west virginia department of environmental protection

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

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

March 13, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-1706445, issued to EQT PRODUCTION COMPANY, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

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

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: WV 514392
Farm Name: SECRIST, MARY FARR
API Well Number: 47-1706445
Permit Type: Horizontal 6A Well
Date Issued: 03/13/2014

API Number: 017 06445

PERMIT CONDITIONS

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

CONDITIONS

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

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 fifty (50) 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. 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.

8. 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.

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

1) Well Operator: EQT Production Company | Operator ID | 017 County | 8 District | 671 Quadrangle

2) Operator's Well Number: 514392 Well Pad Name: WEU49

3) Farm Name/Surface Owner: Mary Farr Secrist Farm Public Road Access: 50/42

4) Elevation, current ground: 1,164.0 Elevation, proposed post-construction: 1,130.0

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

Other _____

(b) If Gas: Shallow • Deep _____

Horizontal •

6) Existing Pad? Yes or No: no

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

Target formation is Marcellus at a depth of 6648 with the anticipated thickness to be 57 feet and anticipated target pressure of 4474 PSI

8) Proposed Total Vertical Depth: 6,648

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth 11,915

11) Proposed Horizontal Leg Length 3,360

12) Approximate Fresh Water Strata Depths: 243, 292, 352, 487

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

14) Approximate Saltwater Depths: 1,542

15) Approximate Coal Seam Depths: 340, 483

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

17) Does proposed well location contain coal seams directly overlying or adjacent to an active mine?

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

DCN
1-31-2014

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CASING AND TUBING PROGRAM

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18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill- up (Cu.Ft.)
Conductor	20	New	Varies	Varies	40	40	38 CTS
Fresh Water	13 3/8	New	MC-50	81	903	903	787 CTS
Coal							
Intermediate	9 5/8	New	MC-50	40	5,238	5,238	2072 CTS
Production	5 1/2	New	P-110	20	11,915	11,915	See Note 1
Tubing	2 3/8		J-55	4.6			May not be run, if run will be set 100' less than TD
Liners							

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

Packers

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

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

DCW
1-31-2014

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

Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go down to an approximate depth of 5,631'.

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

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated treating pressures are expected to average approximately 8500 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 37.4

22) Area to be disturbed for well pad only, less access road (acres): 16.3

23) Describe centralizer placement for each casing string.

- Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.
- Production: One spaced every 1000' from KOP to Int csg shoe

24) Describe all cement additives associated with each cement type. **Surface (Type 1 Cement):** 0-3% Calcium Chloride Used to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone. **Intermediate (Type 1 Cement):** 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.

Production:

Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time.

0.3% CFR (dispersant). Makes cement easier to mix.

Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time.

0.2-0.3% CFR (dispersant). This is to make the cement easier to mix.

60 % Calcuim Carbonate. Acid solubility.

0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.

25) Proposed borehole conditioning procedures. **Surface:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up. **Intermediate:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance hole cleaning use a soap sweep or increase injection rate & foam concentration. **Production:** Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

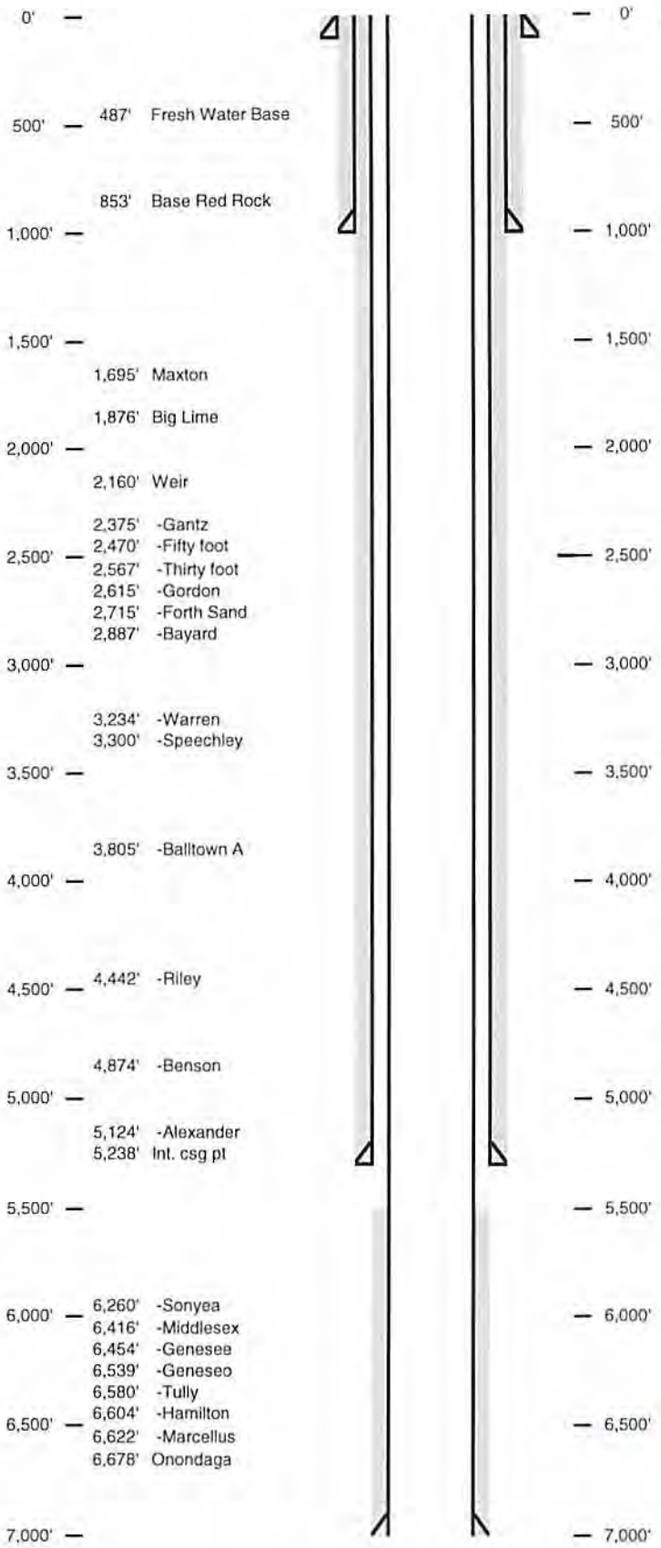
*Note: Attach additional sheets as needed.

