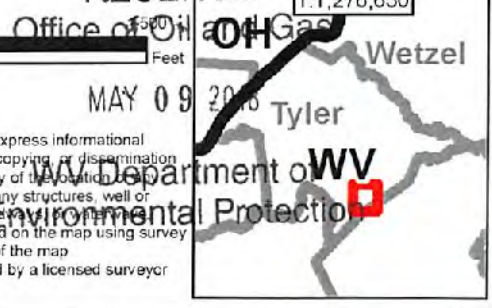
— Marcellus



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 items shown on this map, including, but not limited to, any structures, well or pipeline facilities, property boundaries, topography, roads, or other features. 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.

RECEIVED 1:1,276,650





WW-9  
(4/16)

API Number 47 - 95 - 02510  
Operator's Well No. WEU4H12

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name EQT Production Company OP Code 308688

Watershed (HUC 10) Tributary of Camp Mistake Run Quadrangle West Union

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

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: flowback and residual solids

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

Proposed Disposal Method For Treated Pit Wastes:

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

*Job 5/14/2018*

*DmH 5-14-18*

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

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. See Attached

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Mud

Additives to be used in drilling medium? See Attached

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? See Attached List

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *Erin Spine*

Company Official (Typed Name) Erin Spine

Company Official Title Regional Land Manager

Subscribed and sworn before me this 4 day of May, 2018

Rebecca J. Wanstreet Notary Public

My commission expires 4-7-2020

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# EQT Production Water plan

47 0 9 5 0 2 5 1 0

## Offsite disposals for Marcellus wells

### **CWS TRUCKING INC.**

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

### **BROAD STREET ENERGY LLC**

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

### **LAD LIQUID ASSETS DISPOSAL INC.**

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

### **TRIAD ENERGY**

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

### **TRI COUNTY WASTE WATER MANAGEMENT, INC.**

1487 Toms Run Road  
Holbrook, PA 15341  
724-627-7178 Plant  
724-499-5647 Office  
Greene County/Waynesburg  
Permit # TC-1009

### **KING EXCAVATING CO.**

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

### **Waste Management - Meadowfill Landfill**

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

### **Waste Management - Northwestern Landfill**

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

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## WW-9 Attachment

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc.

- Air is used to drill the top-hole sections of the wellbore (surface, intermediate, and pilot). Water based mud may be necessary depending on hole conditions to stabilize and drill the intermediate section. The pilot hole, curve, and lateral sections will be drilled with either air, water based mud, or oil based mud.

Additives to be used in drilling medium?

- Air - biodegradable oil lubricant, detergent, defoaming, water. Water based mud – Barite, viscosifer, alkalinity control, lime, filtration control, deflocculates, biodegradable oil lubricant, defoaming, walnut shell, salt, x-cide, carbonates. Oil based mud – synthetic base oil, emulsifier, salt, lime, viscosifer, alkalinity control, filtration control, deflocculates, biodegradable oil lubricant, defoaming, carbonates.

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Form WW-9

Operator's Well No. WEU4H12

EQT Production Company

Proposed Revegetation Treatment: Acres Disturbed No Additional Prevegetation pH 6.3

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type Granular 10-20-20

Fertilizer amount 1/3 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

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

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: \_\_\_\_\_

JCB  
5/14/2018

Title: Oil + Gas Inspector

Date: 5-14-18

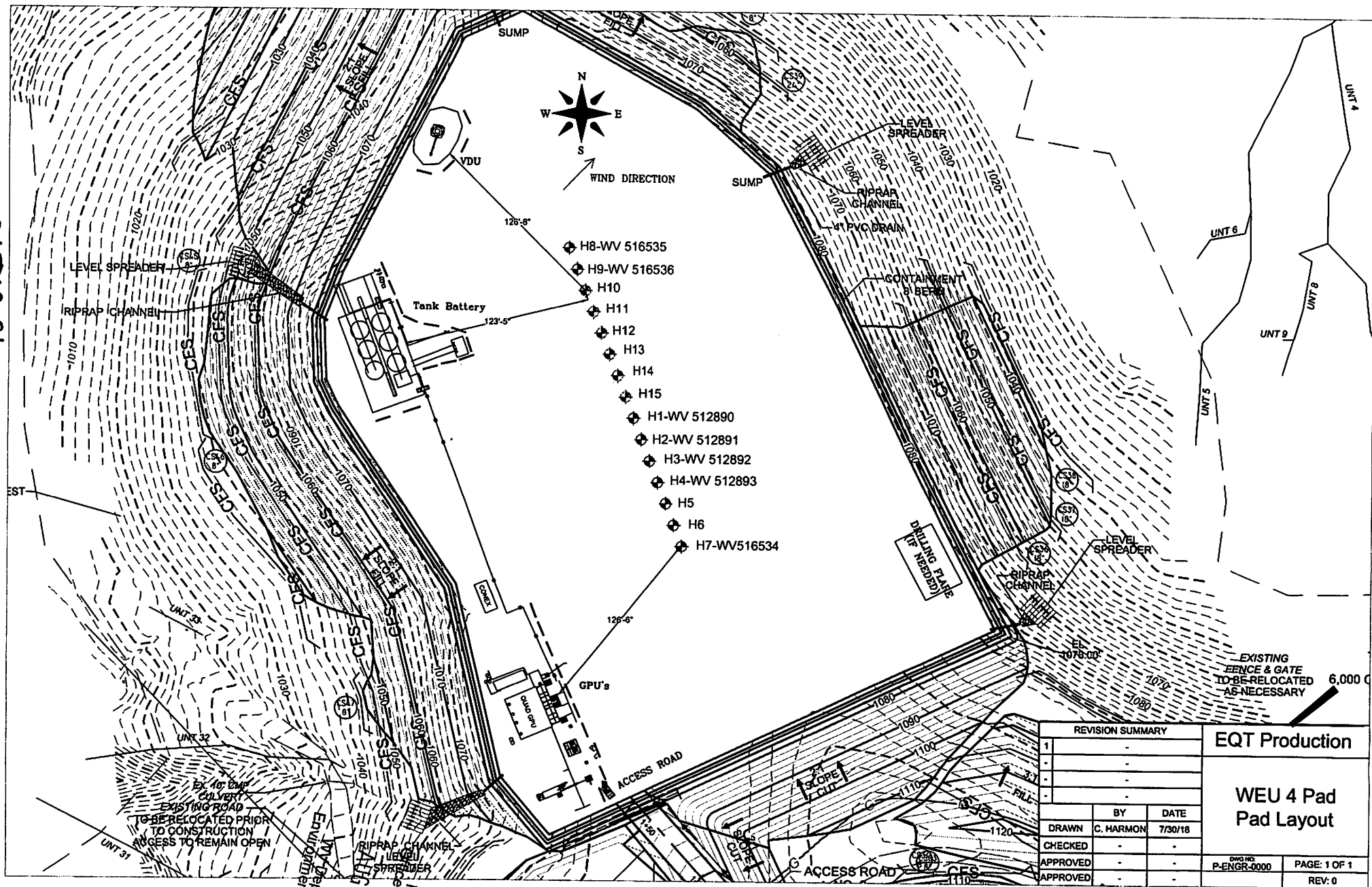
Field Reviewed?  Yes  No

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Environmental Protection

95-02510



EXISTING ROAD  
TO BE RELOCATED PRIOR  
TO CONSTRUCTION  
ACCESS TO REMAIN OPEN

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1 2018

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NY Department of  
Environmental Protection  
1 2018

