west virginia department of environmental protection

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

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

September 16, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-10303016, 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: 515644
Farm Name: HENTHORN, DENCIL ET AL
API Well Number: 47-10303016
Permit Type: Horizontal 6A Well
Date Issued: 09/16/2014

Promoting a healthy environment.

API Number: 4710303016

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 (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 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.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

WW - 6B
(9/13)

4710303016

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

1) Well Operator: EQT Production Company

	Operator ID	County	District	Quadrangle
		103	4	254

2) Operator's Well Number: 515644 Well Pad Name: BIG367

3) Farm Name/Surface Owner : Dencil Henthorn et al Public Road Access: Rt. 74

4) Elevation, current ground: 1,475.5 Elevation, proposed post-construction: 1,442.9

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

Other ____

(b) If Gas: Shallow • Deep ____

Horizontal •

6) Existing Pad? Yes or No: Yes

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

Target formation is Marcellus at a depth of 7574 with the anticipated thickness to be 56 feet and anticipated target pressure of 4801 PSI

8) Proposed Total Vertical Depth: 7,574
9) Formation at Total Vertical Depth: Marcellus
10) Proposed Total Measured Depth 14,098
11) Proposed Horizontal Leg Length 5,042
12) Approximate Fresh Water Strata Depths: 433, 478, & 705
13) Method to Determine Fresh Water Depth: By offset wells
14) Approximate Saltwater Depths: 1965, 2130, & 2168
15) Approximate Coal Seam Depths: 513, 727, 831, 882, 1019, 1190, & 1680
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: ____

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WW - 6B
(3/13)

4710303016

CASING AND TUBING PROGRAM

18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill- up (Cu.Ft.)
Conductor	26	New	MC-50	81	80	80	98 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	956	956	832 C.T.S.
Coal							
Intermediate	9 5/8	New	MC-50	40	2,900	2,900	1,134 C.T.S.
Production	5 1/2	New	P-110	20	14,098	14,098	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	26	30	0.312	-	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.

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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 of5,211'.

Then kick off the horizontal leg into the Marcellus 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): no additional disturbance

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

23) Describe centralizer placement for each casing string.

- Surface: Bow spring centralizers – One 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 % Calcium 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.

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EQT

4710303016

August 14, 2014

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

Re: Casing Plan on Wells (BIG367) 47-103-03014, 03015, 03016, 03017

Dear Mr. Smith,

EQT is requesting the 13-3/8" surface casing be set at 956' KB, 50' below the red rock formation at 906' without setting below elevation. The previous wells drilled on this pad set 13-3/8" casing at approximately 956' KB. This will cover up red rock formations that have given EQT drilling issues in the past. We will set the 9-5/8" intermediate string at 2900' KB, into the Weir formation. The previous wells drilled on this pad set 9-5/8" casing at approximately 2900' KB.

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

Sincerely,

Vicki Roark
Permitting Supervisor

Enc.