017 06445

Well Schematic
EQT Production

Well Name	514392 (WEU49H3)
County	Doddridge
State	West Virgina

Elevation KB:	1143
Target	Marcellus
Prospect	
Azimuth	155
Vertical Section	4180



Hole Size 24" - 20" Conductor at 40'
Bit Size 17.5"

TOC @ Surface
13 3/8", MC-50, 54.5# @ 903' ft MD
Bit Size 12.375"

TOC @ Surface
9 5/8", MC-50, 40# @ 5,238' ft MD
Bit Size 8.5"

KOP = 5,631' ft MD
10 Deg DLS

Land @ 8,055' ft MD
6,648' ft TVD

5 1/2", P-110, 20# 11,415' ft MD
6,648' ft TVD

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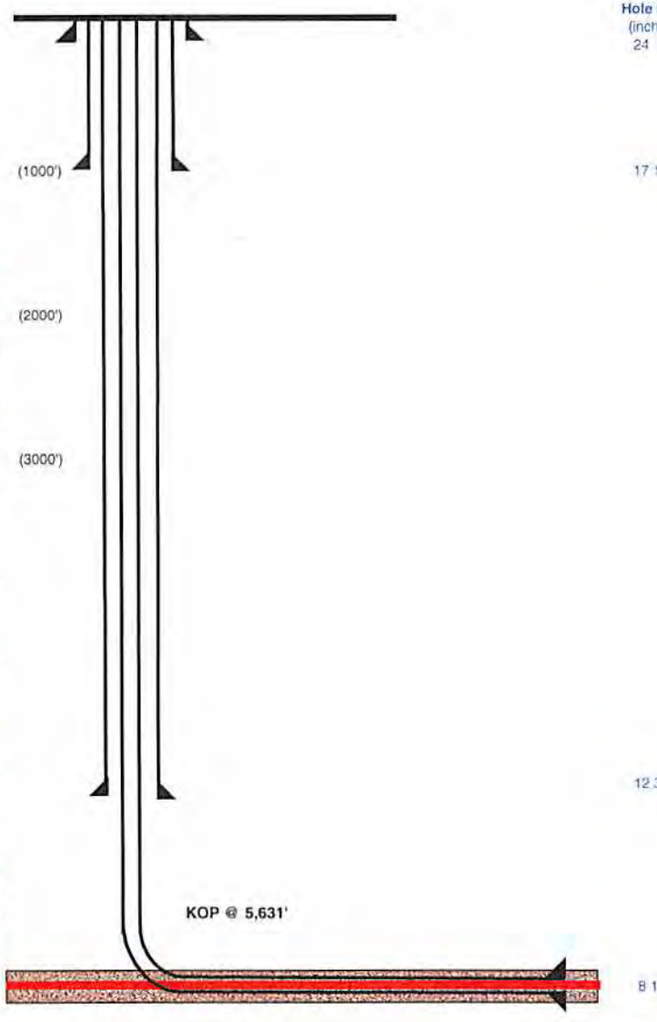
Office of Oil and Gas
Environmental Protection

