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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 12, 2013

**WELL WORK PERMIT**

**Horizontal 6A Well**

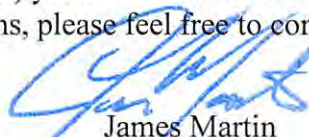
This permit, API Well Number: 47-10302939, issued to EQT PRODUCTION COMPANY, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, 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: 514565  
Farm Name: DENCIL HENTHORN ET AL  
**API Well Number: 47-10302939**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 11/12/2013

**Promoting a healthy environment.**

# 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 fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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

1) Well Operator: EQT Production Company  
Operator ID 103 County 4 District 254 Quadrangle

2) Operator's Well Number: 514565 Well Pad Name BIG367

3 Elevation, current ground: 1,474.3 Elevation, proposed post-construction: 1,442.9

4) Well Type: (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas: Shallow  Deep

Horizontal

5) Existing Pad? Yes or No: no

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9-12-13*

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Target formation is Geneseo at a depth of 7422' with the anticipated thickness to be 53 feet and anticipated target pressure of 4792 PSI

7) Proposed Total Vertical Depth: 7,422

8) Formation at Total Vertical Depth: Geneseo

9) Proposed Total Measured Depth: 11,106

10) Approximate Fresh Water Strata Depths: 433, 478, 705

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

12) Approximate Saltwater Depths: 1965, 2130, 2168

13) Approximate Coal Seam Depths: 620, 857, 1019, 1196, 1680

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

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of Mine: None Reported

16) Describe proposed well work: Drill and complete a new horizontal well in the Geneseo formation. The vertical drill to go down to an approximate depth of 6709'.

17) Describe fracturing/stimulating methods in detail:  
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). Stage lengths vary from 150 to 450 feet. Average approximately 400,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 400,000 pounds of sand per stage.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 16.20 ac

19) Area to be disturbed for well pad only, less access road (acres): 15.42 ac

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**CASING AND TUBING PROGRAM**

20)

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: for Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill- up (Cu.Ft.)</u>
Conductor	26	New	MC-50	77	80	80	98 CTS
Fresh Water	13 3/8	New	MC-50	54	805	805	706 CTS
Coal							
Intermediate	9 5/8	New	MC-50	40	3,617	3,617	1422 CTS
Production	5 1/2	New	P-110	20	11,106	11,106	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							

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
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**

*Dm 14  
9-12-13*

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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21) 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

22) 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.

23) 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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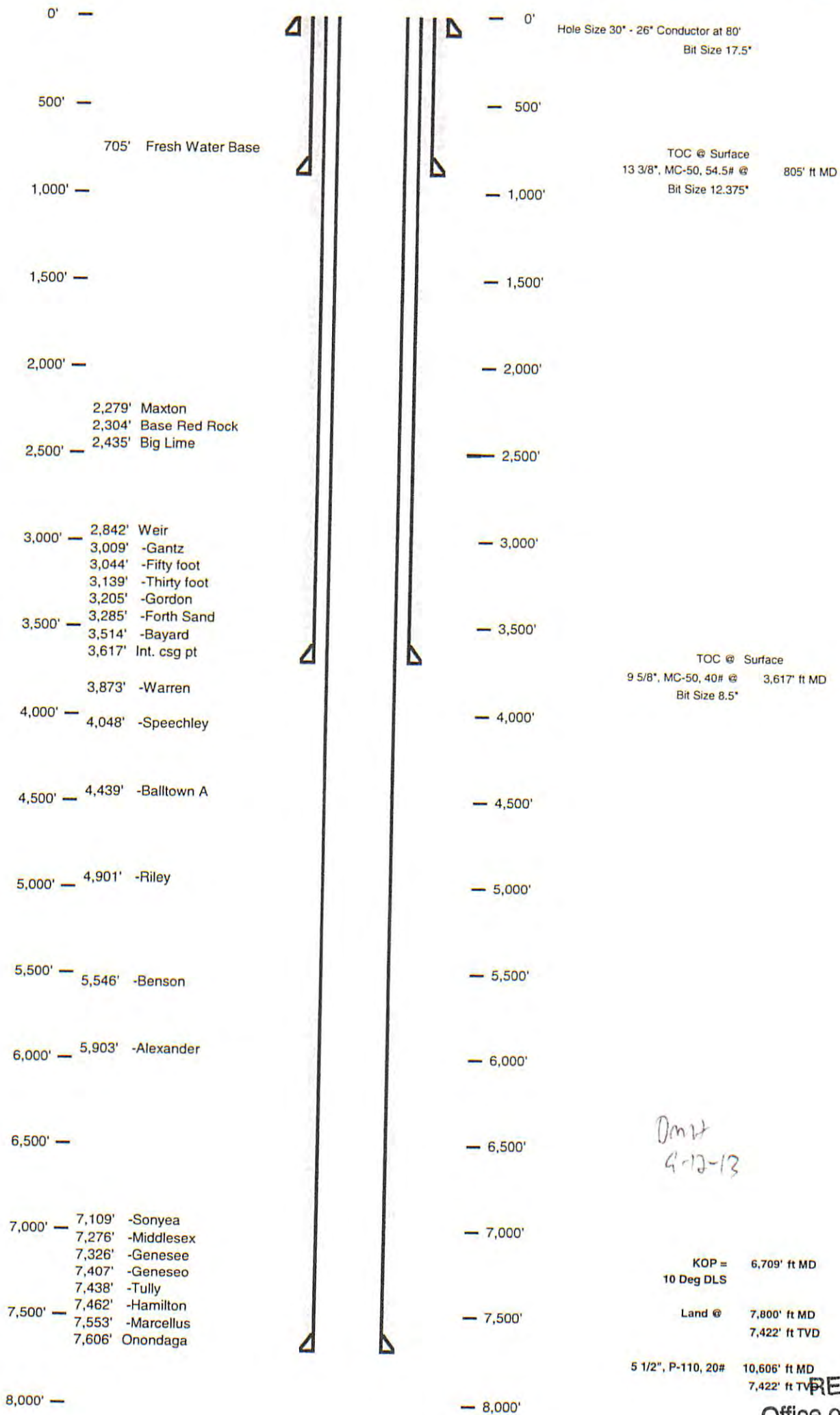
Well Schematic  
EQT Production