REVISION SUMMARY		
1		
BY	DATE	
DRAWN C. HARMON	7/30/18	
CHECKED		
APPROVED		
APPROVED		

**EQT Production**

**WEU 4 Pad  
Pad Layout**

DWG NO: P-ENGR-0000 PAGE: 1 OF 1  
REV: 0

EXISTING FENCE & GATE TO BE RELOCATED AS NECESSARY 6,000





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# Site Specific Safety and Environmental Plan

EQT  
WEU4 Pad  
Alma  
Tyler County, WV

For Wells:  
WEU4H5 WEU4H0 WEU4H10 WEU4H11 WEU4H12  
WEU4H13 WEU4H14 WEU4H15

Date Prepared: February 16, 2018

[Signature]  
EQT Production

Regional Land Supervisor  
Title

5/4/2018  
Date

[Signature]  
WV Oil and Gas Inspector

Oil + Gas Inspector  
Title

5-14-18  
Date

DOB 5/14/2018

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MAY 18 2018  
WV Department of  
Environmental Protection

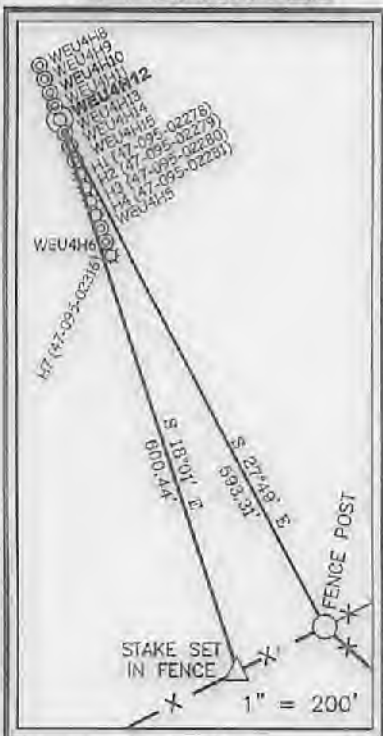
**WEU4  
WEU4H12  
EQT PRODUCTION COMPANY**

(S.P.C. WV NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'27 S.P.C.(FT) N. 318,420.30 E. 1,628,563.29  
 NAD'27 GEO. LAT-(N) 39.366714 LONG-(W) 80.820920  
 NAD'83 UTM (M) N. 4,357,496.87 E. 516,441.34  
**LANDING POINT**  
 NAD'27 S.P.C.(FT) N. 318,487.06 E. 1,628,759.00  
 NAD'27 GEO. LAT-(N) 39.366986 LONG-(W) 80.813123  
 NAD'83 UTM (M) N. 4,357,528.44 E. 516,112.97  
**BOTTOM HOLE**  
 NAD'27 S.P.C.(FT) N. 315,504.06 E. 1,630,149.98  
 NAD'27 GEO. LAT-(N) 39.358853 LONG-(W) 80.808050  
 NAD'83 UTM (M) N. 4,356,626.75 E. 516,551.90

ROYALTY OWNERS		
ROXIE DAVIS ET AL	53 AC.±	LEASE NO. 126208
DARREN L. PARKS ET AL	50 AC.±	LEASE NO. 126218
THOMAS E. & RICHARD S. MARTIN	28 AC.±	LEASE NO. 126257

- NOTES ON SURVEY**
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS 2500 SQ. FT. OR GREATER WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
  - WELL SPOT CIRCLE (SHEET 1) AND TOPO MARK SCALE ARE 1" = 2000'.

**REFERENCES**



SURFACE OWNERSHIP			
TAG	SURFACE OWNER	ACRES	T.M. - PAR.
TYLER COUNTY			
A	CHASE & REBA J. BARTRUG	109.94 ACRES±	TM-C-16-10
B	CONRAD COSTILOV	46.17 ACRES±	TM-C-16-14
C	JEFFERY E. & ANITA L. HOOVER	24.84 ACRES±	TM-C-16-15
D	RICHARD H. METCALF	61.57 ACRES±	TM-C-16-17
E	DONNA J. PETER	113.4 ACRES±	TM-C-16-22
F	CHRIS BAUM ET AL	56.84 ACRES±	TM-C-15-23
G	LEONA W. LORKOVICH ET AL	45.89 ACRES±	TM-C-16-24
H	STONEWALL GAS COMPANY	2 ACRES±	TM-C-16-24.2
I	PAUL WEBKLEY (LIFE)	18 ACRES±	TM-C-16-27
J	PAUL WEBKLEY (LIFE)	5 ACRES±	TM-C-16-28
K	PAUL WEBKLEY (LIFE)	3.37 ACRES±	TM-C-16-29
L	KENDRA WYKE ET AL	9.5 ACRES±	TM-C-18-02
M	ANZANETTA DRAIN HRS	46.88 ACRES±	TM-C-18-03
N	GARY DAVENPORT	15 ACRES±	TM-M-21-25
O	BRUCE & SANDRA STONEKING	69.44 ACRES±	TM-M-21-28
P	BRUCE & SANDRA STONEKING	42.86 ACRES±	TM-M-21-29
Q	ASIA DELL CUMBERLEDGE	75.75 ACRES±	TM-M-21-32
R	BRUCE W. BOLAND	35.43 ACRES±	TM-M-21-34
S	GORDON L. KEYS ET AL	60.6 ACRES±	TM-M-21-35
T	THOMAS E. & RICHARD S. MARTIN	28.99 ACRES±	TM-M-21-36
U	CLAY M. PERKINS ET AL	50.25 ACRES±	TM-M-21-37
V	EDWARD II & CAROLYN A. WHITE	40 ACRES±	TM-M-21-38
W	EDWARD II & CAROLYN A. WHITE	12.5 ACRES±	TM-M-21-39
X	EDWARD II & CAROLYN A. WHITE	16 ACRES±	TM-M-21-40
Y	BRYAN W. PRATT	23 ACRES±	TM-M-21-41
Z	RICHARD & LISA HENDRICKSON	44.68 ACRES±	TM-M-23-02
AA	JAMES T. & KATHRYN L. McNULTY	50.18 ACRES±	TM-M-23-3.1
BB	MYRON B. & BETTY WHITE	15.15 ACRES±	TM-M-23-07
DODDRIDGE COUNTY			
CC	MYRON B. & BETTY L. WHITE	14.88 ACRES±	TM-WU-01-01
DD	KENDRA K. (COLTRILL) WYKE	0.5 ACRES±	TM-WU-01-08
EE	JUDITH ANN BAGLEY	10.09 ACRES±	TM-WU-01-10
FF	JASON P. & JENNIFER L. BAGLEY	1.42 ACRES±	TM-WU-01-10.1

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www.slsurveys.com

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

P.S. *C. Victor Moyers*  
849



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE JULY 27, 20 18

REVISED \_\_\_\_\_  
OPERATORS WELL NO. WEU4H12  
API WELL NO. 47 - 95 - 02510  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7701PWEU4H12.dwg (516539)  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

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

LOCATION: PAD ELEVATION 1,079' WATERSHED TRIBUTARY OF CAMP MISTAKE RUN  
DISTRICT CENTERVILLE COUNTY TYLER QUADRANGLE WEST UNION 7.5'