Well 514392 (WEU49H3)
EQT Production
West Union
Doddridge West Virginia

Azimuth 155
Vertical Section 4180

TVD Depth (feet)	Formation Tops (TVD)	
0'		
250'		
500'	Base Fresh Water	487
750'		
1,000'	Base Red Rock	833
1,250'		
1,500'		
1,750'	Maxton	1695 - 1764
2,000'	Big Lime	1876 - 1926
2,250'	Weir	2160 - 2276
2,500'	-Gantz	2375 - 2435
2,750'	-Fifty foot	2470 - 2519
3,000'	-Thirty foot	2557 - 2615
3,250'	-Gordon	2615 - 2715
3,500'	-Forth Sand	2715 - 2806
3,750'	Bayard	2887 - 2951
4,000'	-Warren	3234 - 3264
4,250'	-Speechley	3300 - 3569
4,500'	-Balltown A	3805 - 4144
4,750'	-Riley	4442 - 4470
5,000'	-Benson	4674 - 4692
5,250'	-Alexander	5124 - 5188
5,500'	Int. csg pt	5238
5,750'	-Sonyea	6260 - 6416
6,000'	-Middlesex	6416 - 6454
6,250'	-Genesee	6454 - 6539
6,500'	-Geneseo	6539 - 6580
6,750'	-Tully	6580 - 6604
	-Hamilton	6604 - 6622
	Marcellus top	6622
	Target Inside Marcellus	**6648**
	Marcellus Bottom	6678



Hole Size (inches)	Casing Type	Casing Size (inches)	Wt (ppf)/Grade
24	Conductor	20	
17 1/2	Surface	13 3/8	54#/MC-50
12 3/8	Intermediate	9 5/8	40#/MC-50
8 1/2	Production Casing	5 1/2	20#/P-110

Land curve @ 6,648' ft TVD
8,055' ft MD

Est. TD @ 6,648' ft TVD
11,415' ft MD

3,360 ft Lateral

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
The vertical drill to go down to an approximate depth of 5631'.
Then kick of the horizontal leg into the Marcellus using a slick water frac.

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Well Number: 514392 (WEU49H3)

Casing and Cementing					Deepest Fresh Water: 487'
Type	**Conductor**	**Mine Protection**	**Surface**	**Intermediate**	**Production**
Hole Size, In.	24		17 1/2	12 3/8	8 1/2
Casing Size, OD In.	20	-	13 3/8	9 5/8	5 1/2
Casing Wall Thickness, In.	0.375	-	0.380	0.395	0.361
Depth, MD	**40'**	-	**903'**	**5,238'**	**11,915'**
Depth, TVD	**40'**	-	**903'**	**5,238'**	**6,648'**
Centralizers Used	Yes	-	Yes	Yes	Yes
Weight/Grade	81#/MC-50	-	54#/MC-50	40#/MC-50	20#/P-110
New or Used	New	-	New	New	New
Pressure Testing	-	-	20% Greater than exp. Pressure	20% Greater than exp. Pressure	20% greater than exp. fracture pressure
After Fracture Pressure Testing	-	-	-	-	20% greater than exp. shut pressure
ID, in	19.25	-	12.615	8.835	4.778
Burst (psi)	-	-	2,480	3,590	12,640
Collapse (psi)	-	-	1,110	2,470	11,100
Tension (mlbs)	-	-	455	456	587
Cement Class	-	-	-	-	H
Cement Type	Construction	-	1	1	-
Cement Yield	1.18	-	1.21	1.21	1.27/1.86
Meets API Standards	-	-	Yes	Yes	Yes
WOC Time	-	-	Min. 8 hrs	Min. 8 hrs	Min. 8 hrs
Top of Cement (Planned)	Surface	-	Surface	Surface	5,438'
Fill (ft.)	40'	-	903'	5,238'	5,977'
Percent Excess	-	-	20	20	10
Est. Volume (cu ft)	38	-	787	2,061	1,511
Est. Volume (BBLS)	7	-	140	367	269

WEST VIRGINIA GEOLOGICAL PROGNOSIS

Horizontal Well

514392 (WEU49H3)

017 06445

Drilling Objectives:	Marcellus					
County:	Doddridge					
Quad:	West Union					
Elevation:	1143 KB			1130 GL		
Surface location	**Northing:**	277524.9	**Easting:**	1635667.1		
Landing Point	**Northing:**	277814.6	**Easting:**	1637390.4	**TVD:**	6648
Toe location	**Northing:**	274769.5	**Easting:**	1638810.4	**TVD:**	6648
Recommended Azimuth	155 Degrees			**Recommended LP to TD:**		3360

Proposed Logging Suite:

@Intermediate Casing Point: The open hole logs need to consist of Gamma Ray, Neutron, Density, Induction and Dipole Sonic. **CONTACT LUKE SCHANKEN PRIOR TO LOGGING (412.580.8016)**
@ Pilothole TD - Run OH logs for evaluation of uphole zones.
An elog should be run for the first well on every horizontal well pad.
GR/LDT/DIL/CNL/Temp/Audio (Allegheny's Air Suite) - pull GR to surface.
Mudloggers to be on location at kickoff point to run samples and measure gas thru both the curve and lateral sections.