4710302939

Well Name 514565 (BIG367H4)  
County Wetzel  
State West Virginia

Elevation KB:  
Target  
Prospect  
Azimuth  
Vertical Section

1456
Geneseo
162
3498



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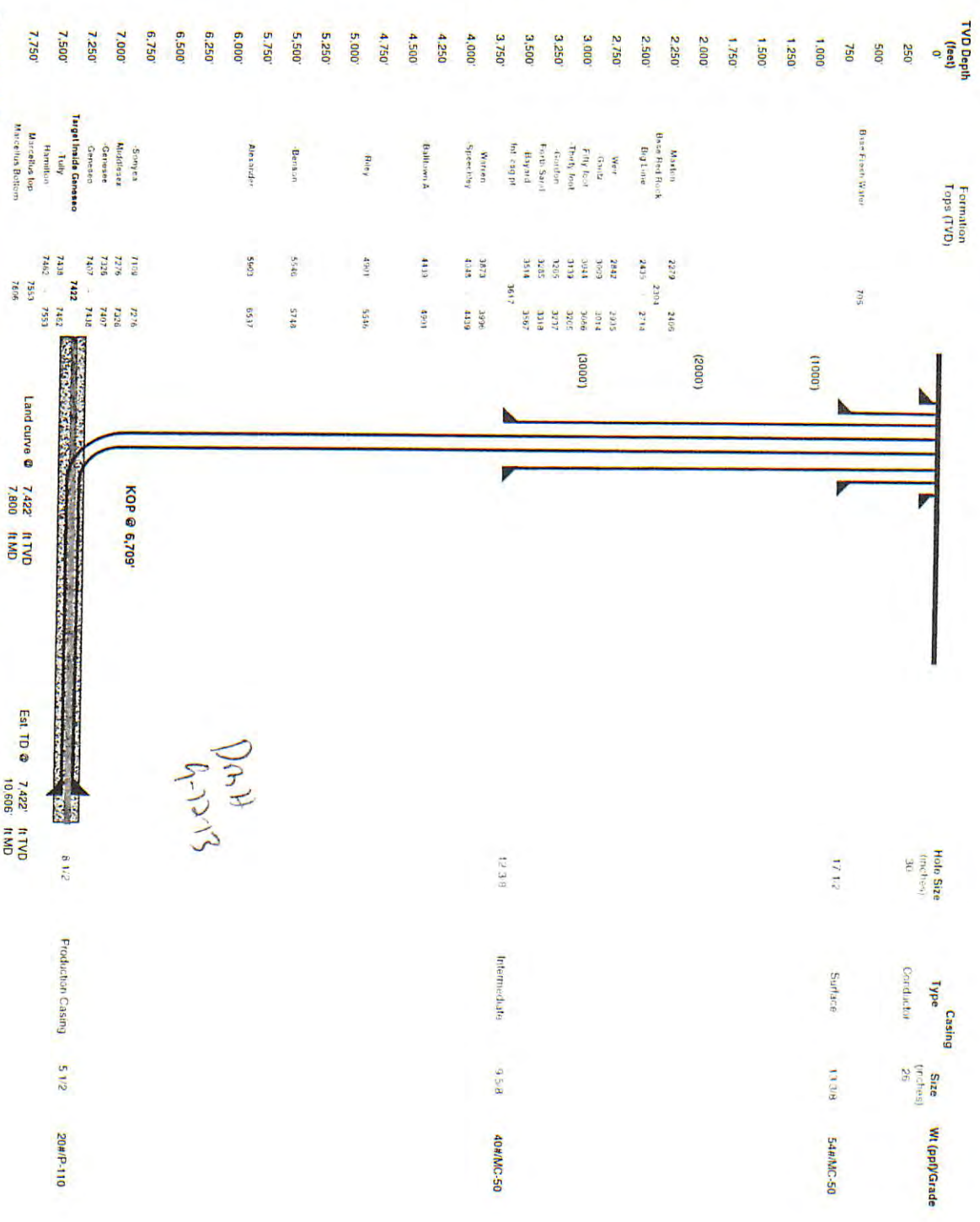
WV Department of  
Environmental Protection

4710302939

Well 514565 (BIC367H4)  
 EOT Production  
 Big Run  
 Weitzel

West Virginia

Armath 182  
 Vertical Section 3496



Proposed Well Work:  
 Drill and complete a new horizontal well in the Genesee formation.  
 The vertical drill to go down to an approximate depth of 6709'

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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

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  No

Will a pit be used for drill cuttings: Yes: \_\_\_\_\_ No:

If so please describe anticipated pit waste: \_\_\_\_\_

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

Proposed Disposal Method For Treated Pit Wastes:

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

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, 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

*DAU  
4-12-13*

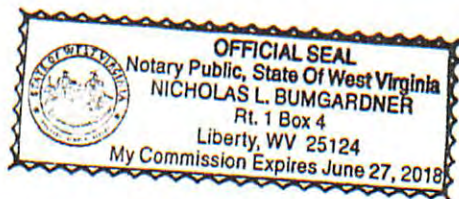
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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 9 day of SEPTEMBER, 20 13

*[Signature]* Notary Public  
My commission expires 6/27/2018



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Proposed Revegetation Treatment: Acres Disturbed 16.2 Prevegetation pH 6

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 1/3 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	<u>40</u>	Orchard Grass	<u>15</u>
Alsike Clover	<u>5</u>	Alsike Clover	<u>5</u>
Annual Rye	<u>15</u>		

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: 9-12-13

Field Reviewed? (  ) Yes (  ) No

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**EQT Production Water plan**  
**Offsite disposals for Marcellus wells**