SURFACE OWNER DONNA J. PETER ACREAGE 113.40±  
ROYALTY OWNER WAGO OIL AND GAS INC. ET AL ACREAGE 152±

PROPOSED WORK: DRILL X CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW FORMATION \_\_\_\_\_ PLUG AND ABANDON \_\_\_\_\_ CLEAN OUT AND REPLUG \_\_\_\_\_ OTHER \_\_\_\_\_  
PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH 6,680'

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

BOTTOM HOLE LONGITUDE 80°47'30" TOP HOLE LONGITUDE 80°47'30"

COUNTY NAME PERMIT

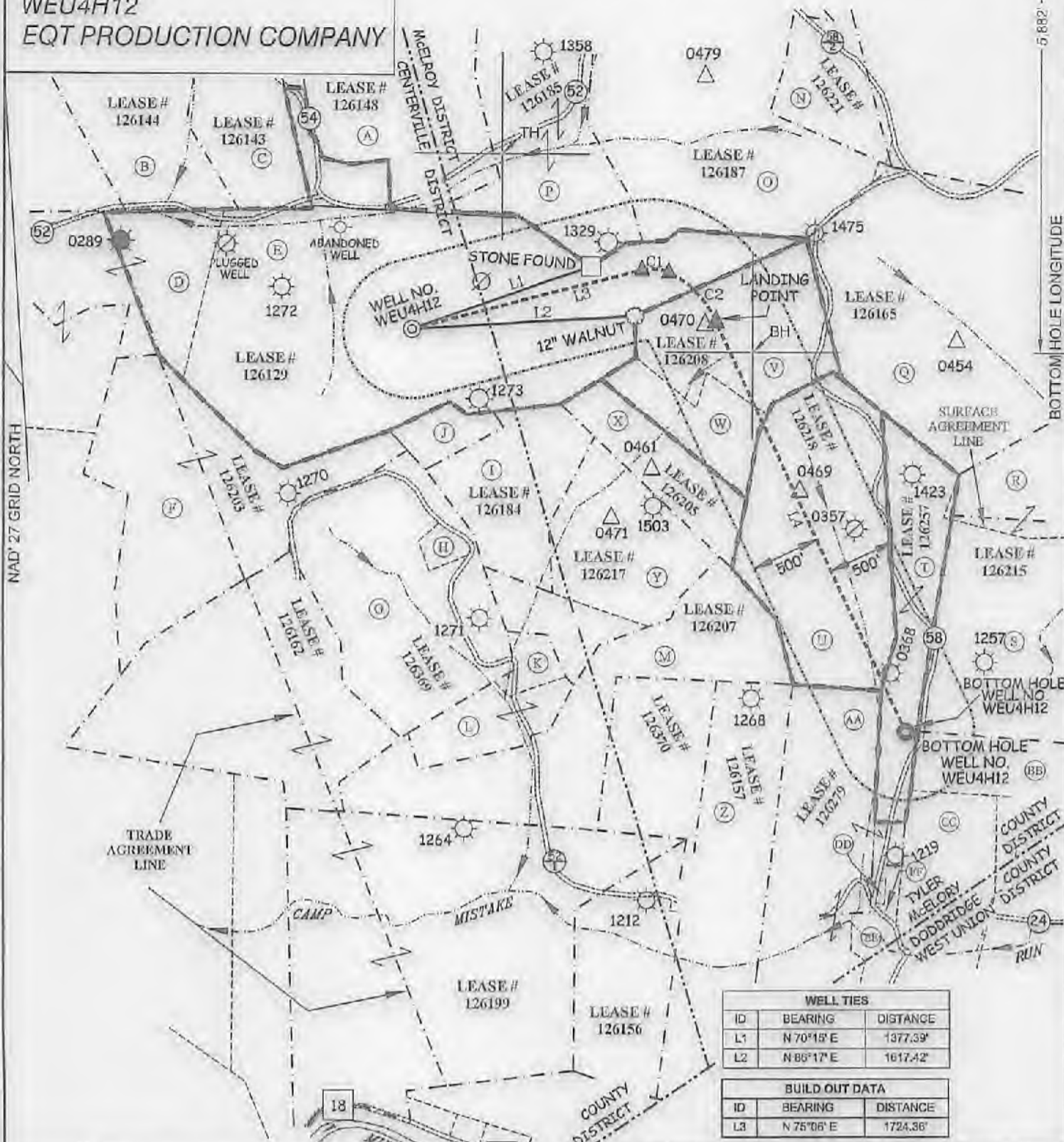


**WEU4  
WEU4H12  
EQT PRODUCTION COMPANY**

NAD'27 GRID NORTH

BOTTOM HOLE LONGITUDE

TOP HOLE LONGITUDE 80°47'30"



WELL TIES		
ID	BEARING	DISTANCE
L1	N 70°15' E	1377.39'
L2	N 86°17' E	1617.42'

BUILD OUT DATA		
ID	BEARING	DISTANCE
L3	N 75°06' E	1724.36'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	197.70'	297.56'	S 85°01'35\" E	194.09'
C2	510.04'	706.75'	S 43°53'05\" E	499.05'

LATERAL		
ID	BEARING	DISTANCE
L4	S 25°00' E	3291.37'

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www.slscurryve.com

(S.P.C. WV NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'27 S.P.C.(FT) N. 318,420.30 E. 1,625,553.29  
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 NAD'83 UTM (M) N. 4,357,496.87 E. 515,441.34  
LANDING POINT  
 NAD'27 S.P.C.(FT) N. 318,437.06 E. 1,628,759.00  
 NAD'27 GEO. LAT.(N) 39.363085 LONG.(W) 80.813123  
 NAD'83 UTM (M) N. 4,357,528.44 E. 515,112.97  
BOTTOM HOLE  
 NAD'27 S.P.C.(FT) N. 315,504.06 E. 1,630,149.98  
 NAD'27 GEO. LAT.(N) 39.359853 LONG.(W) 80.808050  
 NAD'83 UTM (M) N. 4,356,626.75 E. 516,551.90



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

**LEGEND**

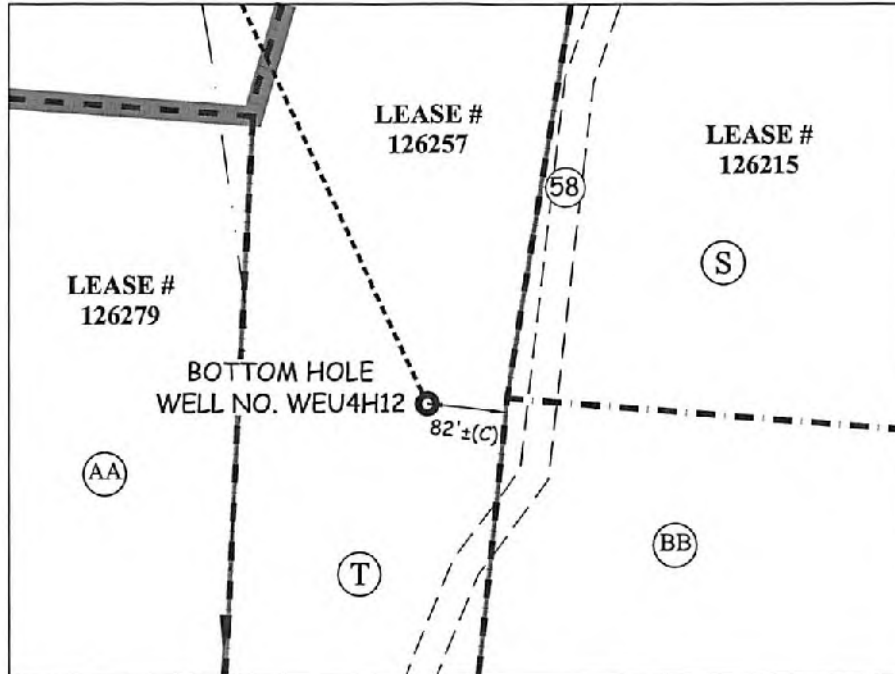
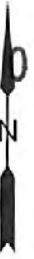
LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
FENCE LINE	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
PLUGGED WELL	
STORAGE WELL	
CENTERVILLE DISTRICT TAX MAP-PARCEL	C-00-00
McELROY DISTRICT TAX MAP-PARCEL	M-00-00
WEST UNION DISTRICT TAX MAP-PARCEL	WU-00-00