Recommended Gas Tests:

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

Possible red rock at: 115,188,277,408,588,683,753,835,853, ...

ESTIMATED FORMATION TOPS

Formation	Top (TVD)	Base (TVD)	Lithology	Comments
Fresh Water Zone	1	487		FW @ 243,292,352,487,. . . . .
Coal	340	343	Coal	Base RR
Pittsburgh Coal	483	485	Coal	Red Rock Possible @ 115,188,277,408,588,683,753,835,853, ... 653
Maxton	1695	1764	Sandstone	SW @ 1542. ,
Big Lime	1876	1926	Limestone	
Weir	2160	2276	Sandstone	
Top Devonian	2375			
-Gantz	2375	2435	Silty Sand	
-Fifty foot	2470	2519	Silty Sand	
-Thirty foot	2567	2615	Silty Sand	
-Gordon	2615	2715	Silty Sand	
-Forth Sand	2715	2806	Silty Sand	
-Bayard	2887	2951	Silty Sand	
-Warren	3234	3264	Silty Sand	
-Speechley	3300	3589	Silty Sand	
-Balltown A	3805	4144	Silty Sand	
-Riley	4442	4470	Silty Sand	
-Benson	4874	4892	Silty Sand	
-Alexander	5124	5188	Silty Sand	
Int. csg pt	5238			Have offsets within 2500ft radius producing from Alexander
-Sonyea	6260	6416	Gray shale	
-Middlesex	6416	6454	Shale	
-Genesee	6454	6539	with black shale	
-Geneseo	6539	6580	Black Shale	
-Tully	6580	6604	Limestone	
-Hamilton	6604	6622	calcareous shales	
-Marcellus	6622	6678	Black Shale	
-Purcell	6631	6642	Limestone	
-Lateral Zone	**6648**	**6648**		**Start Lateral at 6648 ft. drill to 6648 ft**
-Cherry Valley	6658	6668	Limestone	
Onondaga	6678		Limestone	
Pilot Hole TD	**6778**			

Target Thickness	57 feet
Anticipated Target Pressure	4474 PSI

Comments: Note that this is a TVD prog for a horizontal well. **All measurements taken from estimated KB elevation.** Water and coal information estimated from surrounding well data. Intermediate casing point is recommended 50' beneath the Alexander to shut off any production from offset wells. Intermediate casing should be cemented into the surface string, per WV regulations. The estimated TD is the TVD landing point for the horizontal section of well, with the plan to then drill to a final TVD of 6648' at the toe of the lateral. The geologic structure is unknown at this time.

Will cross a fault in the curve/early portion of the lateral

LATERAL DRILLING TOLERANCES

Mapview - Left of borehole:	Deviate as little as possible left to avoid lease line
Mapview - Right of borehole:	Deviate as little as possible right to avoid planned lateral 514391
Mapview - TD:	DO NOT EXTEND beyond recommended wellbore to avoid leaseline.

RECOMMENDED CASING POINTS

Fresh Water/Coal	CSG OD	13 3/8	CSG DEPTH:	903	50' below red rock
Intermediate 1:	CSG OD	9 5/8	CSG DEPTH:	5238	
Production:	CSG OD	5 1/2	CSG DEPTH:	@ TD	

T. Vactor/J. Dereume	Author	Date Created	Plat Date
Prog created:	SLH	12/10/2013	12/3/2013
surface casing deepend	JMD	1/16/2014	

03/14/2014

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WV Dept. of Environmental Protection

4701706445

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API No. 47 - 017 - 0
Operator's Well No. 514392

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

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name WEU49 OP Code ____

Watershed (HUC10) Left Fork Arnold Creek Quadrangle West Union 7.5'

Elevation 1130.0 County Doddridge District West Union

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

Will a pit be used ? Yes: ____ No: X

If so please describe anticipated pit waste: ____

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

Proposed Disposal Method For Treated Pit Wastes:

DLW
UID-201
AAG

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

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

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

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

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

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

- If left in pit and plan to solidify what medium will be used? (Cement, Lime, sawdust) n/a
- Landfill or offsite name/permit number? See Attached List

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

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

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

Subscribed and sworn before me this 30th day of December 2013

Jamie I. Cassell Notary Public

My commission expires 2/24/2016

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
JAMIE I. CASSELL
229 PARK BLVD.
CLARKSBURG, WV 26301
My commission expires February 24, 2016