4710302939

**CWS TRUCKING INC.**

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

**BROAD STREET ENERGY LLC**

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

**LAD LIQUID ASSETS DISPOSAL INC.**

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

**TRIAD ENERGY**

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

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

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

**KING EXCAVATING CO.**

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

**Waste Management - Meadowfill Landfill**

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

**Waste Management - Northwestern Landfill**

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

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FORM WW-9

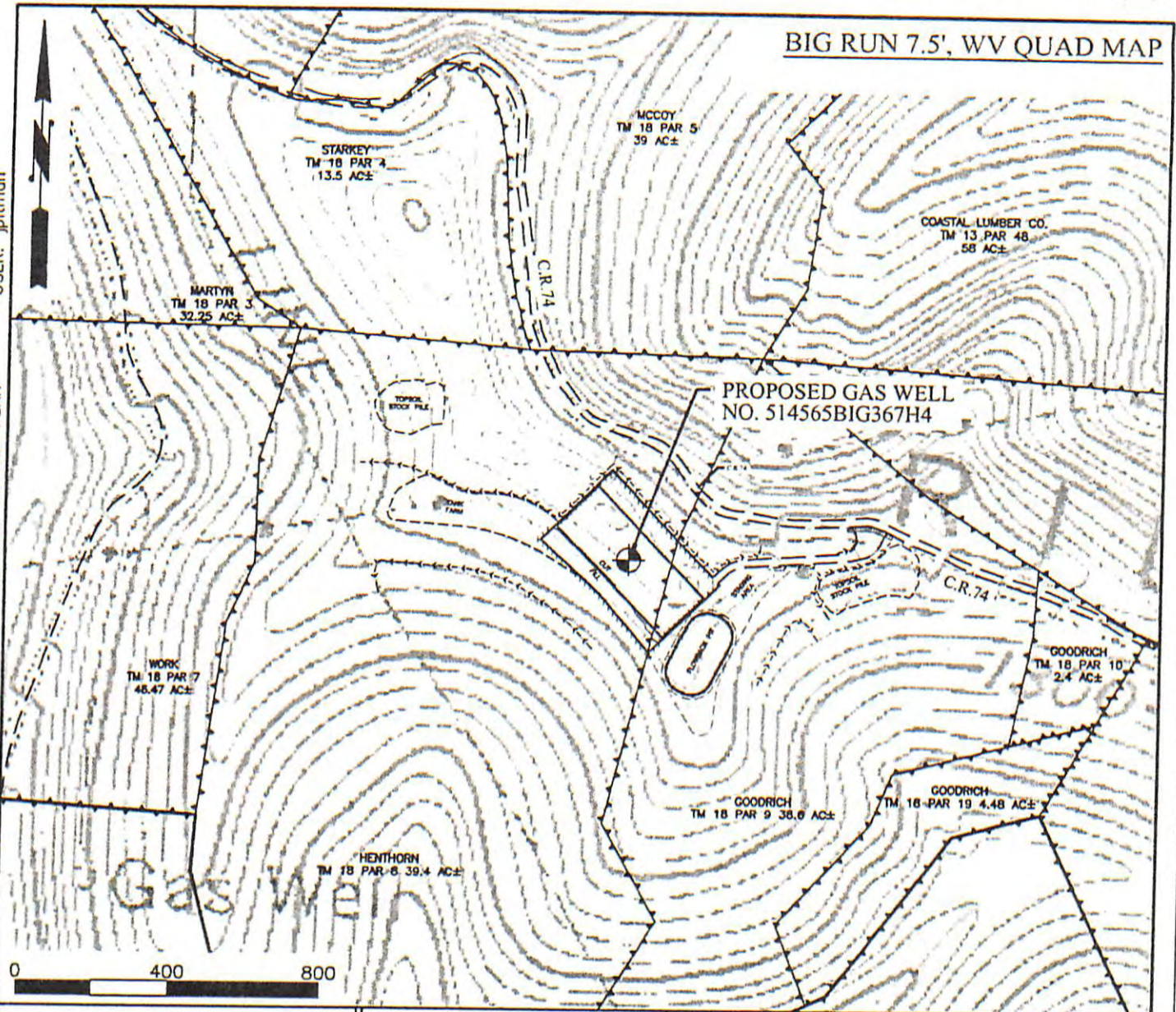
BIG RUN 7.5', WV QUAD MAP

USER: jpitman

LAYOUT: H4-REC PLAN

PLOT DATE/TIME: 9/5/2013 - 3:30pm

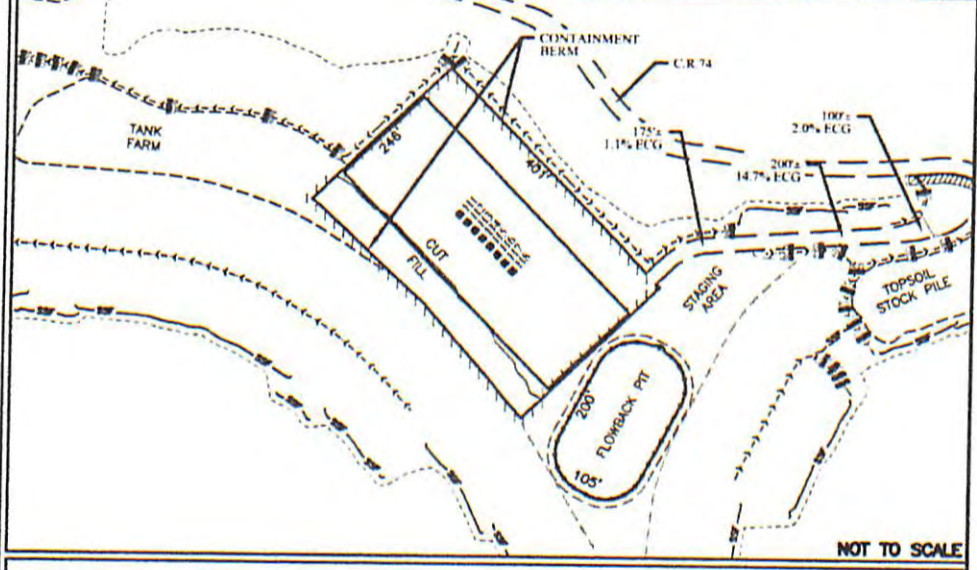
CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Drawing\5-well hole rec plan.dwg



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 outcrop(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.

DETAIL SKETCH FOR EQT WELL 514565



NOTE:  
 EG= EXISTING GRADE  
 ECG= ESTIMATED CONSTRUCTION GRADE

LEGEND

- DRILL SITE= [Symbol]
- ROCK CHECK DAM= [Symbol]
- BUILDING= [Symbol]
- COMPACTED FILL WALLS= [Symbol]
- PIT CUT WALLS= [Symbol]
- SUPER SILT FENCE= [Symbol]
- PROPERTY LINE= [Symbol]
- LIMIT OF DISTURBANCE= [Symbol]
- PLANNED FENCE= [Symbol]
- ROAD= [Symbol]
- OPEN DITCH= [Symbol]
- CULVERT= [Symbol]

DMV  
 9-12-13

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**THRASHER**  
 CIVIL, ENVIRONMENTAL, CONSULTING, FIELD SERVICES  
 20 ORLANDA HOLLOWAY - CLARKSBURG, WV 26304  
 PHONE: (304) 853-3333 FAX: (304) 853-7900

**EQT** Where energy meets innovation.

WELL RECLAMATION PLAN  
 FOR  
 EQT BIG367 H4

SCALE: AS SHOWN  
 DRAWN: JCP  
 CHECKED:  
 APPROVED:  
 SHEET NO.

PROJECT# 030-2259

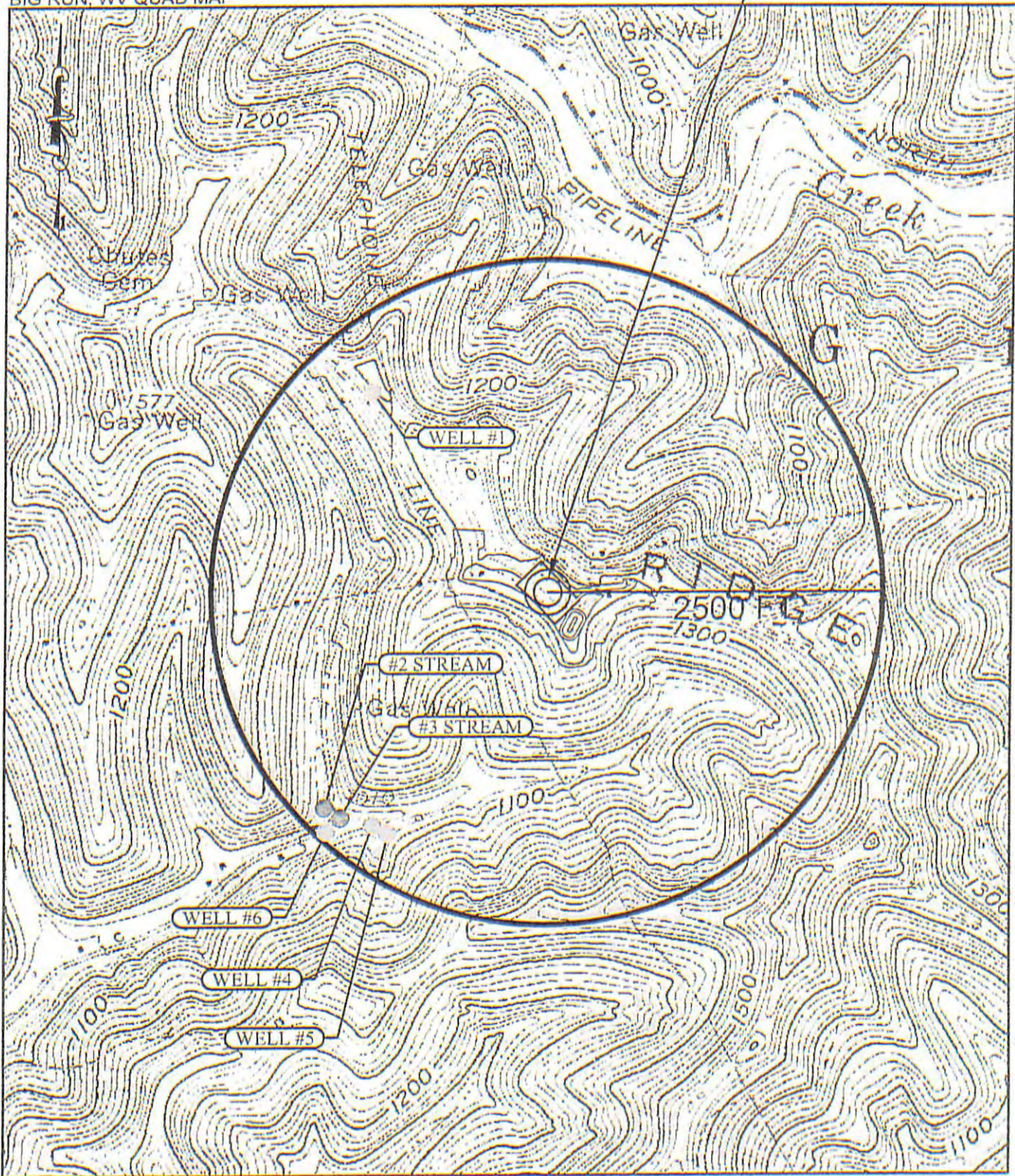
SEP 16 2013  
 WV Department of Environmental Protection