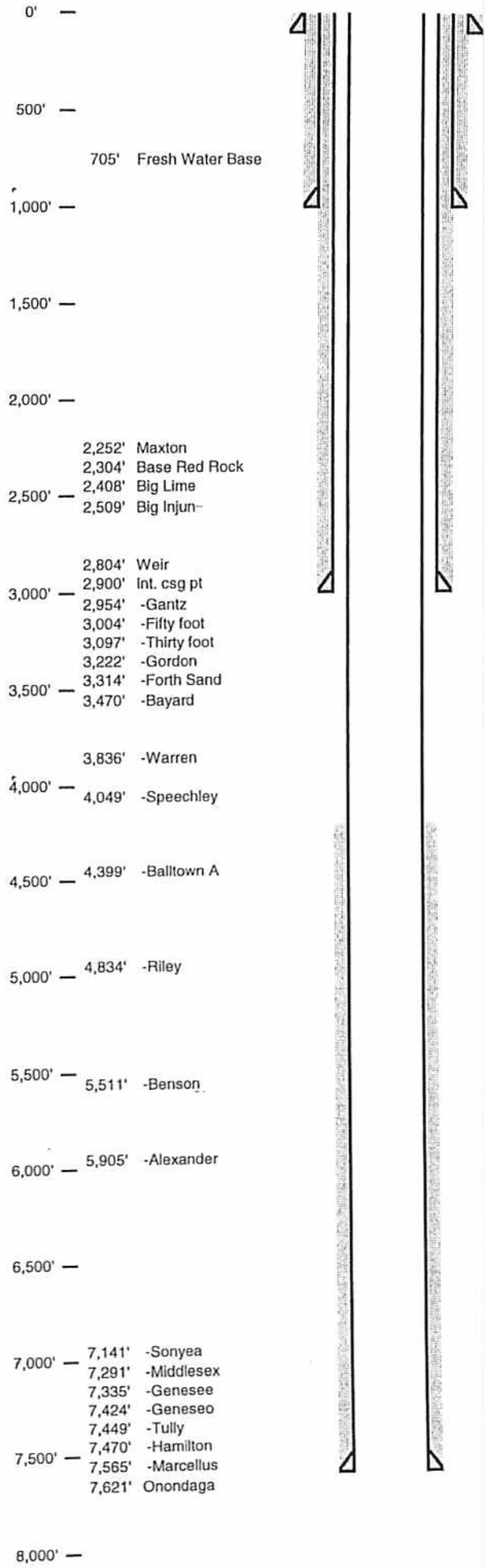
EQT Production 115 Professional Place I P.O. Box 280 I Bridgeport, WV 26330
T 304.848.0000 I F 304.848.0040 I www.eqt.com