RECEIVED
Office of Oil and Gas
JAN 14 2014
WV Department of
Environmental Protection

03/14/2014

WW-9

4701706445

Operator's Well No. 514392

Proposed Revegetation Treatment: Acres Disturbed 37.4 Prevegetation pH 6.1

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type

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

Mulch 2 Tons/acre

Seed Mixtures

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

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newlon Michael Doff

Comments: Preseed + Mulch install E+S to WV Dep regulations

Title: Oil & Gas inspector Date: 1-10-2014

Field Reviewed? (✓) Yes ( ) No

03/14/2014

EQT Production Water plan
Offsite disposals for Marcellus wells

017 06445

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

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

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

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

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

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

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

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

03/14/2014

4701706445

Where energy meets innovation.™

Site Specific Safety and Environmental Plan For

EQT WEU 49 Pad

West Union

Doddridge County, WV

For Wells:

514390	514391	514392	514393	514394	514395	515273

Date Prepared: December 10, 2013

EQT Production

Permitting Supervisor
Title

12-30-13
Date

Douglas Newton
WV Oil and Gas Inspector

Title

1-10-2014
Date

RECEIVED
Office of Oil and Gas
JAN 14 2014
WV Department of
Environmental Protection

03/14/2014

BOP Equipment

Size (in)	Operation	Hole Section	Type	Pressure Class	Test Pressure (psi)	Testing Frequency
13-5/8"	Drilling	Intermediate	Annular	3M	2100	Initial
13-5/8"	Drilling	Pilot	Annular	3M	2100	Initial, Weekly, Trip
13-5/8"	Drilling	Pilot	Annular	5M	4000	Initial, Weekly, Trip
13-5/8"	Drilling	Production	Annular	5M	3500	Initial,Weekly, Trip
13-5/8"	Drilling	Production	Blind	5M	4000	Initial,Weekly, Trip
13-5/8"	Drilling	Production	Pipe	5M	4000	Initial,Weekly, Trip

Wellhead Detail

Size (in)	Type	M.A.W.P. (psi)
13-3/8" SOW x 13-5/8" 5M	Multi-ball Well Head	5,000
13-5/8" 5M x 7-1/16 10M	Tubing Head	10,000
2-1/16" 5M	Christmas Tree	5,000