SCALE 1" = 1000' FILE NO. 7701PWEU4H12.dwg (516539)  
 DATE JULY 27, 2018  
 REVISED \_\_\_\_\_  
 OPERATORS WELL NO. WEU4H12  
 API WELL 47  
 NO. STATE COUNTY PERMIT

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

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

4709502510



### LEGEND

LEASE LINE	
SURFACE LINE	
WELL LATERAL	
CREEK	
ROAD	

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MAY 09 2018  
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## BOTTOM HOLE DETAIL FOR WEU4H12

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



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SCALE: 1 INCH= 200-FEET



JOB #: 7812  
DRAWN BY: MGF  
DATE: 04-13-18  
SCALE: 1" = 200'



**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.

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MAY 09 2018

Well Operator: EQT Production Company  
 By: Erin Spine  
 Its: Regional Land Supervisor

*Erin Spine*  
 WV Department of Environmental Protection

47 09 02 15 10  
Teresea R Hamilton  
Tyler County 03:09:34 PM  
Instrument No 118404  
Date Recorded 11/03/2016  
Document Type AGR  
Pages Recorded 3  
Book-Page 547-702  
Recording Fee \$5.00  
Additional \$6.00

**MEMORANDUM OF AGREEMENT**

This Memorandum of Agreement is entered into this 21<sup>st</sup> day of October, 2016, between Antero Resources Corporation, whose address is 1615 Wynkoop St., Denver, CO., 80202 ("Antero"), and EQT Production Company, a Pennsylvania corporation, with an office at 625 Liberty Avenue, Suite 1700, Pittsburgh, PA 15222 ("EQT").


1. **PARTIES AND AGREEMENT REFERENCE:** Antero and EQT entered into a letter agreement ("Letter Agreement") dated October 21, 2016 (the "Commencement Date") outlining their intent to pursue definitive agreements allowing EQT to develop those certain oil and gas leases controlled by Antero in Tyler County, WV and described on Exhibit "A" attached hereto and by this reference made a part hereof.

2. **TERM:** The rights granted in the Letter Agreement will terminate upon the earlier of (i) two years from the Commencement Date, or (ii) the parties entering into the definitive agreement(s) described in the Letter Agreement.

3. **MEMORANDUM FOR RECORDING PURPOSES ONLY:** This Memorandum is for recording purposes only and does not supplement or supercede the parties' respective rights set forth in the Letter Agreement.

**IN WITNESS WHEREOF,** the parties have signed their names hereto as of the date first above written.

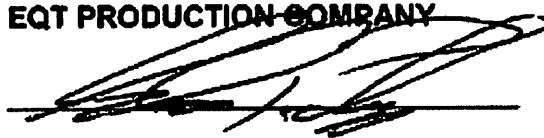
**ANTERO RESOURCES CORPORATION**

  
\_\_\_\_\_

By: Tim Rasmussen

Its: Director of Land Ops. Marcellus

**EQT PRODUCTION COMPANY**

  
\_\_\_\_\_

By: Steven Prelipp

Its: Senior Vice President – Business Development & Land

DLW

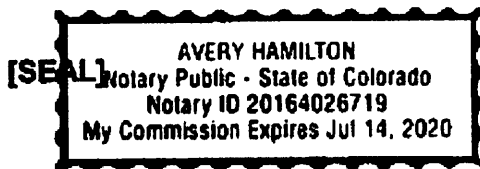
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ATTN: KIM SKINNER  
EQT PRODUCTION  
115 PROFESSIONAL PLACE  
PRINCETON, WV 26330-4509

STATE OF COLORADO;

COUNTY OF DENVER:

Before me, Avery Hamilton, a Notary Public, on this day personally appeared Tim Rody, known to me to be the Director, Land Marcellus of Antero Resources Corporation, subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 25 day of October, 2016. My Commission expires: 7/14/2020.



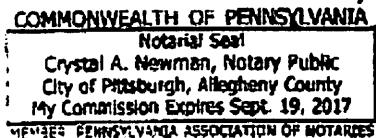
Avery Hamilton  
Notary Public

COMMONWEALTH OF PENNSYLVANIA;

COUNTY OF ALLEGHENY:

Before me, Crystal A Neuman, a Notary Public, on this day personally appeared Steven Prelipp, known to me to be the Senior Vice President, Business Development & Land of **EQT Production Company**, subscribed to the foregoing instrument, and acknowledged to me that he executed the instrument for the purposes and consideration therein expressed as his free act and deed. Given under my hand and seal of office this 27th day of October, 2016. My Commission expires: 9-19-2017.

[SEAL]



Crystal A Neuman  
Notary Public

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WW-6A1 attachment

Operator's Well No.

516539

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>126129</u>	<u>Waco Oil &amp; Gas Co. Inc., et al (current royalty owner)</u>		**	
	William H. Ash, et ux, et al (original lessor)	Equitable Gas Company		LB191/321
	Equitable Gas Company	Equitrans, Inc.		DB 274/471
	Equitrans, Inc.	Equitrans, LP		DB433/777
	Equitrans, LP	EQT Production Company		DB 396/640
	Equitrans, LP	EQT Production Company		OG 440/107
<u>126208</u>	<u>Roxie Davis, et al (current royalty owner)</u>		**	
	Lucy Davis, et al. (original lessor)	Equitable Gas Company		DB 197/551
	Equitable Gas Company	Equitrans, Inc.		DB 274/471
	Equitrans, Inc./Equitable Gas Company/Equitable Resources, Inc.	Equitrans, L.P.		DB 433/777
	Equitrans, L.P.	EQT Production Company		DB 396/640
<u>126218</u>	<u>Darren L. Parks, et al (current royalty owner)</u>		**	
	Carl D. Perkins, et ux (original lessor)	Equitable Gas Company		DB 198/396
	Equitable Gas Company	Equitrans, Inc.		DB 274/471
	Equitrans, Inc./Equitable Gas Company/Equitable Resources, Inc.	Equitrans, L.P.		DB 433/777
	Equitrans, L.P.	EQT Production Company		DB 396/640
<u>126257</u>	<u>Thomas E &amp; Richard S Martin (current royalty owner)</u>		**	
	Daisy Martin and Eli B. Martin (original lessor)	M.S. Lantz		197/259
	M.S. Lantz	Columbia Gas Transmission Corp		197/225
	Columbia Gas Transmission Corp	Columbia Natural Resources, Inc		291/175
	Columbia Natural Resources, Inc	Chesapeake Appalachia, LLC		349/536
	Chesapeake Appalachia, LLC	Statoil USA Onshore Properties, Inc		363/391
	Statoil USA Onshore Properties, Inc	Antero Resource Corporation		544/291
	Antero Resources Corporation	EQT Production Company		547/702
				permitting lett