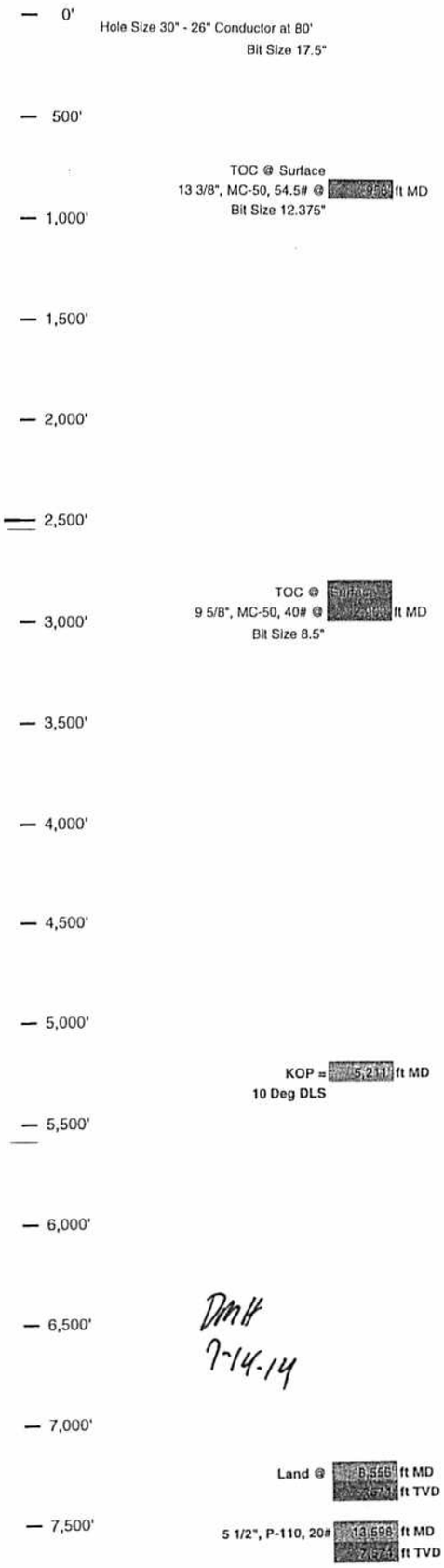
4710303016

Well Schematic
EQT Production

Well Name [redacted]
County
State West Virgina

Elevation KB: [redacted]
Target
Prospect
Azimuth [redacted]
Vertical Section





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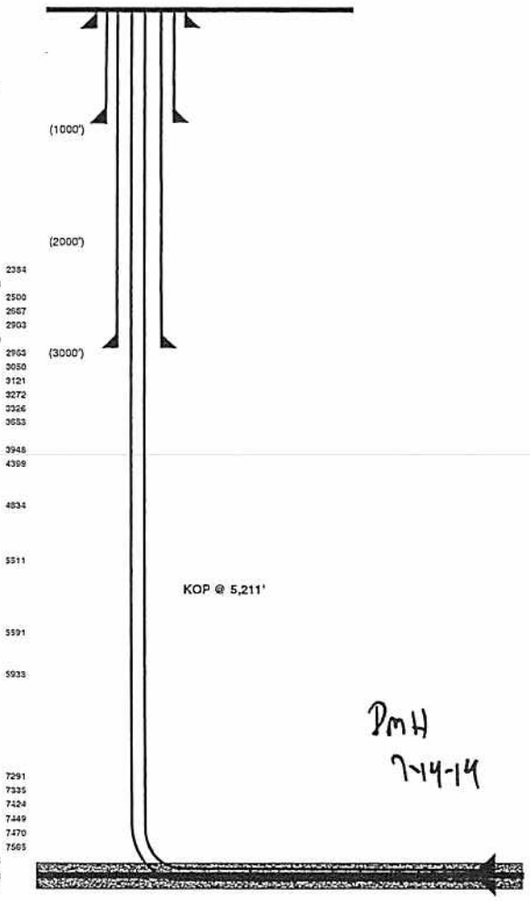
Well [redacted] (BIG367H12)
EQT Production
Big Run [redacted]
Wetzel [redacted] West Virgina

Azimuth [redacted]
Vertical Section [redacted]

TVD Depth (feet)	Formation Tops (TVD)		
0'			
250'			
500'			
750'	Base Fresh Water	705	
1,000'			
1,250'			
1,500'			
1,750'			
2,000'			
2,250'	Maxton	2252	- 2384
	Base Red Rock	2384	
2,500'	Big Lime	2408	- 2500
	Big Injun	2509	- 2667
2,750'	Weir	2804	- 2903
	Int. csg pt	2900	
3,000'	-Gantz	2954	- 2993
	-Fifty foot	3004	- 3050
3,250'	-Thirty foot	3097	- 3121
	-Gordon	3222	- 3272
3,500'	-Forth Sand	3314	- 3326
	-Bayard	3470	- 3653
3,750'			
	-Warren	3836	- 3948
4,000'	-Speechley	4049	- 4399
4,250'			
	-Balltown A	4399	- 4834
4,500'			
4,750'			
	-Riley	4834	- 5511
5,000'			
5,250'			
5,500'	-Benson	5511	- 5591
5,750'			
	-Alexander	5905	- 5933
6,000'			
6,250'			
6,500'			
6,750'	-Sonyea	7141	- 7291
	-Middlesex	7291	- 7335
7,000'	-Genesee	7335	- 7424
	-Geneseo	7424	- 7449
7,250'	-Tully	7449	- 7470
	-Hamilton	7470	- 7565
7,500'	Marcellus top	7565	
	Target Inside Marcellus	**7574**	
7,750'	Marcellus Bottom	7621	



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Hole Size (inches)	Casing Type	Casing Size (inches)	Casing Wt (ppf)/Grade
30	Conductor	26	
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 @ [redacted] ft TVD
[redacted] ft MD

Est. TD @ [redacted] ft TVD
[redacted] ft MD

[redacted] 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 5211'.
Then kick of the horizontal leg into the Marcellus using a slick water frac.

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WW-9
(5/13)

Page ____ of ____
API No. 47 - 103 - 0
Operator's Well No. 515644

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

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name BIG367 OP Code ____

Watershed (HUC10) North Fork of Fishing Creek Quadrangle Big Run 7.5'

Elevation 1442.9 County Wetzel District Grant

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:

- ____ 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

DmH 7-14-14

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 23 day of JUNE, 20 14

Notary Public

My commission expires 7/27/2018

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JUN 27 2014
WV Department of Environmental Protection

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Nicholas L. Bumgardner
Rt. 4, Box 4
Liberty, WV 25124
My Commission Expires July 27, 2018

WW-9

4710303016

Operator's Well No. 515644

Proposed Revegetation Treatment: Acres Disturbed no additional Prevegetation pH 6

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: [signature]

Comments:

Title: Oil & Gas Inspector Date: 7-14-14

Field Reviewed? (✓) Yes ( ) No

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EQT Production Water plan
Offsite disposals for Marcellus wells