Well Control Trained Personnel

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

- Completions & Production
  - EQT On-Site Specialist

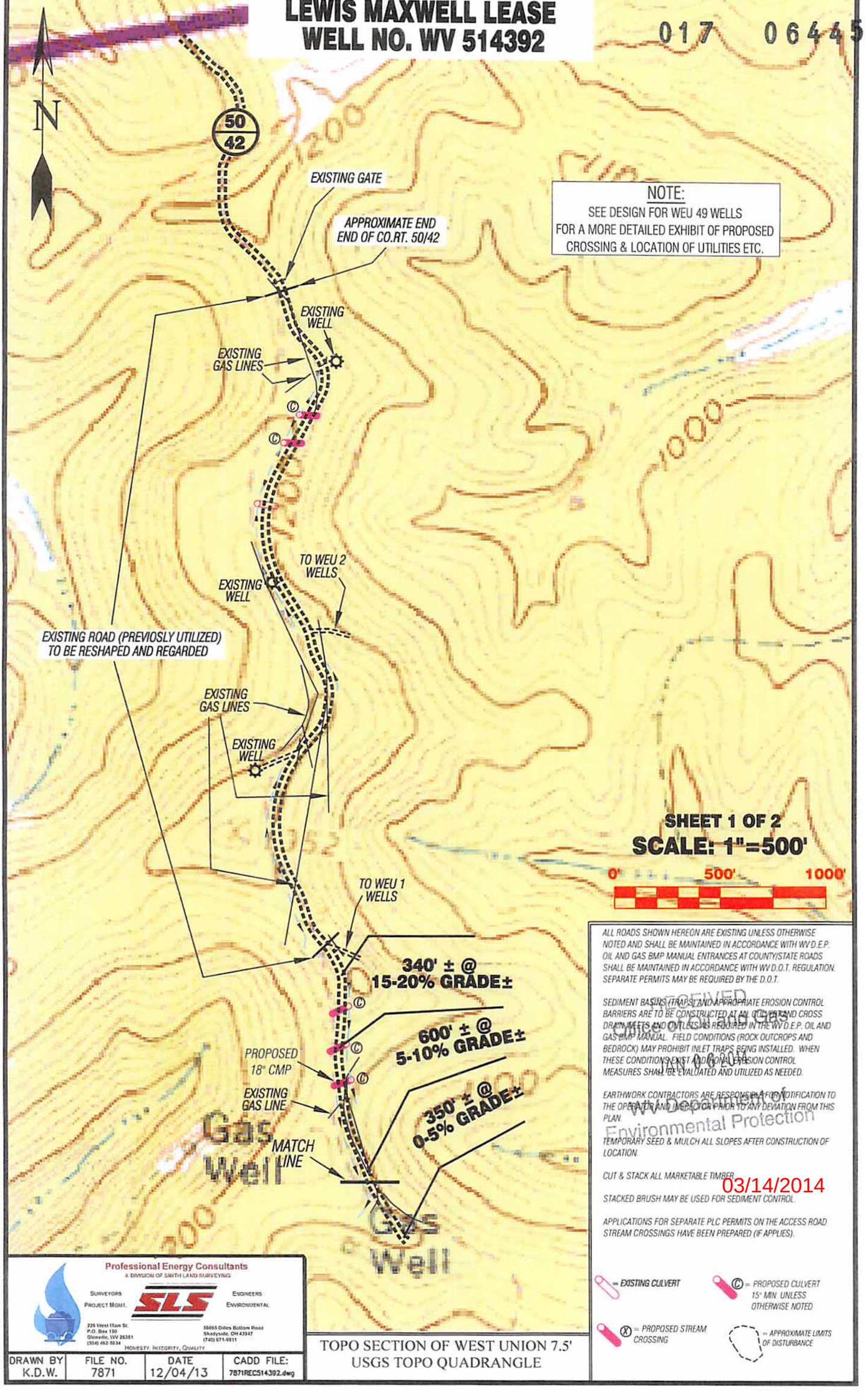
DCN
1-10-2014
MDG

Form WW-9

page of

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
WELL NO. WV 514392

017 06445



NOTE:
SEE DESIGN FOR WEU 49 WELLS
FOR A MORE DETAILED EXHIBIT OF PROPOSED
CROSSING & LOCATION OF UTILITIES ETC.

SHEET 1 OF 2

SCALE: 1"=500'

0' 500' 1000'

ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

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

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

TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER.

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

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

= EXISTING CULVERT

© = PROPOSED CULVERT 15" MIN. UNLESS OTHERWISE NOTED

(X) = PROPOSED STREAM CROSSING

= APPROXIMATE LIMITS OF DISTURBANCE

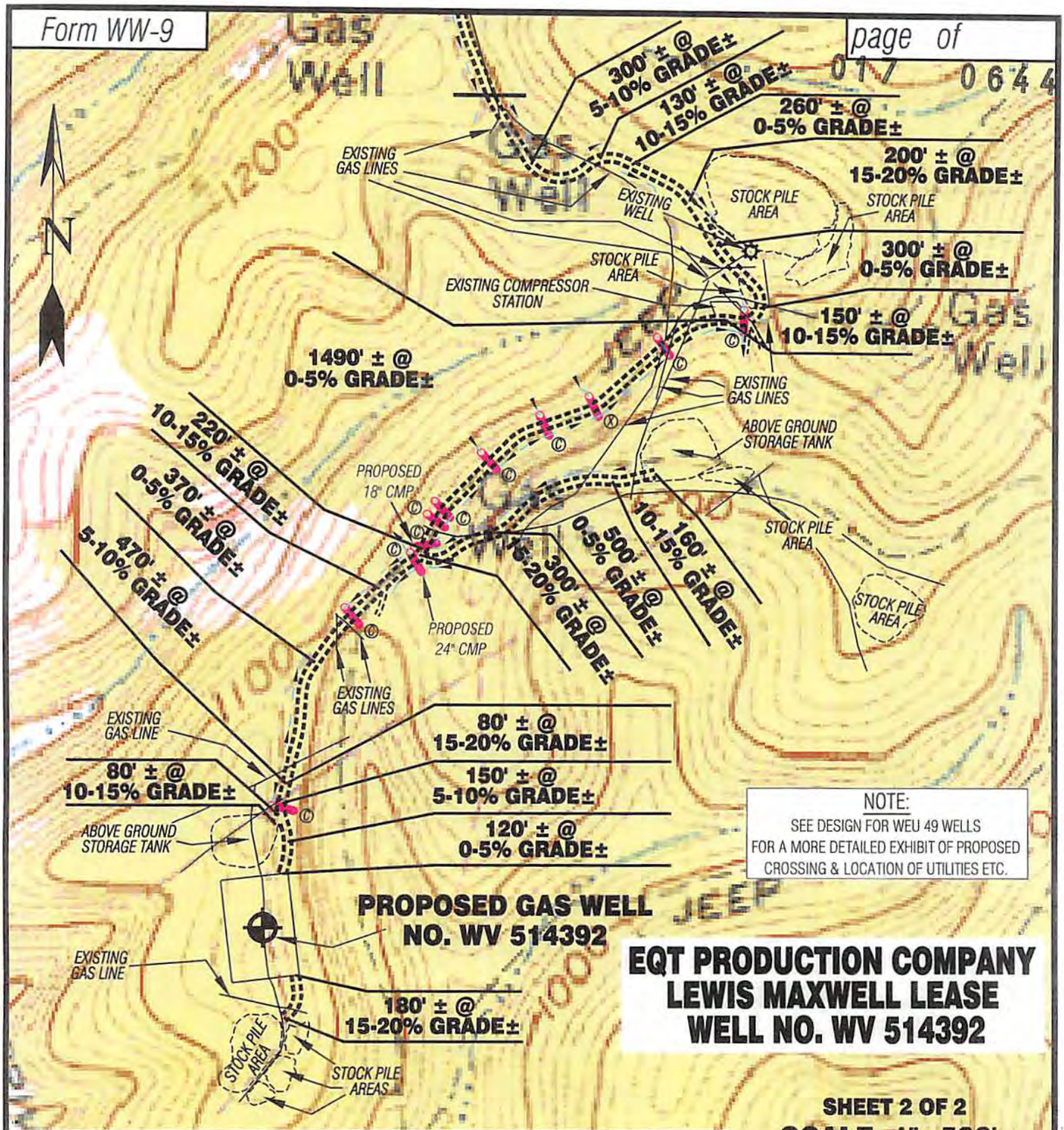
Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING
SURVEYORS PROJECT MGMT. SLS ENGINEERS ENVIRONMENTAL
225 West 13th St. P.O. Box 150 Glenville, WV 26351 (304) 462-5634
56065 Dilles Bottom Road Shadyside, OH 43947 (740) 671-9511
HONESTY. INTEGRITY. QUALITY