**EQT PRODUCTION**  
**BIG 367 WELL PAD AND ACCESS ROAD**  
WETZEL COUNTY, WV

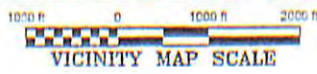
47 10302939

BIG RUN, WV QUAD MAP

PROJECT LOCATION



- EXISTING WELL
- EXISTING STREAM



*Dist  
4-13-13*

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10302939

FORM WW-9

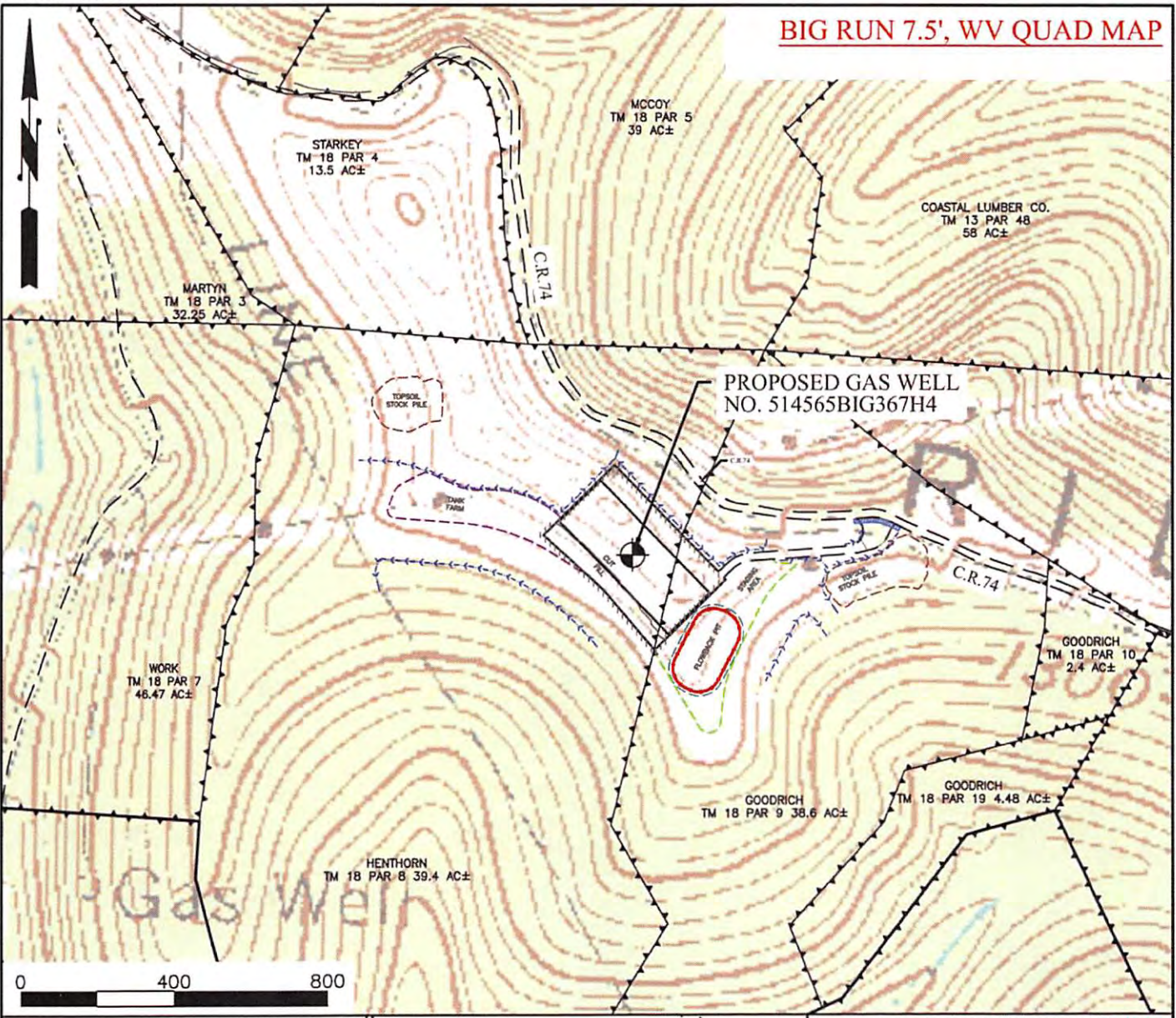
BIG RUN 7.5', WV QUAD MAP

USER: jpitman

LAYOUT: H4-REC PLAN

PLOT DATE/TIME: 9/5/2013 - 3:30pm

CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Drawing\s-well hole rec plan.dwg

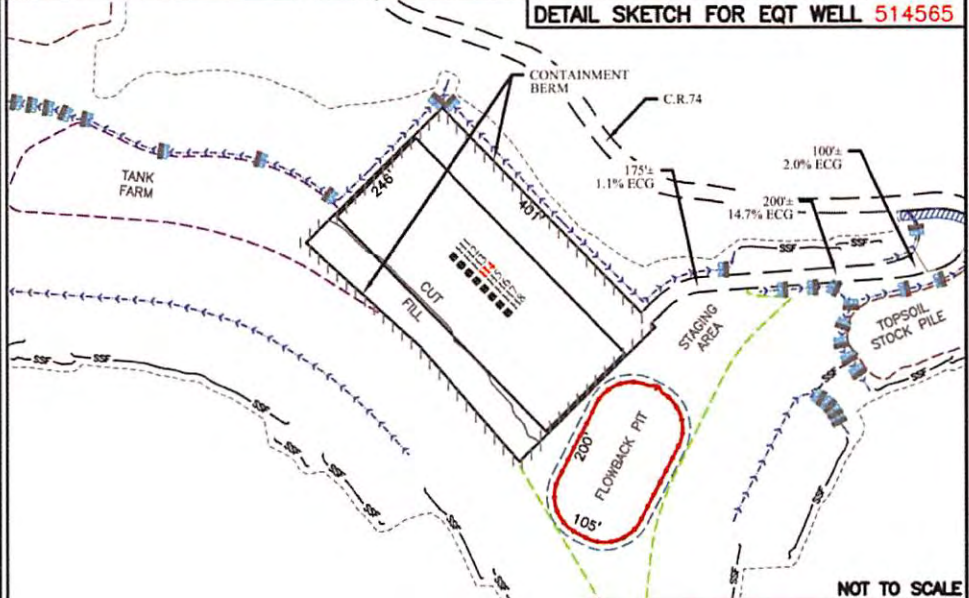


PROPOSED GAS WELL NO. 514565BIG367H4

DETAIL SKETCH FOR EQT WELL 514565

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NOT TO SCALE

NOTE:  
EG= EXISTING GRADE  
ECG= ESTIMATED CONSTRUCTION GRADE

LEGEND

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- COMPACTED FILL WALLS= [Symbol]
- PIT CUT WALLS= [Symbol]
- SUPER SILT FENCE= [Symbol]
- PROPERTY LINE= [Symbol]
- LIMIT OF DISTURBANCE= [Symbol]
- PLANNED FENCE= [Symbol]
- ROAD= [Symbol]
- OPEN DITCH= [Symbol]
- CULVERT= [Symbol]

**THRASHER**  
ENVIRONMENTAL CONSULTING & FIELD SERVICES  
30 COLLIERIA COLLEGE - CLANSBURG, WV 26030  
PHONE (206) 624-4929  
FAX (206) 624-7629

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WELL RECLAMATION PLAN FOR EQT BIG367 H4  
SCALE: AS SHOWN  
DRAWN: JCP  
CHECKED:  
APPROVED:

SHEET No. **4**

PROJECT# 030-2259

SEP 19 2013



## Water Management Plan: Primary Water Sources



WMP-01538

API/ID Number: 047-103-02939

Operator:

EQT Production Company

514565 (BIG367H4)

### 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 07 2013

## Source Summary

WMP- 01538

API Number: 047-103-02939  
514565 (BIG367H4)

Operator: EQT Production Company

### Stream/River

● Source **Ohio River at Hannibal, OH** Wetzel Owner: **Richard Potts/Rich Merryman**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
11/1/2013	11/1/2014	4,700,000		39.655883	-80.86678

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

Max. Pump rate (gpm): **1,500** 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 **S. Fork of Fishing Creek @ Hastings Truck Pad** Wetzel Owner: **Dominion Transmission**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
11/1/2013	11/1/2014	4,700,000		39.553	-80.669

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

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **78.05** Min. Passby (cfs) **10.32**

DEP Comments:

● Source **S. Fork of Fishing Creek @ Jacksonburg Truck Pad** Wetzel Owner: **Ronald Anderson**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
11/1/2013	11/1/2014	4,700,000		39.52609	-80.6338

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

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **73.12** Min. Passby (cfs) **8.86**

DEP Comments:

Source **N. Fork of Fishing Creek @ Pine Grove Truck Pad** Wetzel Owner: **Town of Pine Grove**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:  
11/1/2013 11/1/2014 4,700,000 39.571562 -80.677848

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

Max. Pump rate (gpm): 2,520 Min. Gauge Reading (cfs): 85.35 Min. Passby (cfs) 6.22

DEP Comments:

Source **N. Fork of Fishing Creek @ Edgell Property** Wetzel Owner: **Cathy Edgell**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:  
11/1/2013 11/1/2014 4,700,000 39.58191 -80.622839

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

Max. Pump rate (gpm): 1,260 Min. Gauge Reading (cfs): 78.74 Min. Passby (cfs) 5.76

DEP Comments:

Source **N. Fork of Fishing Creek @ Lydick Property** Wetzel Owner: **Les Lydick**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:  
11/1/2013 11/1/2014 4,700,000 39.57795 -80.59221