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

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**EXHIBIT "A"**

To that certain Memorandum of Agreement dated October 21, 2016 by and between  
Antero Resources Corporation and EQT Production Company

<b>Lessor</b>	<b>Lessee</b>	<b>Date</b>	<b>Acres</b>	<b>Book/Page</b>	<b>County</b>	<b>District</b>	<b>State</b>
Daisy Martin and Eli B. Martin, her husband	M. S. Lantz	2/5/1973	28	197/259	Tyler	McElroy	West Virginia
Bonnie L. Hardway	Tenmile Land, LLC	7/23/2012	20.25	399/692	Tyler	McElroy	West Virginia
Douglas Kearns	Tenmile Land, LLC	4/18/2012	20.25	404/351	Tyler	McElroy	West Virginia

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May 4, 2018

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

Re: WEU4 well pad, wells WEU4H5, WEU4H6, WEU4H10, WEU4H11, WEU4H12,  
WEU4H13, WEU4H14, WEU4H15,  
Centerville District, Tyler County

Dear Mr. Martin,

EQT Production Company is submitting an application for a new well work permit for the above well number. Upon information and belief, Operator's lease and/ or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

Sincerely,

Rebecca Wanstreet  
Landman I -Permitting

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

Date of Notice Certification: 05/07/2018

API No. 47- 95 -  
Operator's Well No. WEU4H12  
Well Pad Name: WEU4

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>WV</u>	UTM NAD 83	Easting: <u>515441.341</u>
County: <u>Tyler</u>		Northing: <u>4357496.873</u>
District: <u>Centerville</u>	Public Road Access: <u>WV-18</u>	
Quadrangle: <u>West Union</u>	Generally used farm name: <u>Donna J Peters</u>	
Watershed: <u>Tributary of Camp Mistake Run</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:  *PLEASE CHECK ALL THAT APPLY  <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED  <input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED  <input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or  <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)  <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION  <input checked="" type="checkbox"/> 5. PUBLIC NOTICE  <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<b>OOG OFFICE USE ONLY</b>  <input type="checkbox"/> RECEIVED/ NOT REQUIRED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED/ NOT REQUIRED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED  <input type="checkbox"/> RECEIVED
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**Required Attachments:**

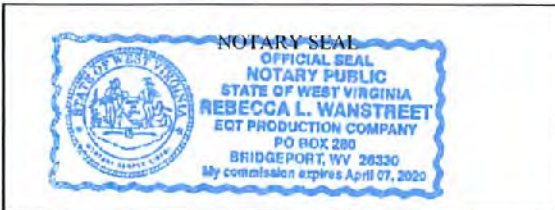
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

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**Certification of Notice is hereby given:**

THEREFORE, I Erin Spine, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>EQT Production Company</u>	Address:	<u>2200 Energy Drive</u>
By:	<u>Erin Spine</u> 		<u>Canonsburg PA 15317</u>
Its:	<u>Regional Land Supervisor</u>	Facsimile:	<u>304-848-0041</u>
Telephone:	<u>304-848-0035</u>	Email:	<u>espine@eqt.com</u>



Subscribed and sworn before me this 4 day of May 2018,  
Rebecca L. Wanstreet Notary Public  
 My Commission Expires 4-7-2020

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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

**Notice Time Requirement:** notice shall be provided no later than the filing date of permit application.

**Date of Notice:** 5/7/2018    **Date Permit Application Filed:** 5/7/2018

**Notice of:**

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice    WSSP Notice    E&S Plan Notice    Well Plat Notice   is hereby provided to:

SURFACE OWNER(s)

Name: See Attached  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: See Attached  
Address: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)

Name: See Attached  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE

Name: See Attached  
Address: \_\_\_\_\_

COAL OPERATOR

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: See Attached  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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**WV Department of  
Environmental Protection**

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multi-well pad if one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.

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MAY 09 2018



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**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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MAY 09 2018

WV Department of  
Environmental Protection

WW-6A  
(8-13)

API NO. 47-95  
OPERATOR WELL NO. WEU4H12  
Well Pad Name: 09502510

**Notice is hereby given by:**

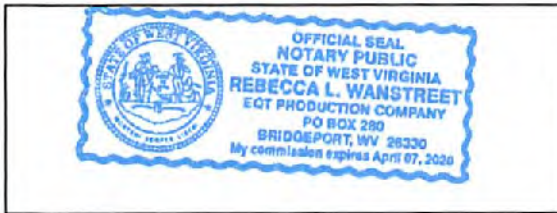
Well Operator: EQT Production Company  
Telephone: 304-848-0035  
Email: espine@eqt.com



Address: 2200 Energy Drive  
Canonsburg PA 15317  
Facsimile: 304-848-0041

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 4 day of May 2018.  
Rebecca L. Wanstreet Notary Public  
My Commission Expires 4-7-2020

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MAY 09 2018  
WV Department of  
Environmental Protection