DRAWN BY	FILE NO.	DATE	CADD FILE:
K.D.W.	7871	12/04/13	7871REC514392.dwg

TOPO SECTION OF WEST UNION 7.5'
USGS TOPO QUADRANGLE

Form WW-9

page of 017 0644



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SEE DESIGN FOR WEU 49 WELLS
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CROSSING & LOCATION OF UTILITIES ETC.

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
WELL NO. WV 514392

SHEET 2 OF 2

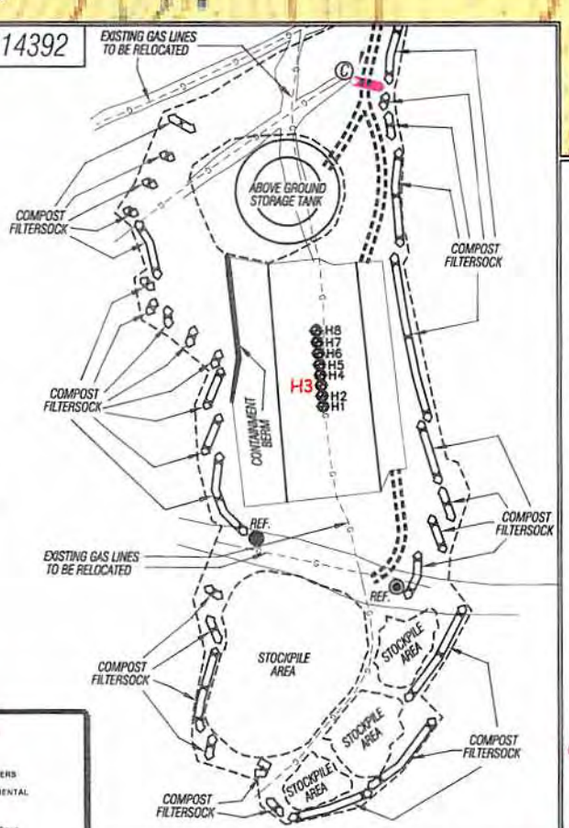
SCALE: 1"=500'

0' 500' 1000'

Detail Sketch for Proposed Well WV 514392

N

WEU49 WELLS
H1-WV 514390
H2-WV 514391
H3-WV 514392
H4-WV 514393
H5-WV 514394
H6-WV 515273
H7-WV 515273
H8- NOT YET DETERMINED



NOTE:
SEE DESIGN FOR WEU 49 WELLS
FOR A MORE DETAILED EXHIBIT OF PROPOSED
CROSSING & LOCATION OF UTILITIES ETC.