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

Max. Pump rate (gpm): 1,260 Min. Gauge Reading (cfs): 75.93 Min. Passby (cfs) 3.28

DEP Comments:



Source **N. Fork of Fishing Creek @ BIG176 Pad** Wetzel Owner: **John W. Kilcoyne**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
11/1/2013	11/1/2014	4,700,000		39.560283	-80.560763

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

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **73.12** Min. Passby (cfs) **2.19**

DEP Comments:

Source **N. Fork of Fishing Creek @ Big 57 Pad** Wetzel Owner: **EQT Corporation**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
11/1/2013	11/1/2014	4,700,000		39.55316	-80.53064

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

Max. Pump rate (gpm): **1,260** Min. Gauge Reading (cfs): **70.31** Min. Passby (cfs) **1.71**

DEP Comments:

## Source Detail

WMP- 01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27512    Source Name: Ohio River at Hannibal, OH  
Richard Potts/Rich Merryman

Source Latitude: 39.655883  
Source Longitude: -80.86678

HUC-8 Code: 5030201

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

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

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

Total Volume from Source (gal): 4,700,000

Max. Pump rate (gpm): 1,500

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

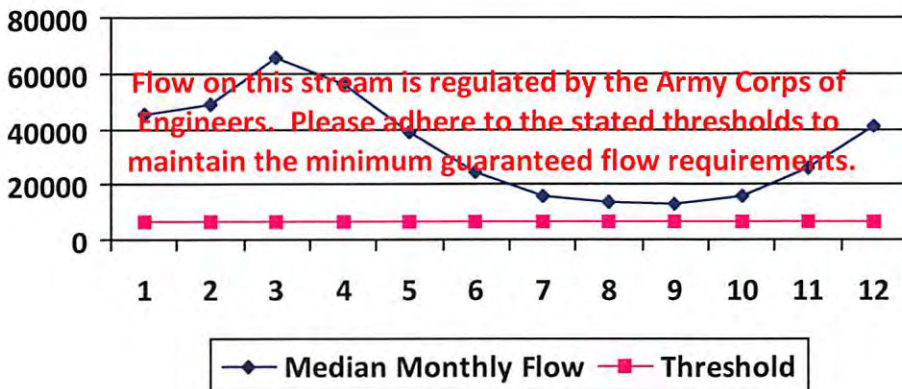
Reference Gaug: 9999999    Ohio River Station: Willow Island Lock & Dam

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):	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- 01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27513 Source Name S. Fork of Fishing Creek @ Hastings Truck Pad  
 Dominion Transmission

Source Latitude: 39.553  
 Source Longitude: -80.669

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 70.02 County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 4,700,000

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?

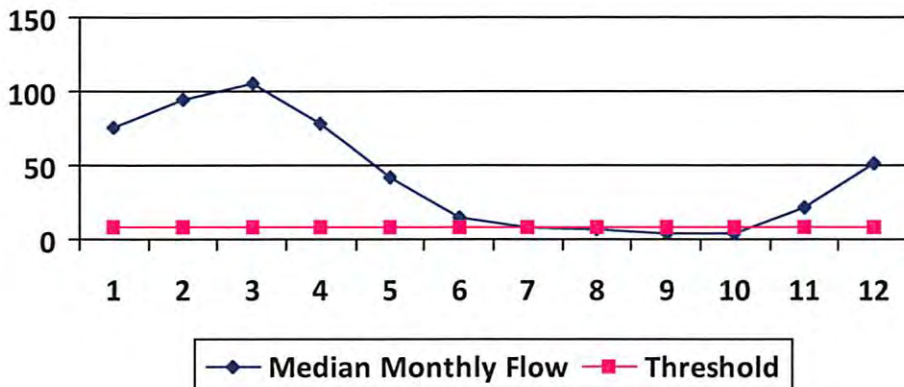
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	75.09	20.87	54.35
2	94.45	20.87	73.72
3	105.69	20.87	84.95
4	78.48	20.87	57.75
5	41.40	20.87	20.66
6	14.46	20.87	-6.28
7	8.18	20.87	-12.56
8	6.74	20.87	-14.00
9	3.45	20.87	-17.29
10	4.33	20.87	-16.40
11	21.17	20.87	0.43
12	51.72	20.87	30.99

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	6.88
Upstream Demand (cfs):	7.74
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	1.72
Ungauged Stream Safety (cfs):	1.72
<b>Min. Gauge Reading (cfs):</b>	<b>78.05</b>
<b>Passby at Location (cfs):</b>	<b>10.32</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.

## Source Detail

WMP-01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27514 Source Name S. Fork of Fishing Creek @ Jacksonburg Truck Pad  
Ronald Anderson

Source Latitude: 39.52609  
Source Longitude: -80.6338

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 45.72 County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 4,700,000

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?

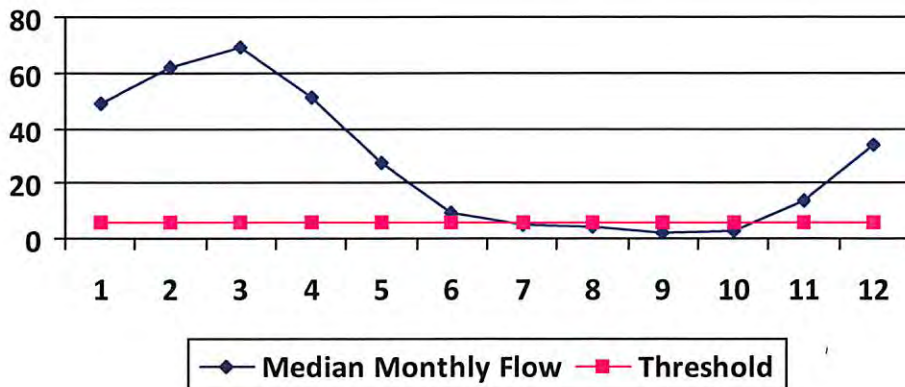
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	49.03	12.36	37.12
2	61.67	12.36	49.76
3	69.01	12.36	57.10
4	51.25	12.36	39.33
5	27.03	12.36	15.12
6	9.44	12.36	-2.47
7	5.34	12.36	-6.57
8	4.40	12.36	-7.51
9	2.25	12.36	-9.66
10	2.83	12.36	-9.08
11	13.82	12.36	1.91
12	33.77	12.36	21.86

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	4.49
Upstream Demand (cfs):	2.81
Downstream Demand (cfs):	2.12
Pump rate (cfs):	2.81
Headwater Safety (cfs):	1.12
Ungauged Stream Safety (cfs):	1.12
<b>Min. Gauge Reading (cfs):</b>	<b>73.12</b>
<b>Passby at Location (cfs):</b>	<b>8.86</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.

## Source Detail

WMP-01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27515    Source Name: N. Fork of Fishing Creek @ Pine Grove Truck Pad  
Town of Pine Grove

Source Latitude: 39.571562  
Source Longitude: -80.677848

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 42.17    County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 4,700,000

Trout Stream?     Tier 3?

Max. Pump rate (gpm): 2,520

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?    Pine Grove

Max. Truck pump rate (gpm): 0

Gauged Stream?

