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**west virginia** department of environmental protection

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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

November 20, 2013

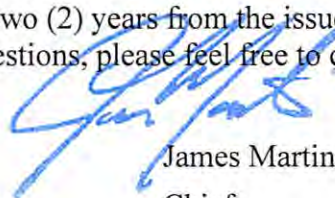
**WELL WORK PERMIT**  
**Horizontal 6A Well**

This permit, API Well Number: 47-1706330, 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 513141  
Farm Name: HEASTER, CHARLES P. , ET AL  
**API Well Number: 47-1706330**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 11/20/2013

## 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.

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### CONDITIONS

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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.

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

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

Operator's Well Number: 513141 Well Pad Name OXF156

Farm Name/Surface Owner: Left Fork Arnolds Creek Public Road Access: CR 10

Elevation, current ground: 1,244.0 Elevation, proposed post-construction: 1,202.0

Well Type: (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas: Shallow  Deep

Horizontal

Existing Pad? Yes or No: No

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

Target formation is Marcellus at a depth of 6596' with the anticipated thickness to be 54 feet and anticipated target pressure of 4447 PSI

Proposed Total Vertical Depth: 6,596

Formation at Total Vertical Depth: Marcellus

Proposed Total Measured Depth: 15,636

Proposed Horizontal Leg Length: 7,620

Approximate Fresh Water Strata Depths: 163, 210, 314, 380, 456, 594, 1078

Method to Determine Fresh Water Depth: By offset wells

Approximate Saltwater Depths: 1382, 1450

Approximate Coal Seam Depths: 1266, 1306

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

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: \_\_\_\_\_

*Douglas Newton*

*11-4-2013*

*Michael [Signature]*

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**CASING AND TUBING PROGRAM**

18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu.Ft.)
Conductor	20	New	Varies	Varies	40	40	38
Fresh Water	13 3/8	New	MC-50	54	1,178	1,178	1,017
Coal							
Intermediate	9 5/8	New	MC-50	40	2,960	2,960	1,150
Production	5 1/2	New	P-110	20	15,636	15,636	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							

*CTS RCN  
CTS 11-4-2013  
M.A.C.*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	0.635	-	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.380	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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Department of Energy  
Economic Development

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 4,500'.  
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): 37.43

22) Area to be disturbed for well pad only, less access road (acres): 26.22

- 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.

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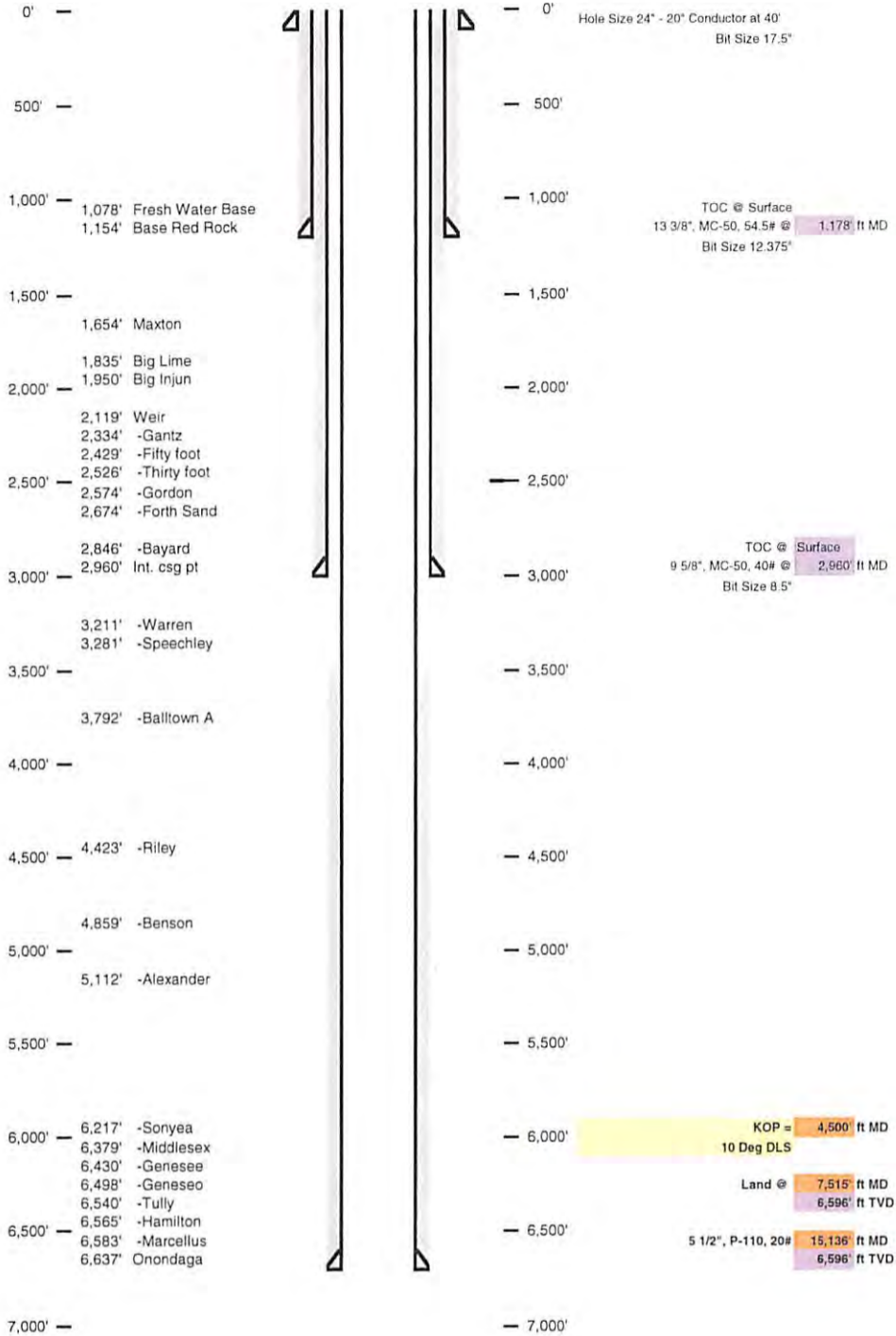
17-06330