4709502510

**Surface Owners:**

DONNA J PETER  
733 RIDGE ROAD  
WILBUR, WV 26320

**Access/ Other Disturbance:**

DONNA J PETER  
733 RIDGE ROAD  
WILBUR, WV 26320

JAMES B. and BRENDA J. STONEKING  
2 DEERHAVEN DRIVE  
WHEELING, WV 26003

DIANE L. and GLENN W. MORGAN  
590 ISNER CREEK ROAD  
ELKINS, WV 26241

RICHARD METCALF  
415 WILDLIFE LANE  
BRIDGEPORT, WV 26330

**Pit/ Impoundment or AST**

DONNA J PETER  
733 RIDGE ROAD  
WILBUR, WV 26320

**Coal Owners:**

ROSEMARY BRANDON  
3013 DELEWARE AVE  
KENNER LA 70065

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Office of Oil and Gas

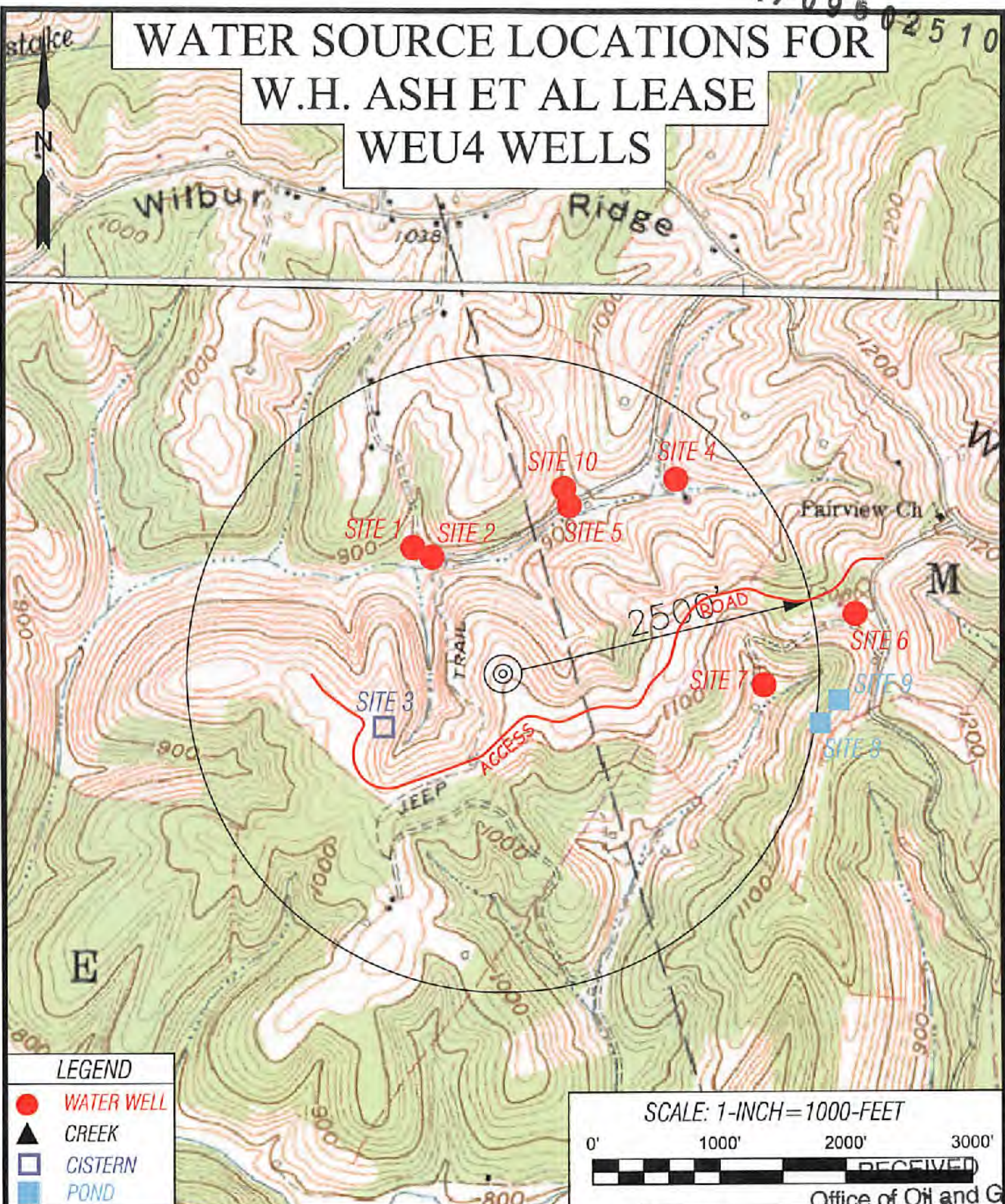
MAY 09 2018

WV Department of  
Environmental Protection



4700502510

# WATER SOURCE LOCATIONS FOR W.H. ASH ET AL LEASE WEU4 WELLS



**LEGEND**

- WATER WELL
- ▲ CREEK
- ◻ CISTERN
- ◻ POND

SCALE: 1-INCH=1000-FEET

0'      1000'      2000'      3000'

Office of Oil and Gas

**SLS**  
Land & Energy Development  
Solutions from the ground up.  
P.O. Box 150 & 12 Vermont Drive • Charleston, WV 25303 • (204) 462-0254  
www.slsenergy.com

TOPO SECTION OF:  
WEST UNION, WV 7.5' QUAD

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

WV Department of Environmental Protection

DRAWN BY MGF	FILE NO. 7701	DATE 04/16/18	CADD FILE: 7701WSNEU4-R3.dwg
-----------------	------------------	------------------	---------------------------------

DISTRICT	COUNTY	TAX MAP-PARCEL NO.
CENTERVILLE	TYLER	16-22



4709502510

**Surface Owners:**

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733 RIDGE ROAD  
WILBUR, WV 26320

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3013 DELEWARE AVE  
KENNER LA 70065

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Office of Oil and Gas  
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WILBUR, WV 26320

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WV Department of  
Environmental Protection

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the filing date of permit application.

**Date of Notice:** 05/07/2018      **Date Permit Application Filed:** 05/07/2018

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

- |  |                               |
|--|-------------------------------|
| <input checked="" type="checkbox"/> CERTIFIED MAIL | <input type="checkbox"/> HAND |
| RETURN RECEIPT REQUESTED                           | DELIVERY                      |

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**  
(at the address listed in the records of the sheriff at the time of notice):

Name: <u>See attached</u>	Name: <u>See Attached</u>
Address: _____	Address: _____
_____	_____

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>WV</u>	UTM NAD 83	Easting: <u>515441.341</u>
County: <u>Tyler</u>		Northing: <u>4357486.873</u>
District: <u>Centerville</u>	Public Road Access: <u>WV-18</u>	
Quadrangle: <u>West Union</u>	Generally used farm name: <u>Donna J Peters</u>	
Watershed: <u>Tributary of Camp Mistake Run</u>		

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: <u>EQT Production Company</u>	Address: <u>2200 Energy Drive</u>
Telephone: <u>304-848-0035</u>	<u>Canonsburg PA 15317</u>
Email: <u>espine@eqt.com</u>	Facsimile: <u>304-848-0041</u>

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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**Office of Oil and Gas**

MAY 09 2018

**WV Department of  
Environmental Protection**



**Surface Owners:**

DONNA J PETER  
733 RIDGE ROAD  
WILBUR, WV 26320

4709502510

**Access/ Other Disturbance:**

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DONNA J PETER  
733 RIDGE ROAD  
WILBUR, WV 26320

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MAY 09 2018

WV Department of  
Environmental Protection

4709902510



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
**Division of Highways**

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.  
Secretary of Transportation/  
Commissioner of Highways

Jill M. Newman  
Deputy Commissioner

Revised February 28, 2018

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

Subject: DOH Permit for the WEU 4 Well Pad, Tyler County

WEU4H5  
WEU4H12

WEU4H6  
WEU4H13

WEU4H10  
WEU4H14

WEU4H11  
WEU4H15

Dear Mr. Martin,

This well site will be accessed from DOH Permit #06-2015-0241 issued to EQT Production Company for access to the State Road for a well site located off of Tyler County Route 58 SLS.

The 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 January 3, 2012.