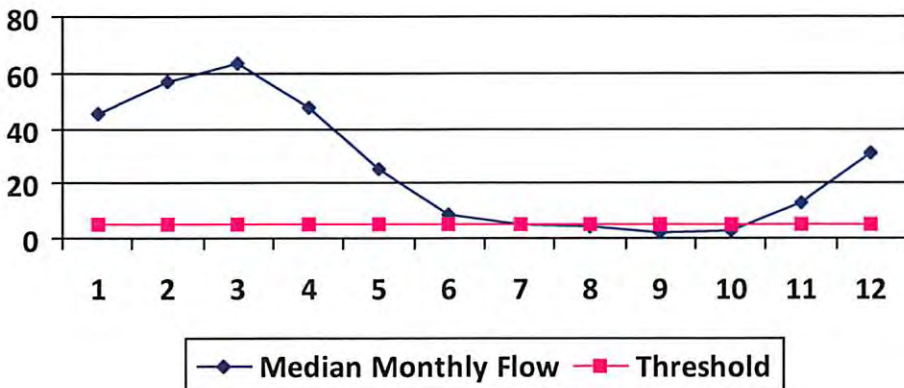
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45.22	24.07	21.25
2	56.89	24.07	32.91
3	63.65	24.07	39.68
4	47.27	24.07	23.29
5	24.93	24.07	0.96
6	8.71	24.07	-15.27
7	4.93	24.07	-19.05
8	4.06	24.07	-19.92
9	2.08	24.07	-21.90
10	2.61	24.07	-21.37
11	12.75	24.07	-11.23
12	31.15	24.07	7.17

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	4.14
Upstream Demand (cfs):	12.24
Downstream Demand (cfs):	0.00
Pump rate (cfs):	5.61
Headwater Safety (cfs):	1.04
Ungauged Stream Safety (cfs):	1.04
Min. Gauge Reading (cfs):	85.35
Passby at Location (cfs):	6.22

"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-01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27516 Source Name N. Fork of Fishing Creek @ Edgell Property  
Cathy Edgell

Source Latitude: 39.58191  
Source Longitude: -80.622839

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 32.23 County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

- Endangered Species?  Mussel Stream?
- Trout Stream?  Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 4,700,000

Max. Pump rate (gpm): 1,260

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm) 0

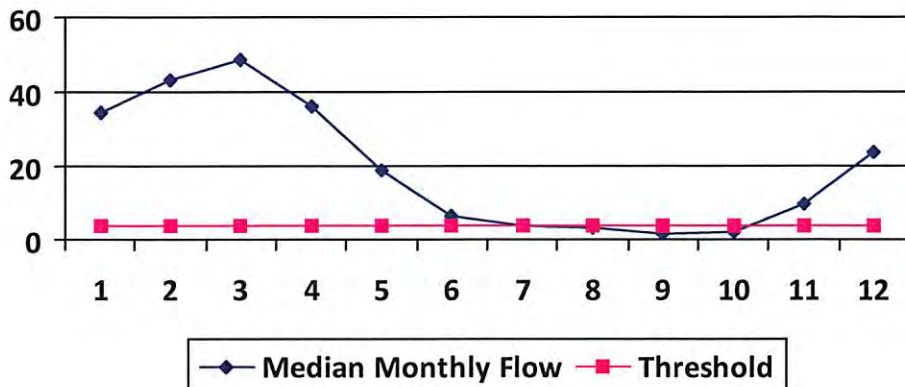
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	34.56	15.99	18.59
2	43.48	15.99	27.51
3	48.65	15.99	32.68
4	36.13	15.99	20.16
5	19.06	15.99	3.09
6	6.65	15.99	-9.32
7	3.77	15.99	-12.20
8	3.10	15.99	-12.87
9	1.59	15.99	-14.38
10	2.00	15.99	-13.98
11	9.74	15.99	-6.23
12	23.81	15.99	7.84

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	3.17
Upstream Demand (cfs):	8.43
Downstream Demand (cfs):	1.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.79
Ungauged Stream Safety (cfs):	0.79
<b>Min. Gauge Reading (cfs):</b>	<b>78.74</b>
<b>Passby at Location (cfs):</b>	<b>5.75</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.

## Source Detail

WMP- 01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27517 Source Name N. Fork of Fishing Creek @ Lydick Property  
Les Lydick

Source Latitude: 39.57795  
Source Longitude: -80.59221

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 15.46 County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?  Mussel Stream?

Total Volume from Source (gal): 4,700,000

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?

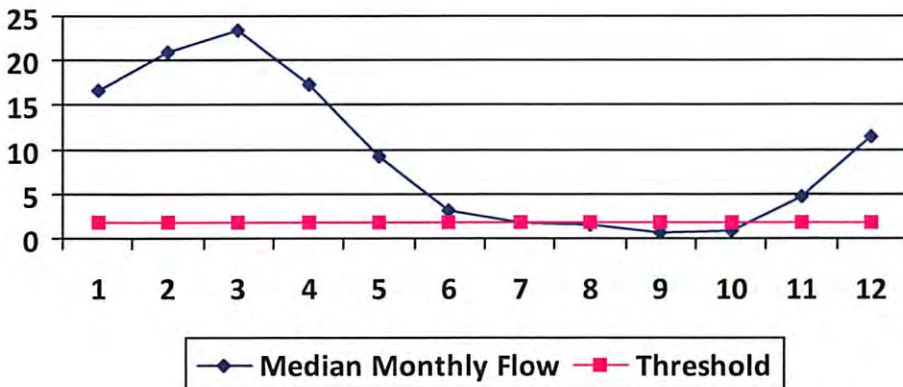
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	16.58	10.71	6.04
2	20.86	10.71	10.32
3	23.34	10.71	12.80
4	17.33	10.71	6.79
5	9.14	10.71	-1.40
6	3.19	10.71	-7.34
7	1.81	10.71	-8.73
8	1.49	10.71	-9.05
9	0.76	10.71	-9.78
10	0.96	10.71	-9.58
11	4.67	10.71	-5.86
12	11.42	10.71	0.88

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	1.52
Upstream Demand (cfs):	5.62
Downstream Demand (cfs):	1.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.38
Ungauged Stream Safety (cfs):	0.38
Min. Gauge Reading (cfs):	75.93
Passby at Location (cfs):	3.28

"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- 01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27518    Source Name: N. Fork of Fishing Creek @ BIG176 Pad  
John W. Kilcoyne

Source Latitude: 39.560283  
Source Longitude: -80.560763

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 8.09    County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 4,700,000

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?

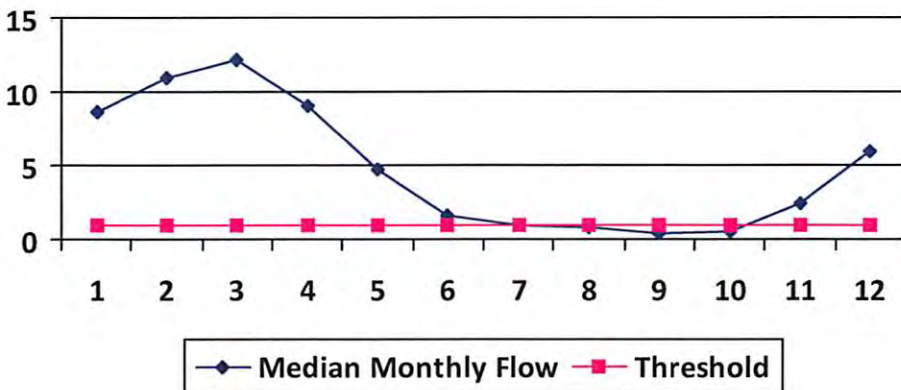
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	8.68	6.81	2.21
2	10.91	6.81	4.45
3	12.21	6.81	5.75
4	9.07	6.81	2.60
5	4.78	6.81	-1.68
6	1.67	6.81	-4.79
7	0.95	6.81	-5.52
8	0.78	6.81	-5.69
9	0.40	6.81	-6.07
10	0.50	6.81	-5.96
11	2.45	6.81	-4.02
12	5.98	6.81	-0.49

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	0.79
Upstream Demand (cfs):	2.81
Downstream Demand (cfs):	1.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.20
Ungauged Stream Safety (cfs):	0.20
<b>Min. Gauge Reading (cfs):</b>	<b>73.12</b>
<b>Passby at Location (cfs):</b>	<b>2.19</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.



## Source Detail

WMP-01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

Source ID: 27519    Source Name: N. Fork of Fishing Creek @ Big 57 Pad  
EQT Corporation

Source Latitude: 39.55316  
Source Longitude: -80.53064

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 4.77    County: Wetzel

Anticipated withdrawal start date: 11/1/2013

Anticipated withdrawal end date: 11/1/2014

Endangered Species?     Mussel Stream?

Total Volume from Source (gal): 4,700,000

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?