Well Schematic  
EQT Production

Well Name: 513141 (OXF156H4)  
County: Doddridge  
State: West Virginia

Elevation KB:  
Target  
Prospect  
Azimuth  
Vertical Section

1212
Marcellus
335
8261



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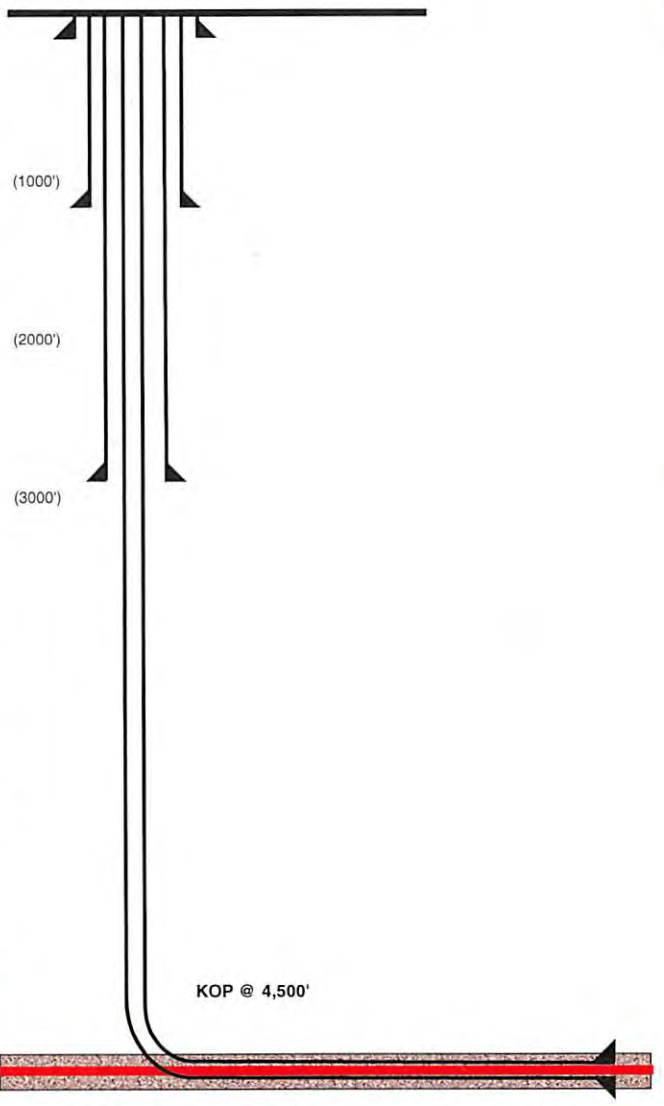
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17-06330

Well 513141 (OXF156H4)  
 EQT Production  
 Oxford  
 Doddridge West Virginia

Azimuth 335  
 Vertical Section 8261

TVD Depth (feet)	Formation Tops (TVD)
0'	
250'	
500'	
750'	
1,000'	Base Fresh Water 1078 Base Red Rock 1154
1,250'	
1,500'	
1,750'	Maxton 1654 - 1723 Big Lime 1835 - 1885 Big Injun 1950 - 1972
2,000'	Weir 2119 - 2235 Gantz 2304 - 2394 Fifty foot 2429 - 2478 Thirty foot 2526 - 2574 Gordon 2574 - 2674 Forth Sand 2674 - 2765 Bayard 2846 - 2910 Int. csg pt 2950
2,250'	
2,500'	
2,750'	
3,000'	
3,250'	Warren 3211 - 3281 Speechley 3281 - 3792
3,500'	
3,750'	
4,000'	Balltown A 3792 - 4423
4,250'	
4,500'	Riley 4423 - 4859
4,750'	
5,000'	Benson 4859 - 5112 Alexander 5112 - 5217
5,250'	
5,500'	
5,750'	Sonyea 6217 - 6379 Middlesex 6379 - 6430 Genesee 6430 - 6498 Genesee 6498 - 6510 Tully 6510 - 6585 Hamilton 6585 - 6683
6,000'	
6,250'	
6,500'	Marcellus top 6583 Target Inside Marcellus 6596 Marcellus Bottom 6637
6,750'	
7,000'	



Hole Size (inches)	Casing		Wt (ppf)/Grade
	Type	Size (inches)	
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 @ 6,596' ft TVD  
 7,515' ft MD  
 Est. TD @ 6,596' ft TVD  
 15,136' ft MD  
 7,620' 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 4500'.  
 Then kick of the horizontal leg into the Marcellus using a slick water frac.

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WW-9  
(5/13)

Page 1 of 2  
API No. 47 - 017 - 0  
Operator's Well No. 513141

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

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name EQT Production Co. OP Code \_\_\_\_\_

Watershed (HUC10) Left Fork Arnolds Creek Quadrangle Oxford 7.5'

Elevation 1,203' 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 for drill cuttings: 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 \_\_\_\_\_)

*DCW  
8-46-2013*

Will closed loop system be used? YES

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and water based mud

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

Additives to be used in drilling medium? MILBAR, Viscosifier, 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.

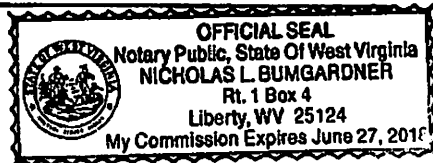
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is 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 *Victoria J. Roark*  
Company Official (Typed Name) Victoria J. Roark  
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 18 day of JULY, 20 13

*Nicholas L. Bumgardner* Notary Public

My commission expires 6/27/2018



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WV Department of Environmental Protection



WW-9

Operator's Well No. 513141

Proposed Revegetation Treatment: Acres Disturbed 37.43 Prevegetation pH 6.6

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 13 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Area I		Area II	
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

Comments: Proceed + Mulch install ETS to WW  
Dep regulations

Title: Oil & Gas Inspector Date: 9-16-2013

Field Reviewed? ( / ) Yes ( ) No

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Environmental Protection

17-06330

**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

**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

11/22/2013  
Received

11/22/2013

47-017-00330



Where energy meets innovation.™

# Site Specific Safety and Environmental Plan For

EQT OXF 156 Pad

Doddridge County, WV

For Wells:

513141

Date Prepared:

July 31, 2013

[Signature]  
EQT Production  
Permitting Supervisor  
Title  
7-31-13  
Date

[Signature]  
WV Oil and Gas Inspector  
Pilot Gas Inspector  
Title  
11-6-2013  
Date

11/22/2013

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## Water Management Plan: Primary Water Sources



WMP- 01494

API/ID Number: 047-017-06330  
513141 (OXF156H4)

Operator:

EQT Production Company

### Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

**DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.**

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at [DEP.water.use@wv.gov](mailto:DEP.water.use@wv.gov).

**APPROVED NOV 01 2013**

**11/22/2013**

17-06330

Source Summary

WMP- 01494

API Number: 047-017-06330  
513141 (OXF156H4)

Operator: EQT Production Company

**Stream/River**

● Source **Ohio River @ Westbrook Trucking Site** Pleasants Owner: **Stephen R. and Janet Sue Westbrook**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/15/2013	9/15/2014	8,300,000		39.384455	-81.25645

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

● Source **Ohio River @ Select Energy** Pleasants Owner: **Select Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/15/2013	9/15/2014	8,300,000		39.346473	-81.338727

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999998 Ohio River Station: Racine Dam

Max. Pump rate (gpm): **1,500** Min. Gauge Reading (cfs): **7,216.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

● Source **Middle Island Creek @ Travis Truck Pad** Doddridge Owner: **Michael J. Travis**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/15/2013	9/15/2014	8,300,000		39.308545	-80.781102

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **4,200** Min. Gauge Reading (cfs): **72.16** Min. Passby (cfs) **28.33**

DEP Comments:

11/22/2013

17-06330

Source **Middle Island Creek @ Rock Run** Doddridge Owner: **William Whitehill**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.298763 Intake Longitude: -80.760682

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,680** Min. Gauge Reading (cfs): **62.89** Min. Passby (cfs) **26.43**

DEP Comments:

Source **Middle Island Creek @ Barnes Withdrawal Site** Doddridge Owner: **Ellen L. Barnes**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.29958 Intake Longitude: -80.75694

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **59.06** Min. Passby (cfs) **26.39**