Very Truly Yours,

Gary K. Clayton P.E.  
Regional Maintenance Engineer  
Central Office Oil & Gas Coordinator

Cc: Nick Bumgardner  
EQT Production Company  
CH, OM, D-6  
File

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MAY 09 2018

WV Department of  
Environmental Protection

GS-02510

### Anticipated Frac Additives Chemical Names and CAS numbers

<u>Material</u>	<u>Ingredient</u>	<u>CAS Number</u>
Water		
Sand	Hydrotreated light petroleum distillate	14808-60-7
Friction Reducer	Tributyl tetradecyl phosphonium chloride	64742-47-8
Biocide	Ammonium chloride	81741-28-8
Scale Inhibitor	Hydrochloric Acid	12125-02-9
15% Hydrochloric Acid	Propargyl Alcohol	7647-01-0
Corrosion Inhibitor	Methanol	107-19-7
Corrosion Inhibitor	Guar Gum	67-56-1
Gelling Agent	Sodium Persulfate	9000-30-0
Oxidizing Breaker	Potassium Carbonate	7775-27-1
Buffering Agent		584-08-7

GCB 5/14/2018 DMH 5-14-18

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MAY 18 2018  
WV Department of  
Environmental Protection

**WVDEP OOG  
ACCEPTED AS-BUILT**

*WJ* 4/4/2016

# WEU-4 AS-BUILT SITE PLAN EQT PRODUCTION COMPANY

PERMITTED WELLS: API# 47-095-02278, 47-095-002279, 47-095-02280, 47-095-02281,  
47-095-02316, 47-095-02317 AND 47-095-02318

PROPOSED WELL NUMBERS: H6-WV512894, H6-WV512895, H8-WV516535,  
H9-WV516536, H11-WV516538, H13-WV516540, H14-WV516600 AND H15-WV516601

SITUATE ON WATERS OF CAMP MISTAKE RUN IN MCELROY AND CENTER DISTRICTS,  
TYLER COUNTY, WEST VIRGINIA

**PROJECT INFORMATION**

PROJECT NAME WEU-4 AS-BUILT SITE PLAN

TAX PARCEL:  
CENTERVILLE DISTRICT  
MAP 16  
MCELROY DISTRICT  
MAP 21

**SURFACE OWNER:**  
L. B. SANDER & SONS  
MURKIN COUNTY  
TYLER COUNTY, WV  
TOTAL PROPERTY AREA: 50.44 ACRES

DOYNA, J. PETER  
MCELROY & CENTERVILLE DISTRICT  
TYLER COUNTY, WV  
TOTAL PROPERTY AREA: 113.86 ACRES

EDWARD & WYNNE HETCALF  
CENTERVILLE DISTRICT  
TYLER COUNTY, WV  
TOTAL PROPERTY AREA: 61.57 ACRES

**OIL AND GAS ROYALTY OWNER**  
WACO OIL & GAS COMPANY, INC. ET AL  
CENTERVILLE DISTRICT  
TYLER COUNTY, WV  
TOTAL PROPERTY AREA: 152 ACRES

**SITE LOCATION**

THE WEU-4 SITE IS NORTH OF CAMP MISTAKE RUN COUNTY ROUTE 56, THE  
ENTRANCE TO THE SITE IS APPROXIMATELY 0.2 MILE SOUTH WEST OF COUNTY  
ROUTE 56 AND COUNTY ROUTE 6027 INTERSECTION.

**LOCATION COORDINATES**

WEU-4 SITE BOUNDARY  
LATITUDE: 38.269178 LONGITUDE: 80.812114 (NAD 83)  
LATITUDE: 4, 357, 272 LONGITUDE: 516, 363 (UTM NAD 83 METERS)

WEU-4 CENTER OF WELL PAD  
LATITUDE: 38.268620 LONGITUDE: 80.820145 (NAD 83)  
LATITUDE: 4, 357, 427 LONGITUDE: 515, 448 (UTM NAD 83 METERS)

WEU-4 FLOW CENTER OF FLOWBACK PIT  
LATITUDE: 38.265305 LONGITUDE: 80.821021 (NAD 83)  
LATITUDE: 4, 357, 350 LONGITUDE: 515, 431 (UTM NAD 83 METERS)

WEU-4 FLOW CENTER OF COMPLETION PIT  
LATITUDE: 38.265009 LONGITUDE: 80.820772 (NAD 83)  
LATITUDE: 4, 357, 406 LONGITUDE: 515, 254 (UTM NAD 83 METERS)

**SITE DISTURBANCE COMPUTATIONS**

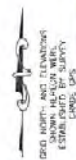
TOTAL AS-BUILT DISTURBANCE = 35.61 ACRES

**GENERAL DESCRIPTION**

THE WEU-4 PAD AND PIT & FLOWBACK PITS WERE CONSTRUCTED TO AID IN THE DEVELOPMENT  
OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

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**



**LIST OF DRAWINGS**

1. COVER SHEET
2. INDEX SHEET
3. WEU-4 ACCESS ROAD
4. WEU-4 FLOWBACK PIT PAD
5. WEU-4 COMPLETION PIT SET POINTS
6. ACCESS ROAD PROFILE
7. ACCESS ROAD PROFILE, FLOWBACK PIT AND COMPLETION PIT PROFILES

LEGEND	
LINE OF EMBANKMENT	---
CONCRETE FILLER EDGE	---
AS-BUILT LID	---
EDGE OF GRAVEL/DIRT	---
EDGE OF PAVEMENT	---
ROAD CENTERLINE	---
STREETLINE	---
CULVERT	---
FENCELINE	---
GATE	---
OVERHEAD UTILITY R/W	---
OVERHEAD UTILITY R/W	---
POWER POLE	---
CITY WIRE	---
TELEPHONE LINE	---
GASLINE	---
GASLINE R/W	---
WATERLINE	---
STRUCTURE	---
POLELINE MARKER	---
BIG FOOTPRINT	---
EDGE OF GRAVEL PAD	---
EDGE OF BERM	---
SUPER BILT FENCE	---
RESURFACED BILT FENCE	---
TOP BERM	---
GRAVEL	---
SOIL BUMP	---
ORIGINAL GROUND CONTOURS	---
AS-BUILT 2' CONTOURS	---
PHOTO NUMBER & LOCATION	---
AS-BUILT WELL LOCATIONS	---
SHOT ELEVATIONS	---
MATCHLINE	---

*DWAH 4/4/16*

SCALE 1"=1000'

DATE	DESCRIPTION
DATE	REVISION
<p>THIS DOCUMENT WAS PREPARED BY SLS LAND SURVEYING INC. FOR EQT</p>	
<p><b>WEU-4 AS-BUILT SITE PLAN</b></p> <p>THIS DOCUMENT WAS PREPARED BY SLS LAND SURVEYING INC. FOR EQT PRODUCTION COMPANY</p>	
DATE:	03/02/2016
BY:	
SCALE:	1" = 1000'
DESIGNED BY:	K.S.S.
FILE NO.:	770
SHEET:	1 OF 2
DATE:	4/16
BY:	ASBUILT.TS.dwg

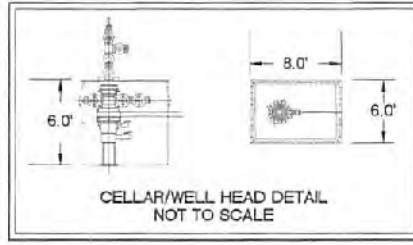


CIRCUIT NORTH AND SURVEYED ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY EOPM SURVEY GRADE.