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

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

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

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

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

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

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

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

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EQT

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Site Specific Safety Plan

EQT BIG 367 Pad

Jacksonburg

Wetzel County, WV

For Wells:

515288	515643	515644	515645			

Date Prepared: June 18, 2014

EQT Production

Title: Permitting Supervisor

Date: 6-2014

WV Oil and Gas Inspector

Title: Oil + Gas Inspector

Date: 7-14-14

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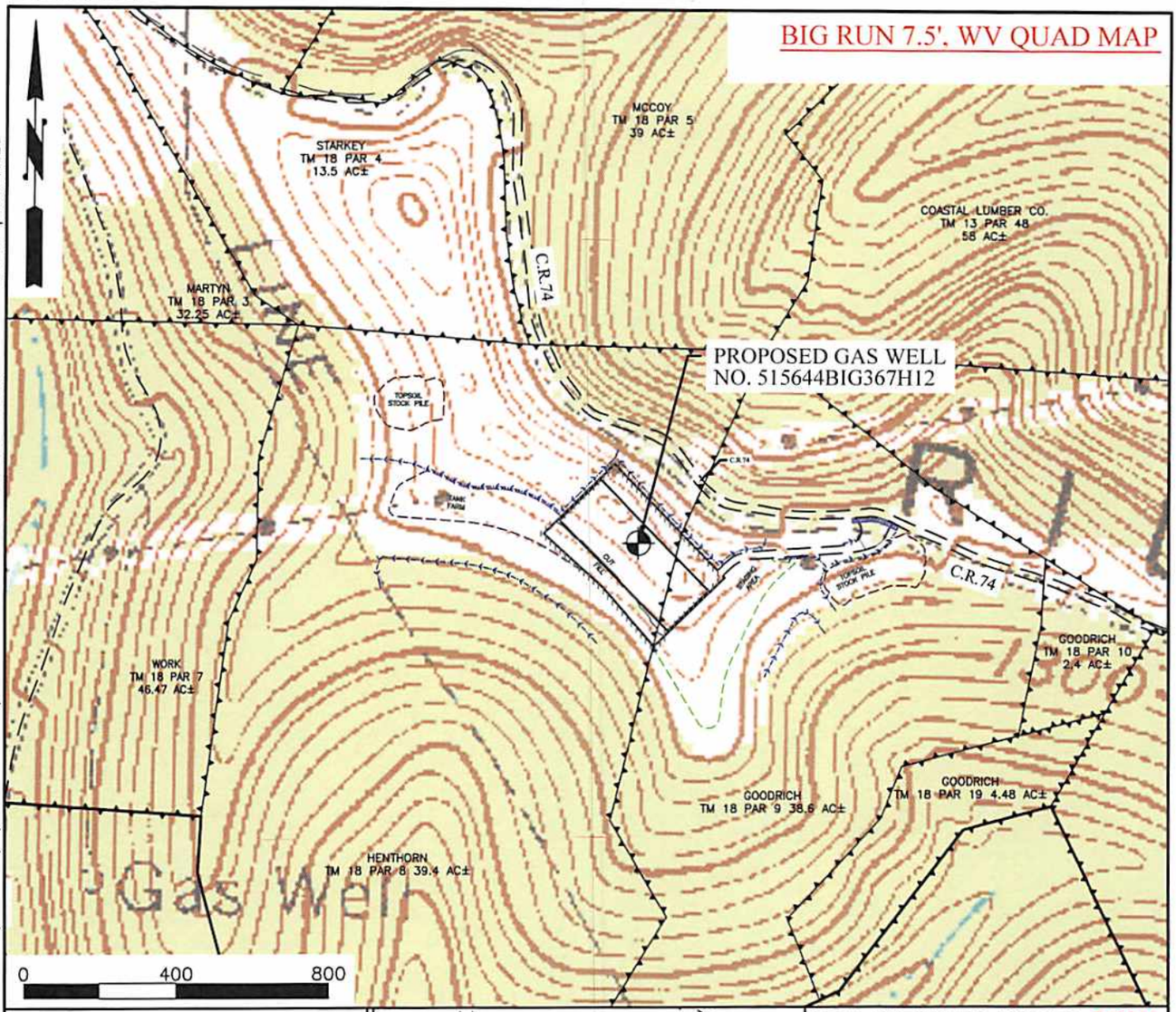
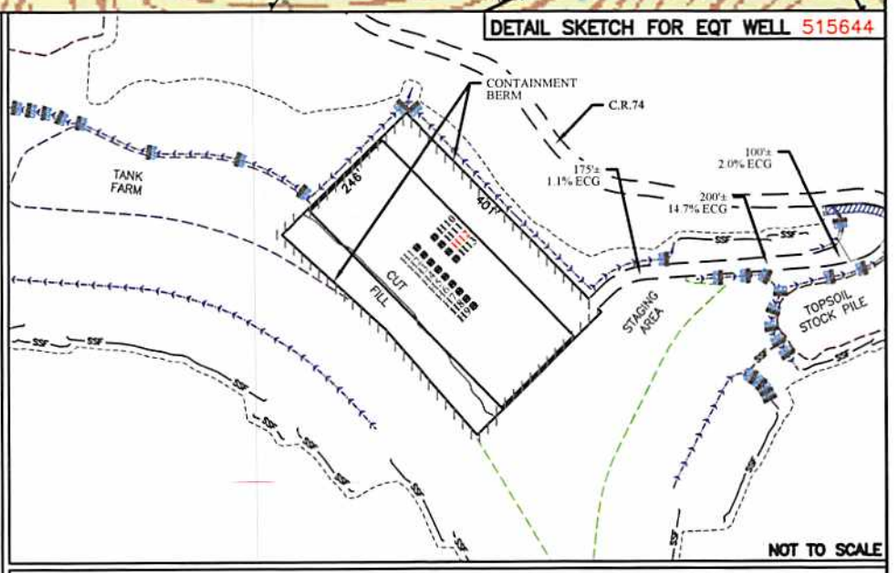
FORM WW-9