DEP Comments:

Source **Meathouse Fork @ Spiker Withdrawal Site** Doddridge Owner: **John & Sue Spiker**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.2591 Intake Longitude: -80.72489

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **74.77** Min. Passby (cfs) **9.26**

DEP Comments:

11/22/2013

17-06330

Source **South Fork of Hughes River @ Upper Wizard Run** Doddridge Owner: **I.L. Morris**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.189998 Intake Longitude: -80.79511

Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): 1,260 Min. Gauge Reading (cfs): 33.12 Min. Passby (cfs) 0.64

DEP Comments:

Source **South Fork of Hughes River @ Harmony Road** Doddridge Owner: **I.L. Morris**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.1962 Intake Longitude: -80.81442

Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): 1,260 Min. Gauge Reading (cfs): 33.12 Min. Passby (cfs) 0.98

DEP Comments:

Source **Straight Fork @ Maxson Withdrawal Site** Ritchie Owner: **Douglas L. Maxson**

Start Date 9/15/2013 End Date 9/15/2014 Total Volume (gal) 8,300,000 Max. daily purchase (gal) Intake Latitude: 39.144317 Intake Longitude: -80.848587

Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): 1,680 Min. Gauge Reading (cfs): 36.74 Min. Passby (cfs) 2.45

DEP Comments:

11/22/2013

17-06330

Source: **Middle Fork @ Janscheck Withdrawal Site**      Doddridge      Owner: **Mary Jo Janscheck**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
9/15/2013	9/15/2014	8,300,000		39.151388	-80.812222

Regulated Stream?      Ref. Gauge ID: **3155220**      SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): **840**      Min. Gauge Reading (cfs): **35.81**      Min. Passby (cfs)      **0.86**

DEP Comments:

11/22/2013



**Source Detail**

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26245 Source Name: Ohio River @ Westbrook Trucking Site  
 Stephen R. and Janet Sue Westbrook Source Latitude: 39.384455  
 Source Longitude: -81.25645

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Pleasants

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Total Volume from Source (gal): 8,300,000

Max. Pump rate (gpm): 1,260

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

- Endangered Species?
- Trout Stream?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?
- Mussel Stream?
- Tier 3?
- Ohio River Min. Flow

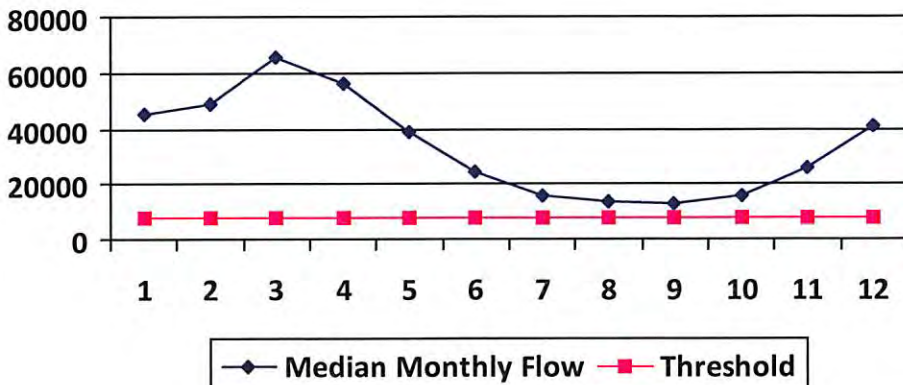
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs): -  
 Upstream Demand (cfs): 0.00  
 Downstream Demand (cfs): 0.00  
 Pump rate (cfs): 2.81  
 Headwater Safety (cfs): 0.00  
 Ungauged Stream Safety (cfs): 1,617.00  
 Min. Gauge Reading (cfs): -  
 Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

**Source Detail**

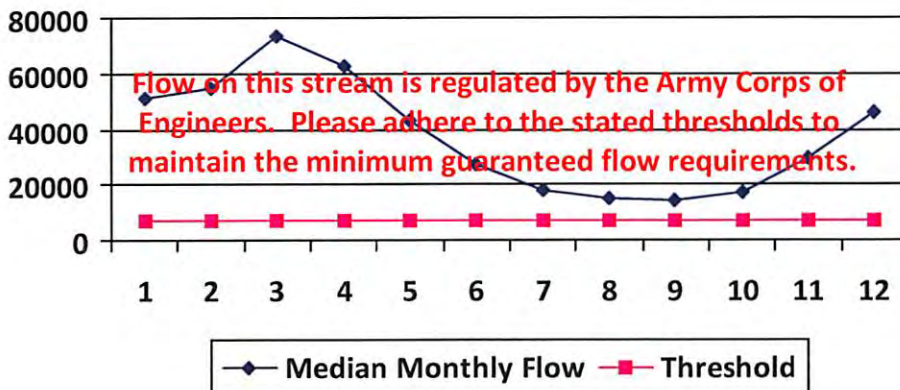
WMP- 01494      API/ID Number: 047-017-06330      Operator: EQT Production Company  
 513141 (OXF156H4)

Source ID: 26246      Source Name: Ohio River @ Select Energy      Source Latitude: 39.346473  
 Select Energy      Source Longitude: -81.338727  
 HUC-8 Code: 5030201  
 Drainage Area (sq. mi.): 25000      County: Pleasants      Anticipated withdrawal start date: 9/15/2013  
 Anticipated withdrawal end date: 9/15/2014  
 Endangered Species?       Mussel Stream?      Total Volume from Source (gal): 8,300,000  
 Trout Stream?       Tier 3?  
 Regulated Stream?      Ohio River Min. Flow      Max. Pump rate (gpm): 1,500  
 Proximate PSD?      Max. Simultaneous Trucks: 0  
 Gauged Stream?      Max. Truck pump rate (gpm): 0

Reference Gaug 9999998      Ohio River Station: Racine Dam  
 Drainage Area (sq. mi.) 25,000.00      Gauge Threshold (cfs): 7216

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	50,956.00	-	-
2	54,858.00	-	-
3	73,256.00	-	-
4	62,552.00	-	-
5	43,151.00	-	-
6	27,095.00	-	-
7	17,840.00	-	-
8	14,941.00	-	-
9	14,272.00	-	-
10	17,283.00	-	-
11	29,325.00	-	-
12	46,050.00	-	-

**Water Availability Profile**



Water Availability Assessment of Location

Base Threshold (cfs): -  
 Upstream Demand (cfs): 0.00  
 Downstream Demand (cfs): 0.00  
 Pump rate (cfs): 3.34  
 Headwater Safety (cfs): 0.00  
 Ungauged Stream Safety (cfs): 0.00  
 Min. Gauge Reading (cfs): -  
 Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

**Source Detail**

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26247 Source Name: Middle Island Creek @ Travis Truck Pad  
Michael J. Travis

Source Latitude: 39.308545  
Source Longitude: -80.781102

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 122.83 County: Doddridge

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 8,300,000

Trout Stream?  Tier 3?

Max. Pump rate (gpm): 4,200

Regulated Stream? West Union Municipal Water

Max. Simultaneous Trucks: 10

Proximate PSD?

Max. Truck pump rate (gpm): 420

Gauged Stream?