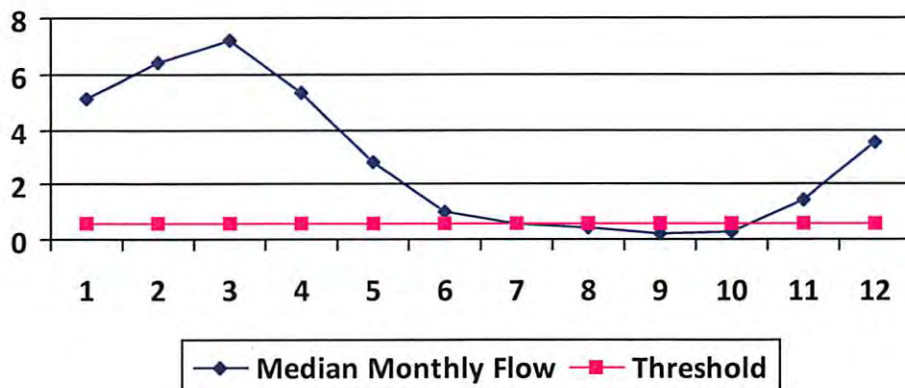
Reference Gaug: 3114500    MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	5.12	3.51	1.62
2	6.43	3.51	2.94
3	7.20	3.51	3.71
4	5.35	3.51	1.85
5	2.82	3.51	-0.67
6	0.98	3.51	-2.51
7	0.56	3.51	-2.93
8	0.46	3.51	-3.03
9	0.24	3.51	-3.26
10	0.30	3.51	-3.20
11	1.44	3.51	-2.05
12	3.52	3.51	0.03

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	0.47
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	1.00
Pump rate (cfs):	2.81
Headwater Safety (cfs):	0.12
Ungauged Stream Safety (cfs):	0.12
Min. Gauge Reading (cfs):	70.31
Passby at Location (cfs):	1.70

"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.



# Water Management Plan: Secondary Water Sources



WMP- 01538

API/ID Number: 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

### 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:	27520	Source Name	Groundwater Well TW#1		Source start date:	11/1/2013
					Source end date:	11/1/2014
Source Lat:	39.56059	Source Long:	-80.56027	County	Wetzel	
Max. Daily Purchase (gal)		Total Volume from Source (gal):			4,700,000	

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.

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Source ID:	27521	Source Name	Groundwater Well TW#5	Source start date:	11/1/2013	
				Source end date:	11/1/2014	
	Source Lat:	39.553434	Source Long:	-80.528871	County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	4,700,000		

DEP Comments:

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**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:	27522	Source Name	YOHO Centralized Freshwater Impoundment		Source start date:	11/1/2013
					Source end date:	11/1/2014
	Source Lat:	39.56092	Source Long:	-80.61432	County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):			4,700,000
DEP Comments:	103-FWC-00001					

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-1068

Source ID:	27523	Source Name	Carlin Centralized Freshwater Impoundment		Source start date:	11/1/2013
					Source end date:	11/1/2014
	Source Lat:	39.51168	Source Long:	-80.598605	County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):			4,700,000
DEP Comments:	103-FWC-00002					

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-1321

WMP-01538

API/ID Number 047-103-02939

Operator: EQT Production Company

514565 (BIG367H4)

**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: 27524	Source Name	BIG176 Centralized Freshwater Impoundment	Source start date:	11/1/2013
			Source end date:	11/1/2014
	Source Lat:	39.561403	Source Long:	-80.561554
			County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	4,700,000
DEP Comments:	103-FWC-00003			

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-1322

Source ID: 27525	Source Name	Sycoc Centralized Freshwater Impoundment	Source start date:	11/1/2013
			Source end date:	11/1/2014
	Source Lat:	39.56436	Source Long:	-80.625644
			County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	4,700,000
DEP Comments:	103-FWC-00004			

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-1222

**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: 27526	Source Name	Mobley Centralized Freshwater Impoundment	Source start date:	11/1/2013
			Source end date:	11/1/2014
	Source Lat:	39.553653	Source Long:	-80.52971
			County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	4,700,000
DEP Comments:	103-FWC-00006			

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-1534

Source ID: 27527	Source Name	Richwood Centralized Freshwater Impoundment	Source start date:	11/1/2013
			Source end date:	11/1/2014
	Source Lat:	39.551137	Source Long:	-80.605342
			County	Wetzel
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	4,700,000
DEP Comments:	103-FWC-00007			

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-1535

**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.

**Recycled Frac Water**

Source ID: 27528 Source Name Various

Source start date: 11/1/2013

Source end date: 11/1/2014

Source Lat:

Source Long:

County

Max. Daily Purchase (gal)

Total Volume from Source (gal): 4,700,000

DEP Comments:

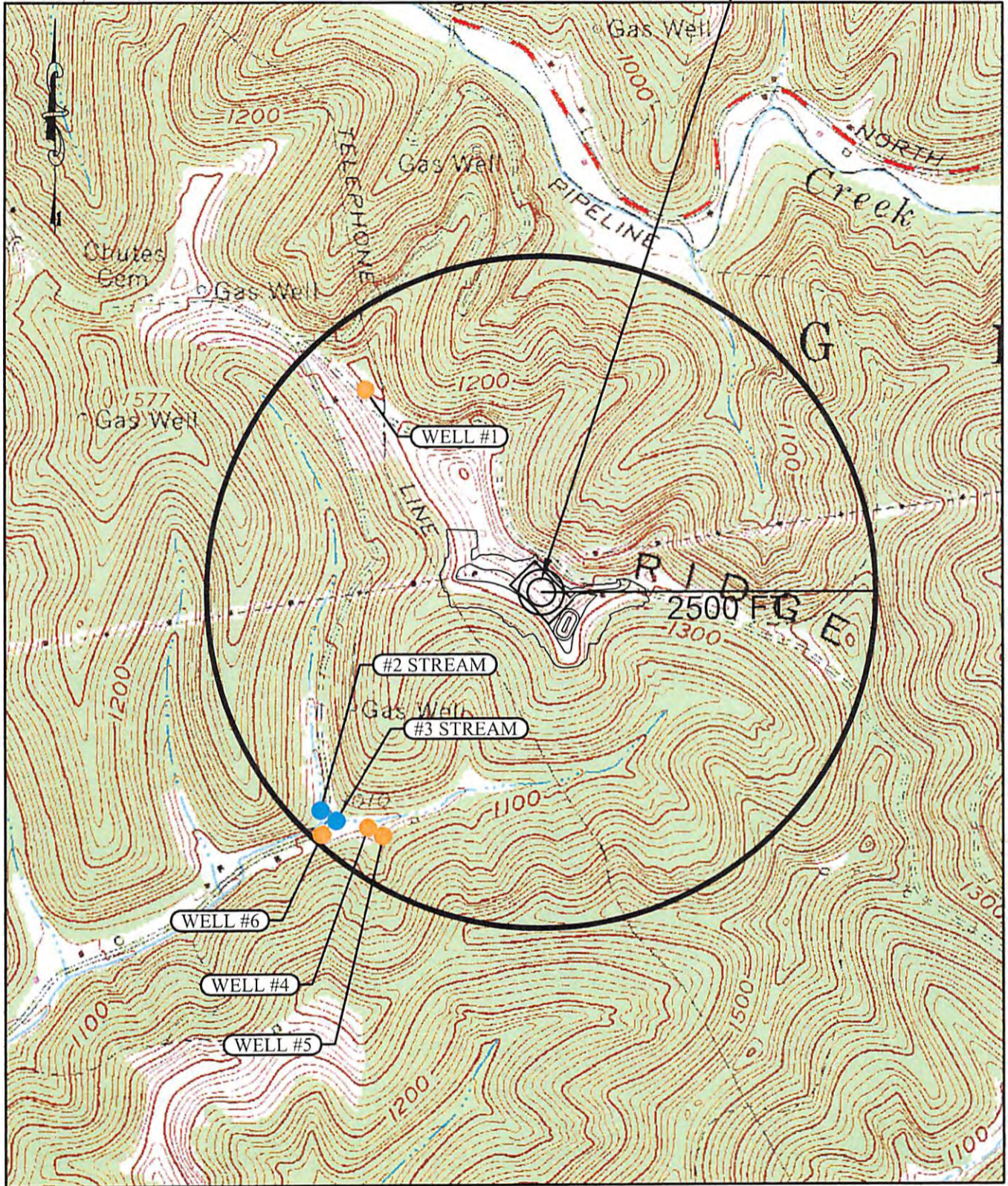
**EQT PRODUCTION  
BIG 367 WELL PAD AND ACCESS ROAD  
WETZEL COUNTY, WV**

103 02939

*Plat spotted*

BIG RUN, WV QUAD MAP

PROJECT LOCATION



- EXISTING WELL
- EXISTING STREAM



RECEIVED  
Office of Oil & Gas  
SEP 12 2013  
WV Department of  
Environmental Protection