GENERAL NOTE

1. This drawing is a schematic representation of the proposed well site and access road. Proposed structures such as well site pad, drilling pit, roadway, culverts, erosion and sediment control barriers, etc., are shown in approximate pre-planning configurations.
2. Trees and slash will be cleared as necessary before any proposed road, drill pad or pipeline construction begins. Any residue materials available from clearing will be windrowed below the anticipated fill outslope(s) to intercept and retain sediment from the disturbed areas. Silt fence will be additionally installed as shown on the Reclamation Plan. All marketable timber above 6" will be cut and stacked in areas adjacent to operations for eventual removal.
3. All roads shown on reclamation plan are identified as either existing or new construction. Unless otherwise noted all access roads whether existing or new shall be maintained in accordance with WV D.E.P. Office of Oil and Gas Erosion and Sediment Control BMP Field Manual as revised 2/98. Entrances upon county/state roads shall be maintained in accordance with WV D.O.T. regulations, however, separate permits may be further required by the WV D.O.T. Existing roads will be upgraded with additional stone as necessary. Newly constructed access roads will be stabilized with stone as necessary for ingress and egress to the drill site.
4. All culvert pipes installed will be a minimum of 12" in diameter with length determined by field conditions. All installed and existing culvert pipes will be accompanied by an entrance sump, new culverts installed at an angle to ensure proper flow and protected from erosion and sedimentation using large rocks, rip-rap or other sediment control devices including the placement of hay bales at the sump inlet and outlet. All ditches will be maintained as required during the construction, drilling, completion and reclamation phases of this operation as required by the WV D.E.P. Office of Oil and Gas Erosion and Sediment Control BMP Field Manual. Stormwater from the ditches and culvert pipes will be directed to stable natural vegetative areas. During reclamation all water bars necessary for erosion and sedimentation control will be installed.
5. All cut and fill slopes will be immediately stabilized, seeded and mulched after construction.
6. All existing utilities within the construction area will be identified, marked and if necessary relocated by the contractor or company.
7. Earthwork contractors are responsible for notification to the operator and inspector prior to any deviation from this plan.