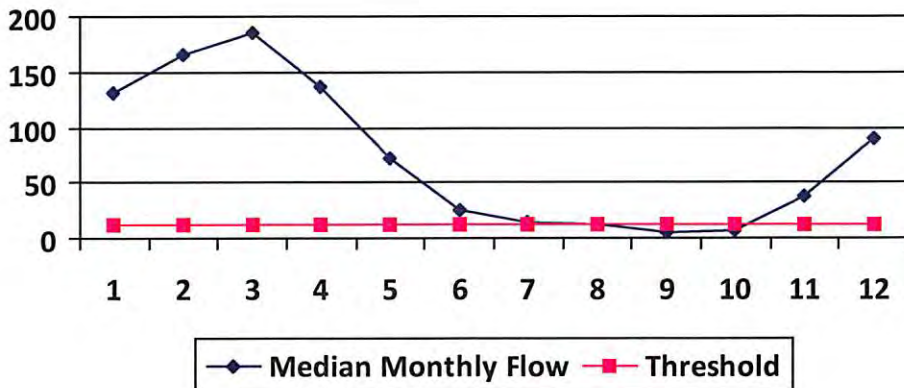
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	131.72	30.99	101.10
2	165.69	30.99	135.07
3	185.40	30.99	154.78
4	137.68	30.99	107.05
5	72.63	30.99	42.00
6	25.36	30.99	-5.26
7	14.35	30.99	-16.27
8	11.82	30.99	-18.81
9	6.05	30.99	-24.57
10	7.60	30.99	-23.02
11	37.14	30.99	6.51
12	90.73	30.99	60.11

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	12.07
Upstream Demand (cfs):	6.55
Downstream Demand (cfs):	13.24
Pump rate (cfs):	9.36
Headwater Safety (cfs):	3.02
Ungauged Stream Safety (cfs):	0.00
<b>Min. Gauge Reading (cfs):</b>	<b>72.16</b>
<b>Passby at Location (cfs):</b>	<b>28.33</b>

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

17-06330

**Source Detail**

WMP-01494      API/ID Number: 047-017-06330      Operator: EQT Production Company  
 513141 (OXF156H4)

Source ID: 26248      Source Name: Middle Island Creek @ Rock Run      Source Latitude: 39.298763  
 William Whitehill      Source Longitude: -80.760682

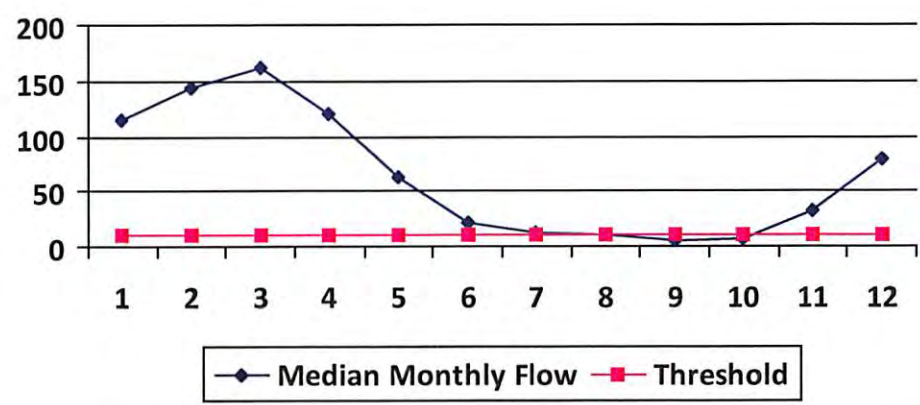
HUC-8 Code: 5030201      Anticipated withdrawal start date: 9/15/2013  
 Drainage Area (sq. mi.): 107.35      County: Doddridge      Anticipated withdrawal end date: 9/15/2014

- Endangered Species?       Mussel Stream?
  - Trout Stream?       Tier 3?
  - Regulated Stream?
  - Proximate PSD?      West Union Municipal Water
  - Gauged Stream?
- Total Volume from Source (gal): 8,300,000  
 Max. Pump rate (gpm): 1,680  
 Max. Simultaneous Trucks: 4  
 Max. Truck pump rate (gpm): 420

Reference Gaug: 3114500      MIDDLE ISLAND CREEK AT LITTLE, WV  
 Drainage Area (sq. mi.): 458.00      Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	115.12	19.74	95.58
2	144.81	19.74	125.27
3	162.04	19.74	142.50
4	120.33	19.74	100.79
5	63.47	19.74	43.93
6	22.17	19.74	2.63
7	12.54	19.74	-7.00
8	10.33	19.74	-9.21
9	5.29	19.74	-14.25
10	6.65	19.74	-12.89
11	32.46	19.74	12.91
12	79.30	19.74	59.76

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs): 10.55  
 Upstream Demand (cfs): 2.81  
 Downstream Demand (cfs): 13.24  
 Pump rate (cfs): 3.74  
 Headwater Safety (cfs): 2.64  
 Ungauged Stream Safety (cfs): 0.00

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Min. Gauge Reading (cfs): 62.80  
 Passby at Location (cfs): 26.42

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

**Source Detail**

17-06330

WMP-01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26249 Source Name Middle Island Creek @ Barnes Withdrawal Site  
Ellen L. Barnes

Source Latitude: 39.29958  
Source Longitude: -80.75694

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 107.08 County: Doddridge

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 8,300,000

Trout Stream?  Tier 3?

Max. Pump rate (gpm): 1,260

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD? West Union

Max. Truck pump rate (gpm) 0

Gauged Stream?

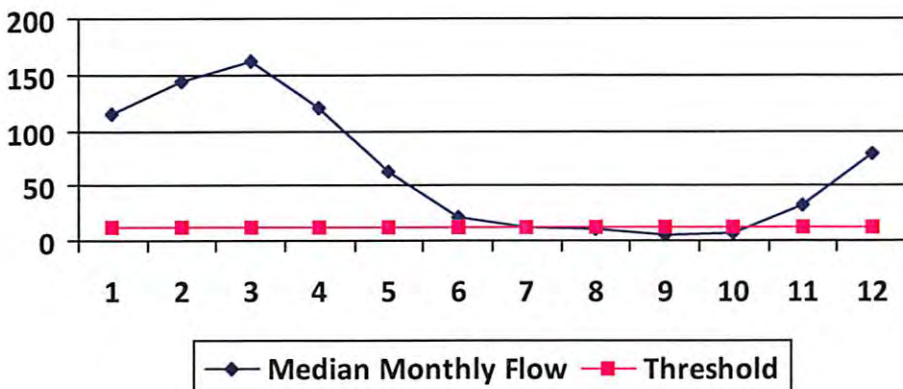
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	114.83	18.59	96.42
2	144.45	18.59	126.03
3	161.63	18.59	143.21
4	120.02	18.59	101.61
5	63.31	18.59	44.90
6	22.11	18.59	3.69
7	12.51	18.59	-5.91
8	10.30	18.59	-8.12
9	5.28	18.59	-13.14
10	6.63	18.59	-11.79
11	32.37	18.59	13.96
12	79.10	18.59	60.68

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	10.52
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	13.24
Pump rate (cfs):	2.81
Headwater Safety (cfs):	2.63
Ungauged Stream Safety (cfs):	2.63
Min. Gauge Reading (cfs):	70.31
Passby at Location (cfs):	29.02

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

11/22/2013

**Source Detail**

17-06330

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26250 Source Name: Meathouse Fork @ Spiker Withdrawal Site  
John & Sue Spiker

Source Latitude: 39.2591  
Source Longitude: -80.72489

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 62.75 County: Doddridge

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 8,300,000

Trout Stream?  Tier 3?