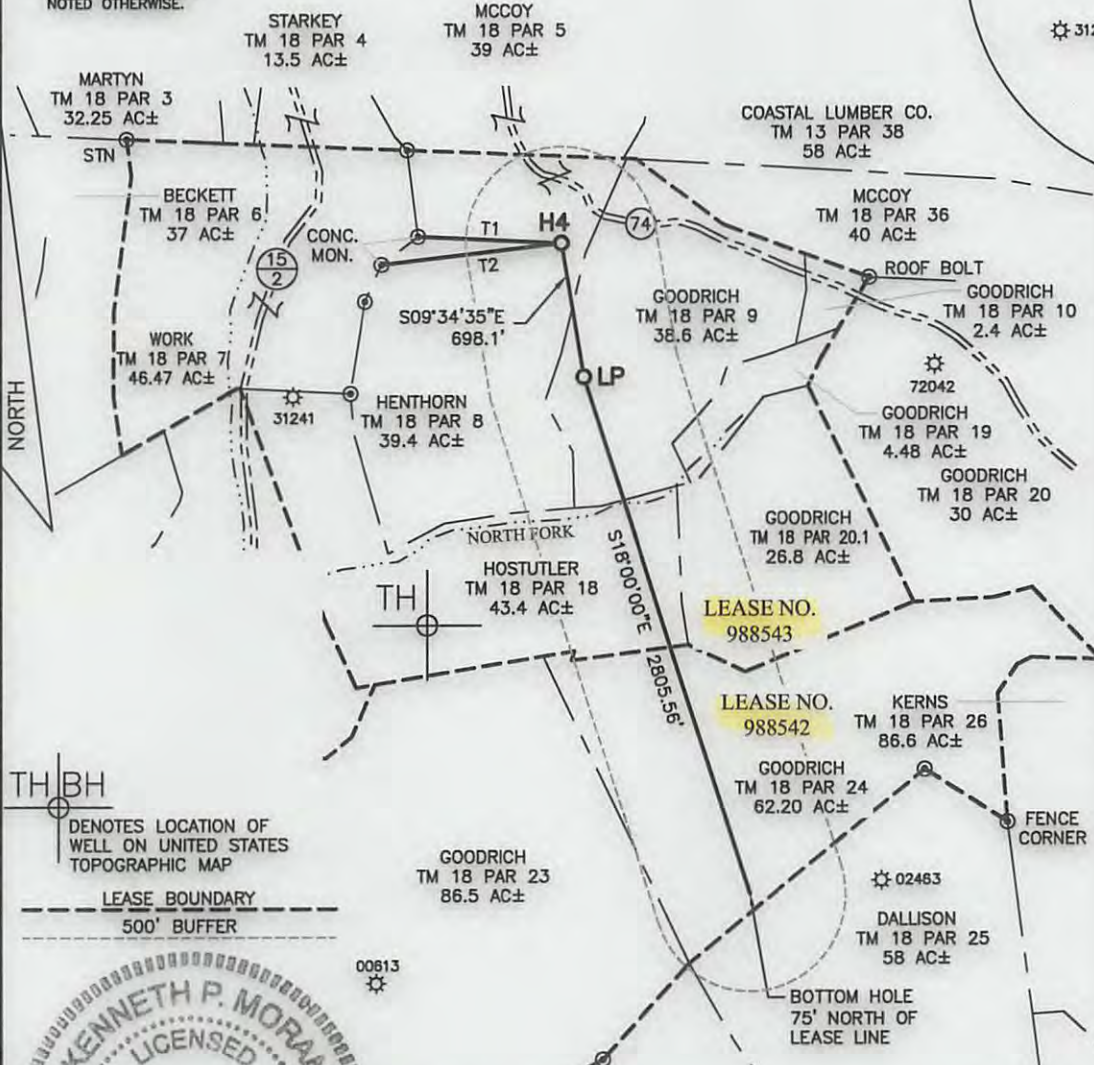
# EQT WELL NO. 514565

LATITUDE 39° 35' 00"

**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 H4.

⊙= MONUMENT FOUND IRON REBAR UNLESS NOTED OTHERWISE.



**WELL 514565 TOP HOLE**  
 STATE PLANE COORDINATES (NAD 27 NORTH ZONE)  
 N:386644.959  
 E:1695471.180  
 LAT:39.556623  
 LON:80.579891

UTM COORDINATES (NAD 83-METER)  
 N:4378632.888  
 E:536091.250

**WELL 514565 LAUNCH POINT**  
 STATE PLANE COORDINATES (NAD 27 NORTH ZONE)  
 N:385956.588  
 E:1695587.344  
 LAT:39.554737  
 LON:80.579450

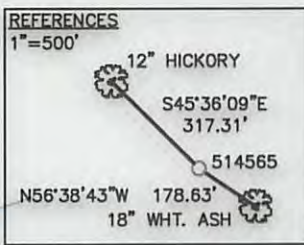
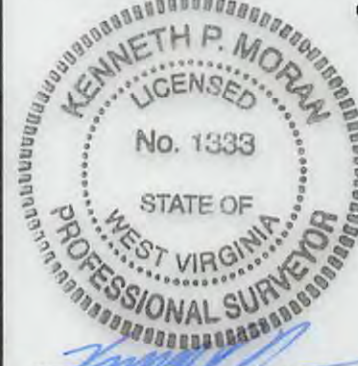
UTM COORDINATES (NAD 83-METER)  
 N:4378423.759  
 E:536130.134

**WELL 514565 BOTTOM HOLE**  
 STATE PLANE COORDINATES (NAD 27 NORTH ZONE)  
 N:383288.342  
 E:1696454.404  
 LAT:39.547441  
 LON:80.576262

UTM COORDINATES (NAD 83-METER)  
 N:4377615.263  
 E:536407.831

TH BH  
 DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAP

LEASE BOUNDARY 500' BUFFER



LINE	BEARING	DIST.
T1	S87°22'01"E	749.34'
T2	N83°18'29"E	945.59'



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	STATE OF WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION OFFICE OF OIL & GAS	DATE AUGUST 26, 2013
SCALE: 1"=1000'		OPERATOR'S WELL NO. 514565
MINIMUM DEGREE OF ACCURACY: 1 in 2500		API WELL NO. 47 - 103 - 2939
PROVEN SOURCE OF ELEVATION: OPUS SURVEY GRADE GPS		STATE COUNTY PERMIT H6A
<b>WELL TYPE:</b> OIL <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> (IF "GAS"), PRODUCTION <input checked="" type="checkbox"/> STORAGE <input type="checkbox"/> DEEP <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/> <b>LOCATION:</b> ELEVATION: EG: 1,474.3' PROP: 1,442.90' WATER SHED: NORTH FORK OF FISHING CREEK <b>DISTRICT:</b> GRANT <b>COUNTY:</b> WETZEL <b>QUADRANGLE:</b> BIG RUN <b>ACREAGE:</b> 39.4 AC± <b>SURFACE OWNER:</b> DENCIL HENTHORN ET AL <b>LEASE ACREAGE:</b> 297.5/280 AC± <b>OIL &amp; GAS ROYALTY OWNER:</b> SHIBEN ESTATE, INC., CNX GAS CO., LLC <b>LEASE NO.</b> 988543/988542 <b>PROPOSED WORK:</b> DRILL <input checked="" type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____ <b>PLUG AND ABANDON</b> _____ <b>CLEAN OUT AND REPLUG</b> _____ <b>TARGET FORMATION:</b> GENESEO <b>ESTIMATED DEPTH:</b> TVD/MD <b>WELL OPERATOR:</b> EQT PRODUCTION <b>DESIGNATED AGENT:</b> REX C. RAY <b>ADDRESS:</b> 115 PROFESSIONAL PLACE BRIDGEPORT, WV 26330		



30 COLUMBIA BLVD.  
 CLARKSBURG, WV 26301  
 PHONE 304-624-4108

USER: kpoth  
 LAYOUT: H4 (2)  
 PLOT DATE/TIME: 8/23/2013 - 9:56am  
 CAD FILE: R:\030-2259 EQT BIG367 Well Pad and Access Rd\Survey\030-2259 BIG 367 -EQT.dwg