NOTE:
EG= EXISTING GRADE
ECG= ESTIMATED CONSTRUCTION GRADE

LEGEND

DRILL SITE=
ROCK CHECK DAM=
BUILDING=
COMPACTED FILL WALLS=
PIT CUT WALLS=
SUPER SILT FENCE= ——SSF——

PROPERTY LINE=
LIMIT OF DISTURBANCE=
PLANNED FENCE=
ROAD=
OPEN DITCH=
CULVERT=

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THRASHER
CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
30 COLUMBIA BOULEVARD – CLARKSBURG, WV 26301
PHONE (304) 624-4108
FAX (304) 624-7831

EQT Where energy meets innovation.

WELL RECLAMATION PLAN
FOR
EQT BIG367 H12

SCALE: AS SHOWN	
DRAWN: JCP	
CHECKED:	
APPROVED:	

SHEET No. 12

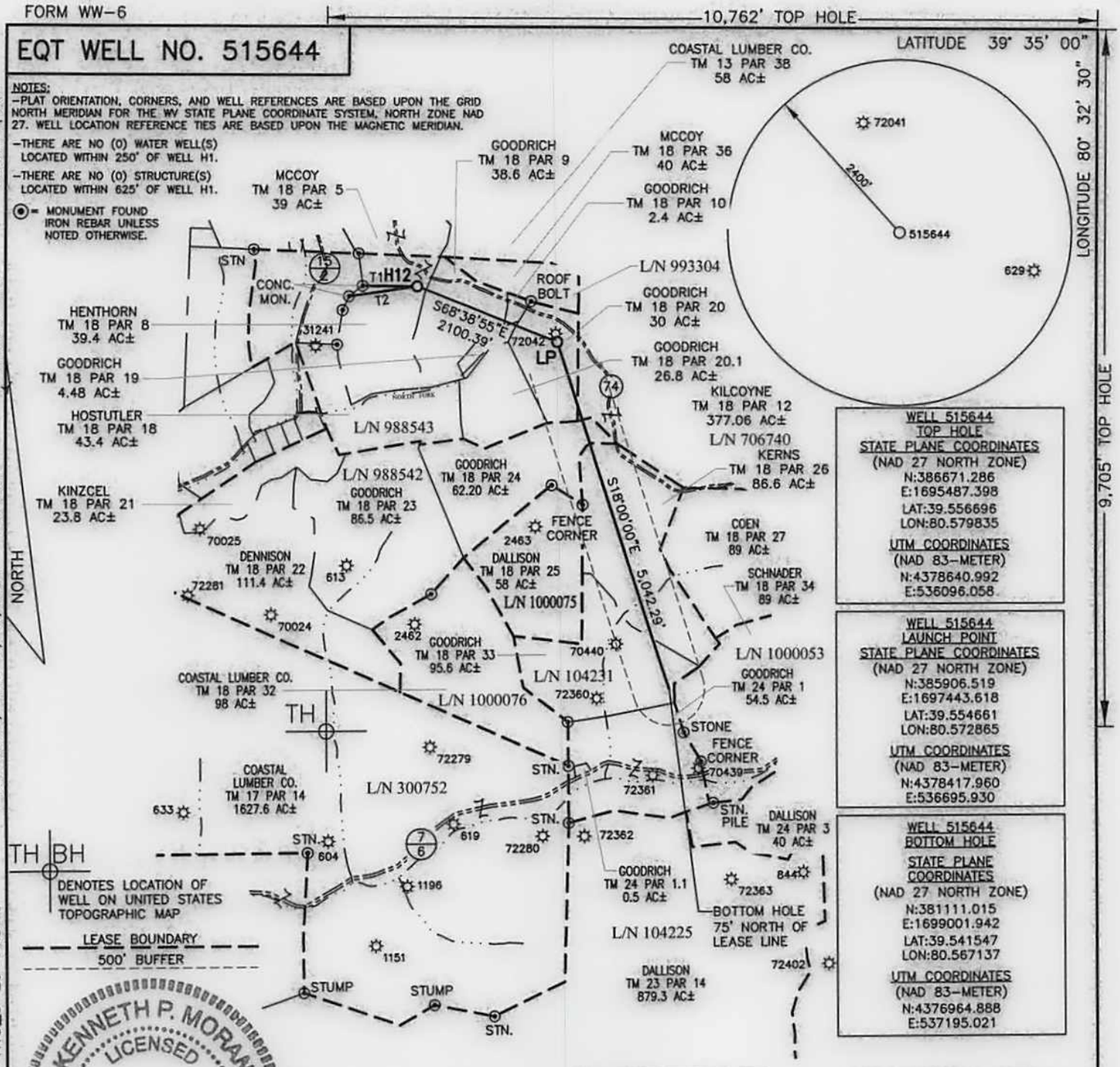
PROJECT# 030-2259

CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Drawing\s-well hole rec plan.dwg
PLOT DATE/TIME: 6/6/2014 – 2:39pm
LAYOUT: H12-REC PLAN
USER: pescoriaza