Max. Pump rate (gpm): 1,260

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

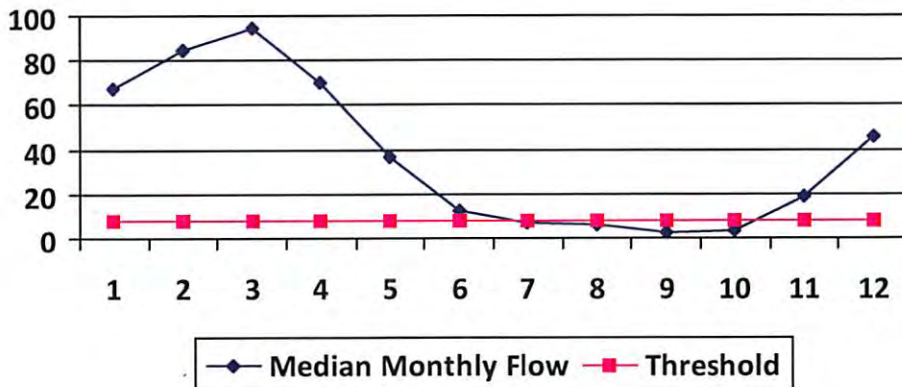
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	67.29	16.52	51.09
2	84.65	16.52	68.45
3	94.72	16.52	78.52
4	70.34	16.52	54.14
5	37.10	16.52	20.90
6	12.96	16.52	-3.24
7	7.33	16.52	-8.87
8	6.04	16.52	-10.16
9	3.09	16.52	-13.11
10	3.88	16.52	-12.32
11	18.97	16.52	2.77
12	46.35	16.52	30.15

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	6.17
Upstream Demand (cfs):	4.46
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	1.54
Ungauged Stream Safety (cfs):	1.54
Min. Gauge Reading (cfs):	74.77
Passby at Location (cfs):	9.25

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

**Source Detail**

17-06330

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

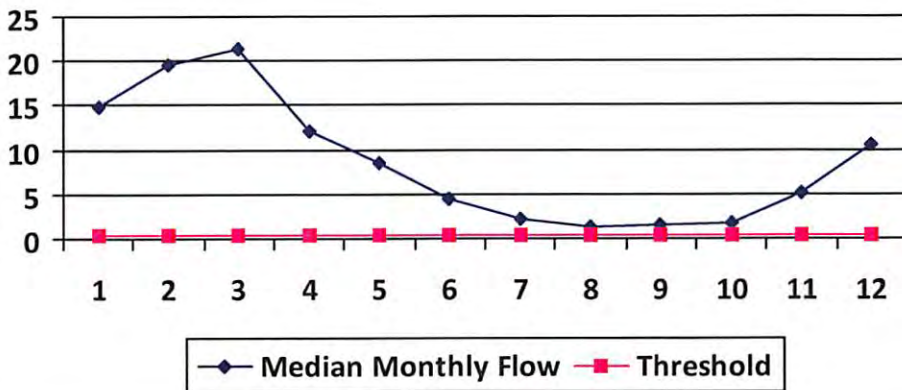
513141 (OXF156H4)

Source ID: 26251	Source Name: South Fork of Hughes River @ Upper Wizard Run I.L. Morris	Source Latitude: 39.189998
HUC-8 Code: 5030203	Source Longitude: -80.79511	
Drainage Area (sq. mi.): 5.33	County: Doddridge	Anticipated withdrawal start date: 9/15/2013
<input type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?	Anticipated withdrawal end date: 9/15/2014
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?	Total Volume from Source (gal): 8,300,000
<input type="checkbox"/> Regulated Stream?		Max. Pump rate (gpm): 1,260
<input type="checkbox"/> Proximate PSD?		Max. Simultaneous Trucks: 0
<input checked="" type="checkbox"/> Gauged Stream?		Max. Truck pump rate (gpm): 0

Reference Gaug: 3155220	SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV
Drainage Area (sq. mi.): 229.00	Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	14.97	6.26	8.79
2	19.52	6.26	13.33
3	21.37	6.26	15.19
4	12.08	6.26	5.90
5	8.48	6.26	2.29
6	4.56	6.26	-1.63
7	2.26	6.26	-3.93
8	1.31	6.26	-4.88
9	1.57	6.26	-4.62
10	1.70	6.26	-4.48
11	5.09	6.26	-1.09
12	10.51	6.26	4.32

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	0.51
Upstream Demand (cfs):	2.81
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.13
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	33.12
Passby at Location (cfs):	0.64

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

11/22/2013

**Source Detail**

17-06330

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26252 Source Name: South Fork of Hughes River @ Harmony Road  
I.L. Morris

Source Latitude: 39.1962  
Source Longitude: -80.81442

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 8.1 County: Doddridge

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 8,300,000

Trout Stream?  Tier 3?

Max. Pump rate (gpm): 1,260

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm) 0

Gauged Stream?

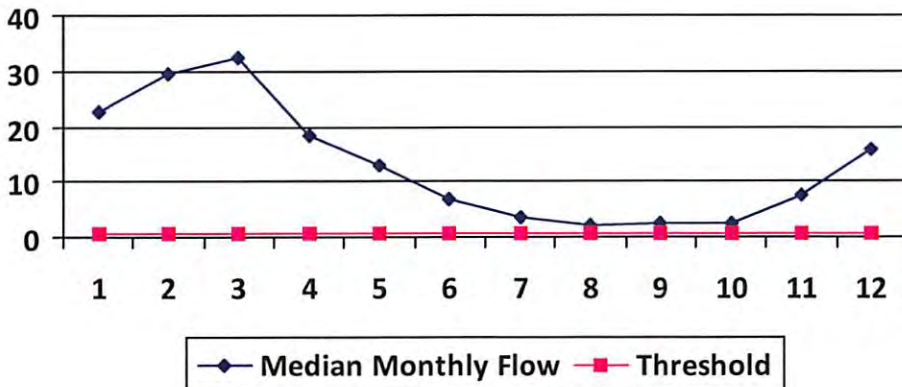
Reference Gaug 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.) 229.00

Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	22.75	6.59	16.28
2	29.66	6.59	23.19
3	32.48	6.59	26.01
4	18.36	6.59	11.89
5	12.88	6.59	6.41
6	6.92	6.59	0.45
7	3.43	6.59	-3.04
8	1.98	6.59	-4.49
9	2.38	6.59	-4.09
10	2.59	6.59	-3.88
11	7.74	6.59	1.27
12	15.97	6.59	9.50

**Water Availability Profile**



Water Availability Assessment of Location

Base Threshold (cfs):	0.78
Upstream Demand (cfs):	2.81
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.19
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	33.12
Passby at Location (cfs):	0.97

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



**Source Detail**

17-06330

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

Source ID: 26253 Source Name: Straight Fork @ Maxson Withdrawal Site  
Douglas L. Maxson

Source Latitude: 39.144317

Source Longitude: -80.848587

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 16.99 County: Ritchie

Anticipated withdrawal start date: 9/15/2013

Anticipated withdrawal end date: 9/15/2014

Endangered Species?  Mussel Stream?