Not To Scale

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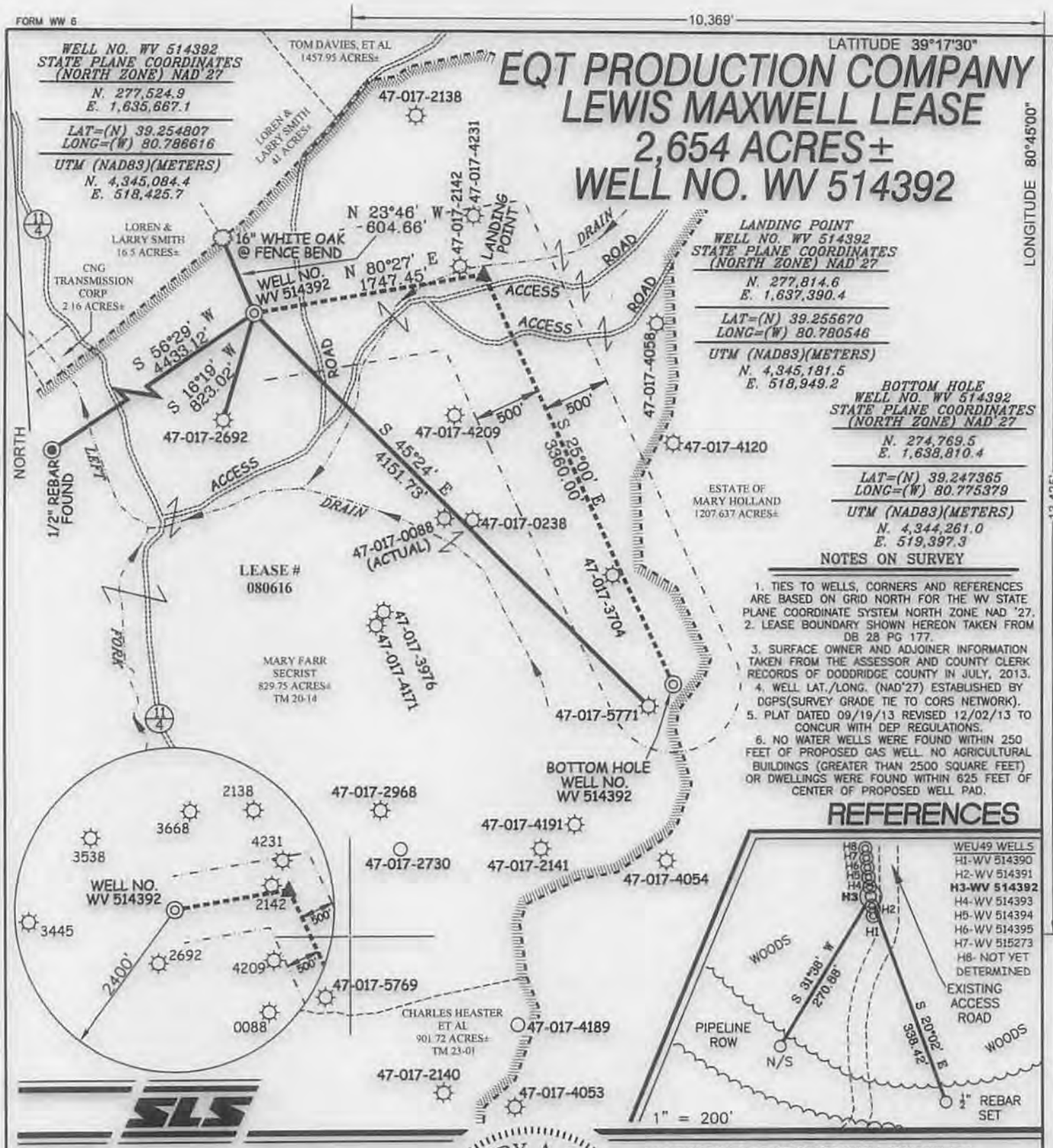
239 West Main St. P.O. Box 150 Glenville, WV 26351 (304) 462-5634
55065 Dilles Bottom Road Shadyside, OH 43947 (740) 671-8511
HONESTY, INTEGRITY, QUALITY

DRAWN BY	FILE NO.	DATE	CADD FILE:
K.D.W.	7871	12/04/13	7871REC514392.dwg

TOPO SECTION OF WEST UNION 7.5' USGS TOPO QUADRANGLE

FORM WW 6

EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
2,654 ACRES±
WELL NO. WV 514392



NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 09/19/13 REVISED 12/02/13 TO CONCUR WITH DEP REGULATIONS.
6. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.

REFERENCES

SLS

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

P.S. 677 Gregory A. Smith

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

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

DATE DECEMBER 03 , 20 13

OPERATORS WELL NO. WV 514392

API WELL NO. 47 - 17 - 06445 H6A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7871P514392R

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

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

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

LOCATION:
ELEVATION 1,164'(GROUND) 1,130'(PROPOSED) WATERSHED LEFT FORK OF ARNOLD CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE WEST UNION 7.5'
SURFACE OWNER MARY FARR SECRIST ACREAGE 829.75±
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654± 03/14/2014
PROPOSED WORK: LEASE NO 080616
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD 6648 THD 11,915

COUNTY NAME / PERMIT

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