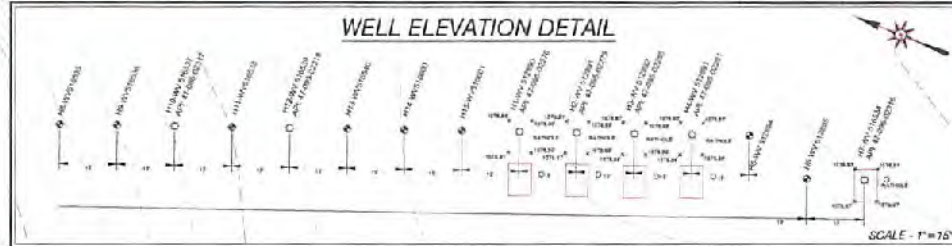
# WEU-4 AS BUILT SITE PLAN

SITUATE ON WATERS OF CAMP MISTAKE RUN IN MOELCROY AND CENTER DISTRICTS, TYLER COUNTY, WEST VIRGINIA

**WVDEP OOG  
ACCEPTED AS-BUILT**  
4/4/2016



L. B. & SANDRA STONER KING  
42.66 ACRES



Donna J. Peter  
113.4 Acres  
TM 16-22

WEU-4 FLOWBACK PIT VOLUMES AT 1' INTERVALS

Storage Volume	Flowback	IC-3	IC-4	IC-5	IC-6	IC-7
15	1084.21	0	0	0	0	0
17	1084.21	17.5	0.20777	8820.8	20.4	0
18	1071.21	121.0	0.20381	24485.8	45.8	0
19	1071.21	223.0	0.14814	48418.4	112.2	0
19	1071.21	288.0	0.24898	80771.0	159.5	0
19	1071.21	315.0	0.38165	124111.5	206.8	0
19	1071.21	333.0	0.50885	177731.5	252.2	0
19	1071.21	333.0	0.74115	241621.5	276.8	0
19	1071.21	333.0	0.96942	315517.8	291.1	0
19	1071.21	333.0	1.23542	400261.5	305.7	0
19	1071.21	333.0	1.52720	497720.5	3165.0	0
19	1071.21	333.0	1.84388	608916.5	3142.0	0
19	1071.21	333.0	2.18557	733971.5	3047.0	0
19	1071.21	333.0	2.55227	872996.5	2905.0	0
19	1071.21	333.0	2.94500	1026001.5	2717.0	0
19	1071.21	333.0	3.36377	1193207.5	2492.0	0
19	1071.21	333.0	3.80860	1375624.5	2242.0	0
19	1071.21	333.0	4.28050	1574352.5	1972.0	0
19	1071.21	333.0	4.77950	1789491.5	1692.0	0
19	1071.21	333.0	5.30570	2022041.5	1412.0	0

VOLUME OF WATER AT 2' INTERVALS  
6884.21' = 1,341,822.7 GALLONS  
1084.21' = 21,682.4 BARRELS

*DMH 4/4/16*

REV	DATE	DESCRIPTION
REV 1	3/21/16	ADDED TYPICAL CELLAR DETAIL

**EQT**  
Energy & Environmental Solutions

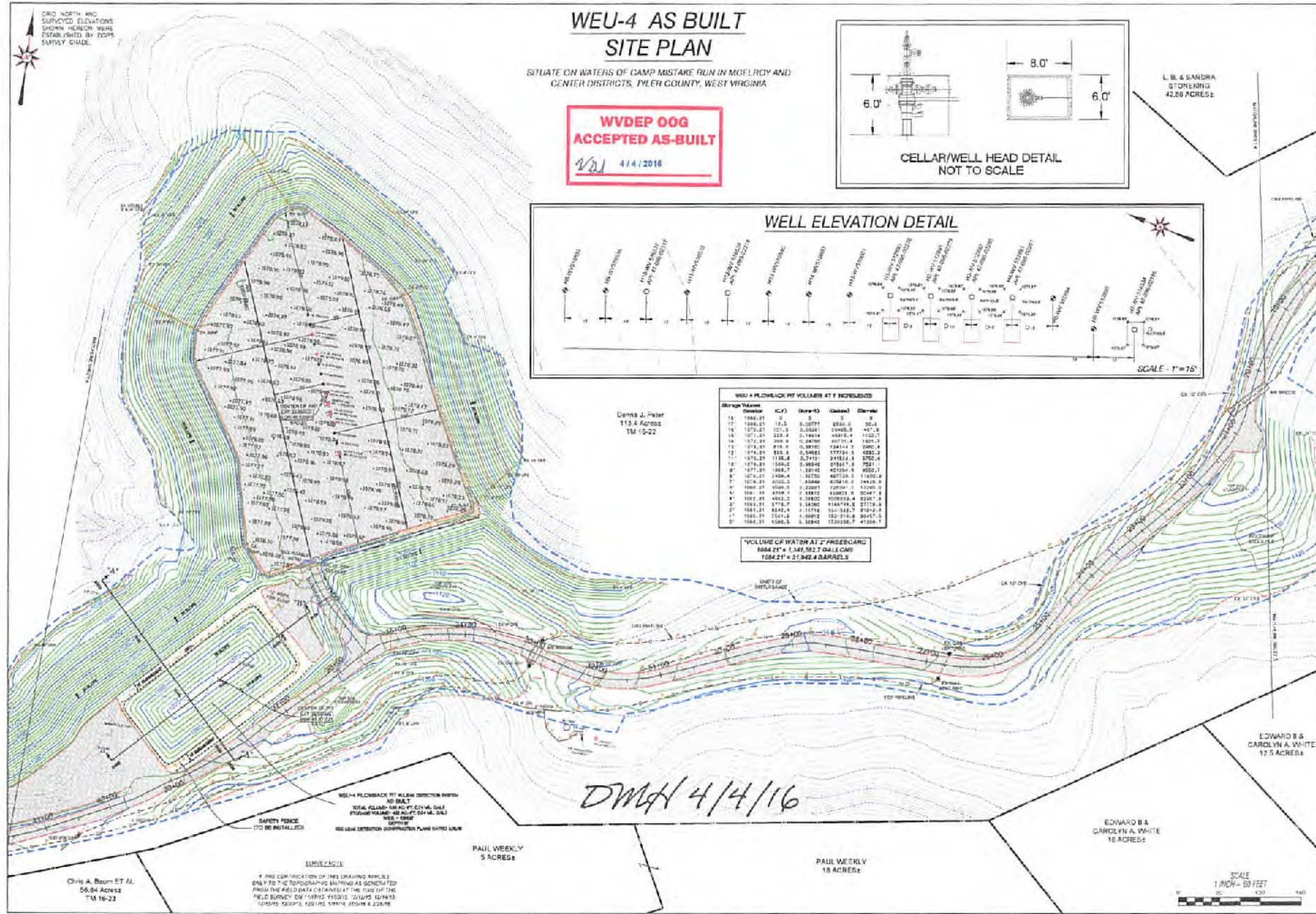
**SLS**  
Site & Survey Solutions

THIS DOCUMENT WAS PREPARED BY SLS SURVEYING, INC. FOR EQT.

**WEU-4 AS-BUILT SITE PLAN**

THIS DOCUMENT WAS PREPARED BY SLS SURVEYING, INC. FOR EQT.

DATE	04/16/2016
REV	1
SCALE	1" = 60'
DESIGNED BY	K.E.S.
SHEET NO	1 OF 3
SHEET	4 OF 3
DATE	11/16
FILE	7101 WEU-4 AS-BUILT SITE PLAN



Chris A. Baum ET AL  
56.94 Acres  
TM 16-23

IF THE CERTIFICATION OF THIS DRAWING APPLIES ONLY TO THE SURVEYING WORKING AS INDICATED FROM THE FIELD DATA OBTAINED AT THE TIME OF THE FIELD SURVEY BY THE SURVEYOR, IT DOES NOT APPLY TO ANY OTHER WORK SHOWN ON THIS DRAWING.

SCALE  
1 INCH = 60 FEET