Trout Stream?  Tier 3?

Total Volume from Source (gal): 8,300,000

Regulated Stream?

Max. Pump rate (gpm): 1,680

Proximate PSD?

Max. Simultaneous Trucks: 4

Gauged Stream?

Max. Truck pump rate (gpm): 420

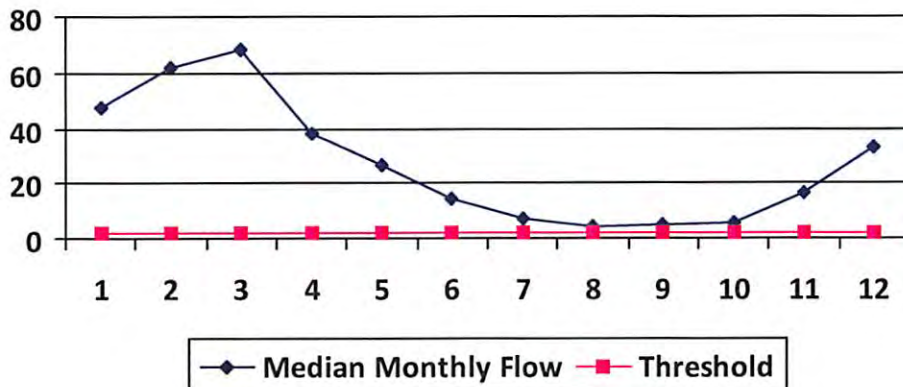
Reference Gaug: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.): 229.00

Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	47.72	6.19	41.62
2	62.22	6.19	56.12
3	68.13	6.19	62.04
4	38.52	6.19	32.42
5	27.03	6.19	20.93
6	14.52	6.19	8.42
7	7.20	6.19	1.10
8	4.16	6.19	-1.94
9	5.00	6.19	-1.10
10	5.43	6.19	-0.67
11	16.23	6.19	10.13
12	33.50	6.19	27.40

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	1.63
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	3.74
Headwater Safety (cfs):	0.41
Ungauged Stream Safety (cfs):	0.41
Min. Gauge Reading (cfs):	36.74
Passby at Location (cfs):	2.45

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

11/22/2013

**Source Detail**

17-06330

WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

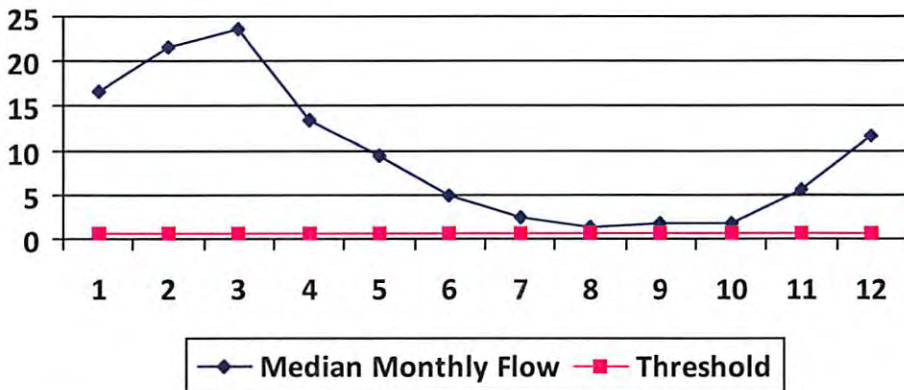
513141 (OXF156H4)

Source ID: 26254	Source Name: Middle Fork @ Janschek Withdrawal Site Mary Jo Janschek	Source Latitude: 39.151388
HUC-8 Code: 5030203	Source Longitude: -80.812222	
Drainage Area (sq. mi.): 5.92	County: Doddridge	Anticipated withdrawal start date: 9/15/2013
<input checked="" type="checkbox"/> Endangered Species?	<input checked="" type="checkbox"/> Mussel Stream?	Anticipated withdrawal end date: 9/15/2014
<input type="checkbox"/> Trout Stream?	<input type="checkbox"/> Tier 3?	Total Volume from Source (gal): 8,300,000
<input type="checkbox"/> Regulated Stream?		Max. Pump rate (gpm): 840
<input type="checkbox"/> Proximate PSD?		Max. Simultaneous Trucks:
<input type="checkbox"/> Gauged Stream?		Max. Truck pump rate (gpm):

Reference Gaug: 3155220	SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV
Drainage Area (sq. mi.): 229.00	Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	16.63	2.72	14.03
2	21.68	2.72	19.08
3	23.74	2.72	21.14
4	13.42	2.72	10.83
5	9.42	2.72	6.82
6	5.06	2.72	2.46
7	2.51	2.72	-0.09
8	1.45	2.72	-1.15
9	1.74	2.72	-0.85
10	1.89	2.72	-0.70
11	5.66	2.72	3.06
12	11.67	2.72	9.08

**Water Availability Profile**



**Water Availability Assessment of Location**

Base Threshold (cfs):	0.57
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	1.87
Headwater Safety (cfs):	0.14
Ungauged Stream Safety (cfs):	0.14
Min. Gauge Reading (cfs):	34.87
Passby at Location (cfs):	0.85

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

11/22/2013

17-06330

# west virginia department of environmental protection



## Water Management Plan: Secondary Water Sources



WMP- 01494

API/ID Number: 047-017-06330

Operator: EQT Production Company

513141 (OXF156H4)

### Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

### Ground Water

Source ID:	26255	Source Name	Groundwater Well TW#1	Source start date:	9/15/2013
				Source end date:	9/15/2014
Source Lat:	39.56059	Source Long:	-80.56027	County	Wetzel
Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,300,000

DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

**Lake/Reservoir**

Source ID: 26256	Source Name: Pennsboro Lake	Source start date: 9/15/2013
		Source end date: 9/15/2014
Source Lat: 39.281689	Source Long: -80.925526	County: Ritchie
Max. Daily Purchase (gal)	Total Volume from Source (gal):	8,300,000

DEP Comments:

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

**Multi-site impoundment**

Source ID:	26257	Source Name	Davies Centralized Freshwater Impoundment		Source start date:	9/15/2013
					Source end date:	9/15/2014
	Source Lat:	39.269635	Source Long:	-80.77711	County	Doddridge
	Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,300,000

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-1083

Source ID:	27403	Source Name	OXF149 Tank Pad A		Source start date:	9/15/2013
					Source end date:	9/15/2014
	Source Lat:	39.221932	Source Long:	-80.799873	County	Doddridge
	Max. Daily Purchase (gal)		Total Volume from Source (gal):			8,300,000

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-1532

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	27404	Source Name	OXF149 Tank Pad B		Source start date:	9/15/2003	
					Source end date:	9/15/2014	
		Source Lat:	39.221733	Source Long:	-80.798991	County	Doddridge
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,300,000	

DEP Comments:

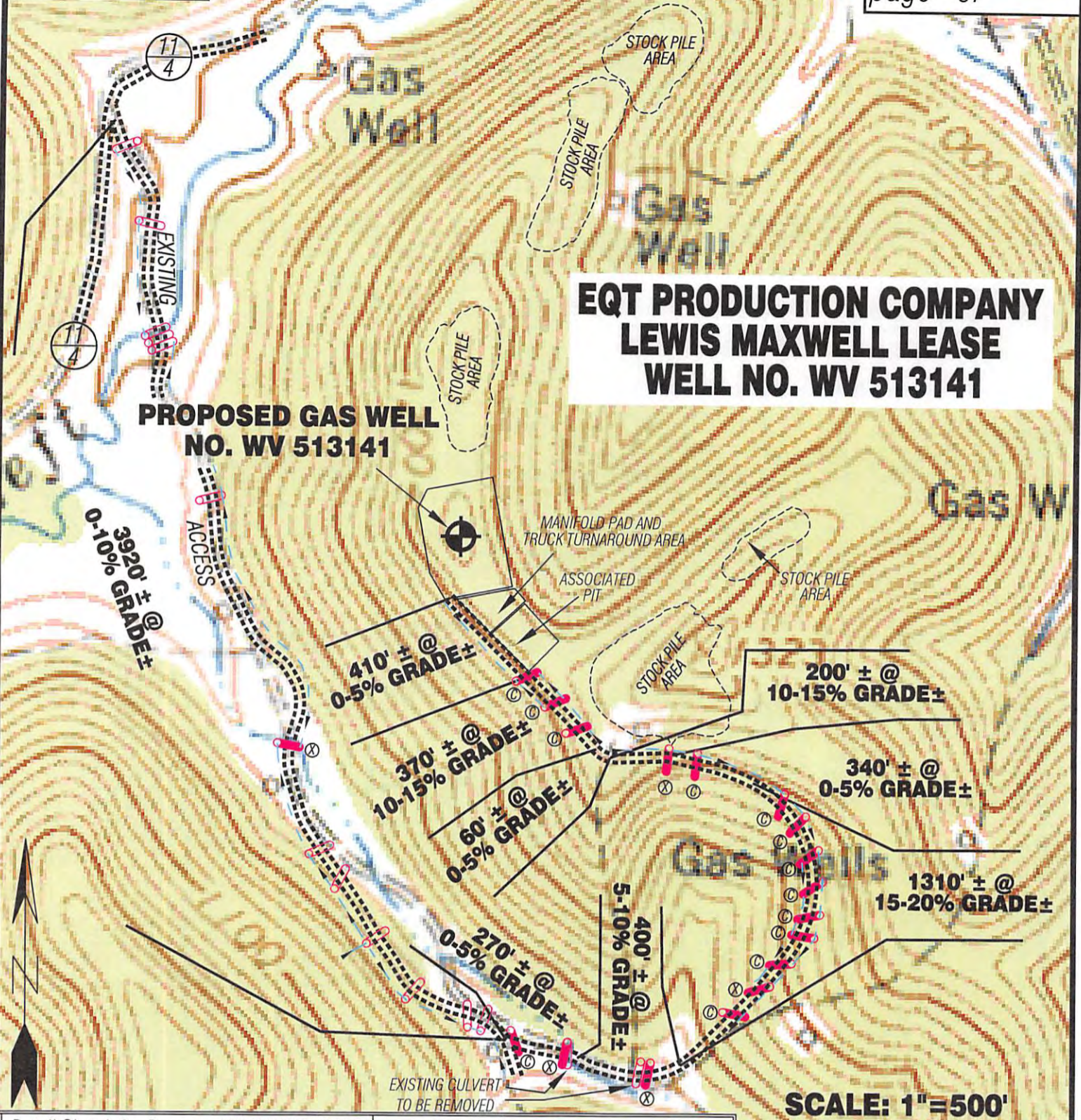
The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-1533

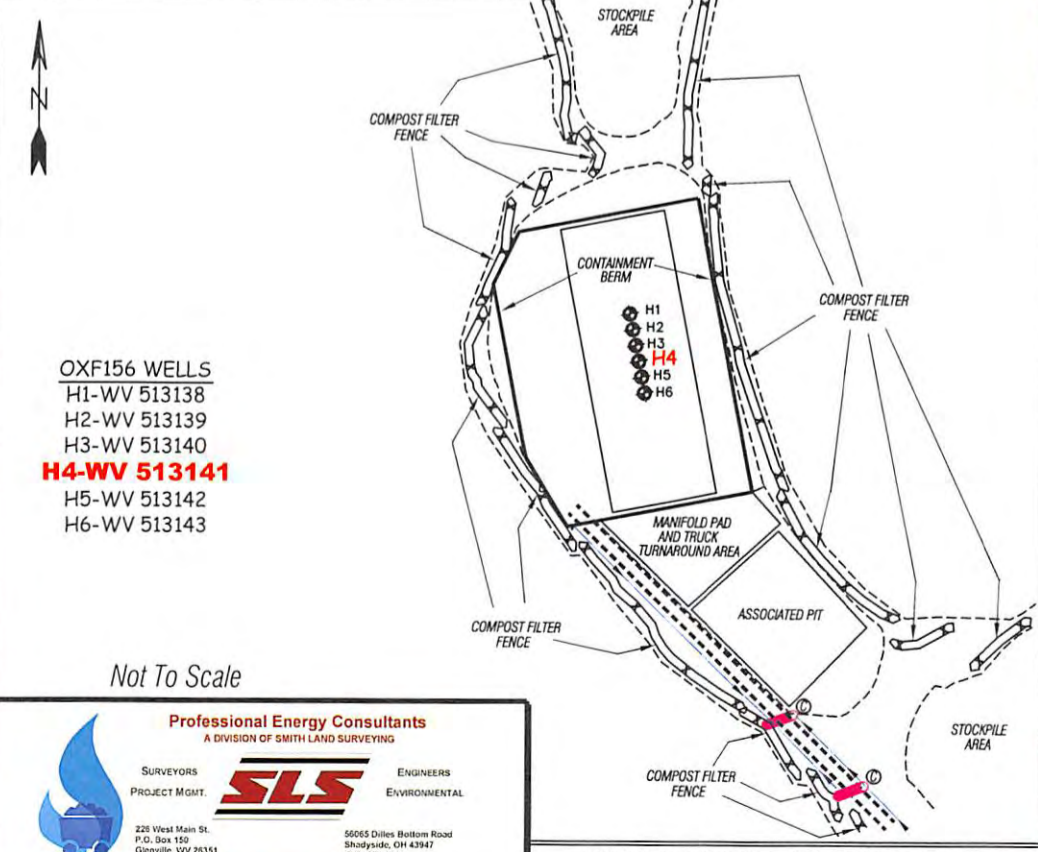
**Recycled Frac Water**

Source ID:	26258	Source Name	Various		Source start date:	9/15/2013	
					Source end date:	9/15/2014	
		Source Lat:		Source Long:		County	
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		8,300,000	

DEP Comments:



Detail Sketch for Proposed Well WV 513141



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 CULVERT 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 PLO PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

- ① = EXISTING CULVERT
- ② = PROPOSED CULVERT 12" MIN. UNLESS OTHERWISE NOTED
- ⊗ = PROPOSED STREAM CROSSING
- = APPROXIMATE LIMITS OF DISTURBANCE