FORM WW-6

EQT WELL NO. 515644

NOTES:
-PLAT ORIENTATION, CORNERS, AND WELL REFERENCES ARE BASED UPON THE GRID NORTH MERIDIAN FOR THE WV STATE PLANE COORDINATE SYSTEM, NORTH ZONE NAD 27. WELL LOCATION REFERENCE TIES ARE BASED UPON THE MAGNETIC MERIDIAN.
-THERE ARE NO (0) WATER WELL(S) LOCATED WITHIN 250' OF WELL H1.
-THERE ARE NO (0) STRUCTURE(S) LOCATED WITHIN 625' OF WELL H1.
⊙= MONUMENT FOUND IRON REBAR UNLESS NOTED OTHERWISE.



WELL 515644
TOP HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:386671.286
E:1695487.398
LAT:39.556696
LON:80.579835
UTM COORDINATES
(NAD 83-METER)
N:4378640.992
E:536096.058

WELL 515644
LAUNCH POINT
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:385906.519
E:1697443.618
LAT:39.554661
LON:80.572865
UTM COORDINATES
(NAD 83-METER)
N:4378417.960
E:536695.930

WELL 515644
BOTTOM HOLE
STATE PLANE COORDINATES
(NAD 27 NORTH ZONE)
N:381111.015
E:1699001.942
LAT:39.541547
LON:80.567137
UTM COORDINATES
(NAD 83-METER)
N:4376964.888
E:537195.021

REFERENCES
1"=500'
12" HICKORY
S51°09'03"E 311.94'
515644
N46°52'41"W 182.20'
18" WHT. ASH

515644
BIG367-H12

LINE	BEARING	DIST.
T1	S89°23'36"E	764.81'
T2	N81°52'04"E	965.07'

LEASE NO.	ROYALTY OWNER	ACRES
988542	CNX GAS CO. LLC	280±
104231	JOYCE M. MARTIN et al	300±
706740	EQT PRODUCTION CO.	1003.75±

KENNETH P. MORAN LICENSED No. 1333 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

KENNETH P. MORAN P.S. 1333

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

FILE NO. 030-2259
SCALE: 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1 in 2500
PROVEN SOURCE OF ELEVATION: OPUS SURVEY GRADE GPS

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

DATE JUNE 23 ,2014
OPERATOR'S WELL NO. 515644
API WELL NO.
47 - 103 - 030/6 H6A
STATE COUNTY PERMIT

WELL TYPE: OIL ☐ GAS ☒ LIQUID INJECTION ☐ WASTE DISPOSAL ☐ (IF "GAS"), PRODUCTION ☒ STORAGE ☐ DEEP ☐ SHALLOW ☒
LOCATION: ELEVATION: EG: 1,475.5' PROP: 1,442.90' WATER SHED: NORTH FORK OF FISHING CREEK
DISTRICT: GRANT COUNTY: WETZEL
QUADRANGLE: BIG RUN ACREAGE: 39.4 AC±
SURFACE OWNER: DENCIL HENTHORN ET AL LEASE ACREAGE: 297.50 AC+
OIL & GAS ROYALTY OWNER: SHIBEN ESTATE, INC. LEASE NO. 988543
PROPOSED WORK: DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PERFORATE NEW FORMATION ☐ PLUG OFF OLD FORMATION ☐ OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
PLUG AND ABANDON CLEAN OUT AND REPLUG
TARGET FORMATION: MARCELLUS SHALE ESTIMATED DEPTH: TVD: 7,565

THRASHER
THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

RECEIVED
Office of Oil and Gas
JUL 08 2014
WV Department of Environmental Protection

WELL OPERATOR: EQT PRODUCTION
ADDRESS: 115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

DESIGNATED AGENT: REX C. RAY
ADDRESS: 115 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330