- OXF156 WELLS  
H1-WV 513138  
H2-WV 513139  
H3-WV 513140  
**H4-WV 513141**  
H5-WV 513142  
H6-WV 513143

Not To Scale

Professional Energy Consultants  
A DIVISION OF SMITH LAND SURVEYING



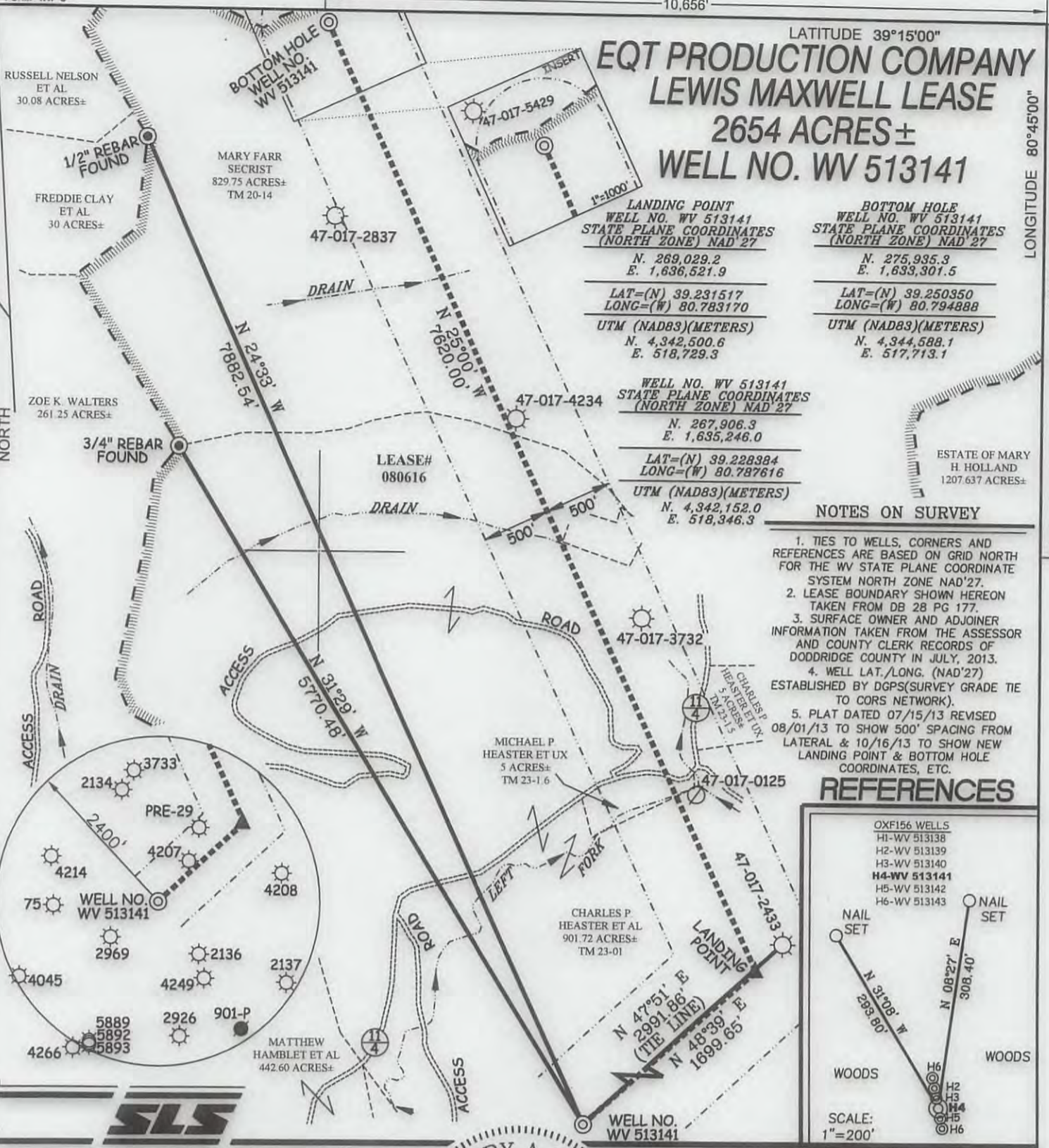
SURVEYORS PROJECT MGMT. **SLS** ENGINEERS ENVIRONMENTAL  
226 West Main St. P.O. Box 150 Glenville, WV 260351 (304) 452-5534  
56065 Dilles Bottom Road Shady Side, OH 43097 (740) 671-9911

DRAWN BY K.D.W.	FILE NO. 6980	DATE 07/15/13	CADD FILE: 6980RECS13141.dwg
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TOPO SECTION OF OXFORD 7.5'  
USGS TOPO QUADRANGLE

11/22/2013  
Received  
AUG - 2 2013  
Office of Environmental Protection  
WV Dept. of Environmental Protection

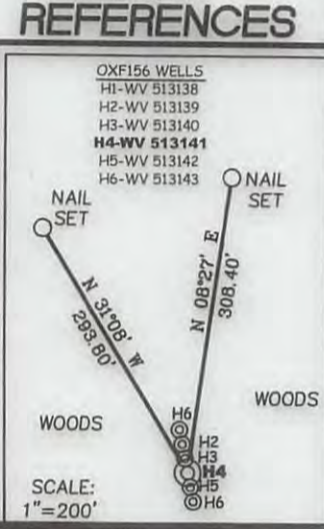
# EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE 2654 ACRES± WELL NO. WV 513141



WELL NO. WV 513141 STATE PLANE COORDINATES (NORTH ZONE) NAD 27	BOTTOM HOLE WELL NO. WV 513141 STATE PLANE COORDINATES (NORTH ZONE) NAD 27
N. 269,029.2 E. 1,636,521.9	N. 275,935.3 E. 1,633,301.5
LAT=(N) 39.231517 LONG=(W) 80.783170	LAT=(N) 39.250350 LONG=(W) 80.794888
UTM (NAD83)(METERS) N. 4,342,500.6 E. 518,729.3	UTM (NAD83)(METERS) N. 4,344,588.1 E. 517,713.1

WELL NO. WV 513141 STATE PLANE COORDINATES (NORTH ZONE) NAD 27
N. 267,906.3 E. 1,635,246.0
LAT=(N) 39.228384 LONG=(W) 80.787616
UTM (NAD83)(METERS) N. 4,342,152.0 E. 518,346.3

- 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 07/15/13 REVISED 08/01/13 TO SHOW 500' SPACING FROM LATERAL & 10/16/13 TO SHOW NEW LANDING POINT & BOTTOM HOLE COORDINATES, ETC.



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*



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

DATE OCTOBER 16, 20 13

OPERATORS WELL NO. WV 513141

API WELL NO. 47-017-06330 H6A

STATE WEST VIRGINIA COUNTY DODDRIDGE PERMIT H6A

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 6980P513141R2

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  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,244'(GROUND) 1,202'(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK

DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER CHARLES P. HEASTER ET AL ACREAGE 901.72 ±

ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ± **11/22/2013**

PROPOSED WORK: LEASE NO. 080616

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  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 \_\_\_\_\_

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE BRIDGEPORT, WV 26330 P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE BRIDGEPORT, WV 26330 P.O. BOX 280

COUNTY NAME PERMIT