



**west virginia** department of environmental protection

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

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

May 03, 2016

**WELL WORK PERMIT**

**Horizontal 6A Well**

This permit, API Well Number: 47-10303058, 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: 512916

Farm Name: COASTAL FOREST RESOURCES

**API Well Number: 47-10303058**

**Permit Type: Horizontal 6A Well**

Date Issued: 05/03/2016

**Promoting a healthy environment.**

**05/06/2016**

# PERMIT CONDITIONS

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

## CONDITIONS

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

WW-6B  
(04/15)

API NO. 47-103 - 03058  
OPERATOR WELL NO. 512916  
Well Pad Name: BIG177

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

1) Well Operator: EQT Production Company 306686 103-Wetzel 4-Grant 254-Big Run  
Operator ID County District Quadrangle

2) Operator's Well Number: 512916 Well Pad Name: BIG177

3) Farm Name/Surface Owner: Coastal Forest Resources  
DBA Coastal Timberlands Co. Public Road Access: Rt. 19

4) Elevation, current ground: 809.0 Elevation, proposed post-construction: 811.0

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No yes

*DMH*  
*2-19-16*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Middlesex, 6626, 45, 2620

8) Proposed Total Vertical Depth: 6626

9) Formation at Total Vertical Depth: Middlesex

10) Proposed Total Measured Depth: 12660

11) Proposed Horizontal Leg Length: 5430

12) Approximate Fresh Water Strata Depths: 170,280,480,630

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

14) Approximate Saltwater Depths: 1135, 1450

15) Approximate Coal Seam Depths: 100,153,431,541

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

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

**Received**  
**Office of Oil & Gas**  
**FEB 25 2016**

WW-6B  
(04/15)

API NO. 47- 103 - 03058  
 OPERATOR WELL NO. 512916  
 Well Pad Name: BIG177

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	26	New	A-500	85.6	80	80	98 ft <sup>3</sup> / CTS
Fresh Water	18 5/8	New	J-55	87.5	320	320	519 ft <sup>3</sup> / CTS
Coal	13 3/8	New	J-55	54.5	765	765	644 ft <sup>3</sup> / CTS
Intermediate	9 5/8	New	A-500	40	2728	2728	1072 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	12660	12660	500' above top producing zone
Tubing	2 3/8		J-55	4.7			May not be run, if run set 100' from TD.
Liners							

*DmH*  
*Q-19-16*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	30	.312	-	18	Class A	1.18
Fresh Water	18 5/8	24	.435	2250	1800	See Variance	1.19
Coal	13 3/8	17 1/2	.38	2700	2160	See Variance	1.19
Intermediate	9 5/8	12 3/8	.395	3950	3160	Class H	1.07
Production	5 1/2	8 1/2	.361	12640	10112	Class H	1.07/1.86
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:	n/a			
Sizes:	n/a			
Depths Set:	n/a			

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WW-6B  
(10/14)

API NO. 47- 103 - 03058

OPERATOR WELL NO. 512916

Well Pad Name: BIG177

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

Drill and complete a new horizontal well in the Middlesex Formation. Drill the vertical to an approximate depth of 5387'. Kick off and drill curve. Drill the lateral in the Middlesex. Cement casing.

DAH  
2-18-16

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 internal casing pressure is expected to be approximately 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 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): 6.9

22) Area to be disturbed for well pad only, less access road (acres): 6.5

23) Describe centralizer placement for each casing string:

- Freshwater: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Coal: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.
- Production: One solid body cent spaced every joint from production casing shoe to KOP

24) Describe all cement additives associated with each cement type:

Conductor: Class A no additives  
 Freshwater (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. .25% Flake Loss Circulation Material (LCM)  
 Coal (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. .25% Flake Loss Circulation Material (LCM)  
 Intermediate (Class H Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. 0.25% flake. Loss Circulation Material (LCM) .6% Super FL-300 (fluid loss/lengthens thickening time)  
 Production:  
 Lead (Type H Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50:50 POZ (extender)  
 Tail (Type H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation.  
 60 % Calcium Carbonate. Acid solubility.

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25) Proposed borehole conditioning procedures:

FEB 25 2016

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

\*Note: Attach additional sheets as needed.

Well 512916(BIG177H4)

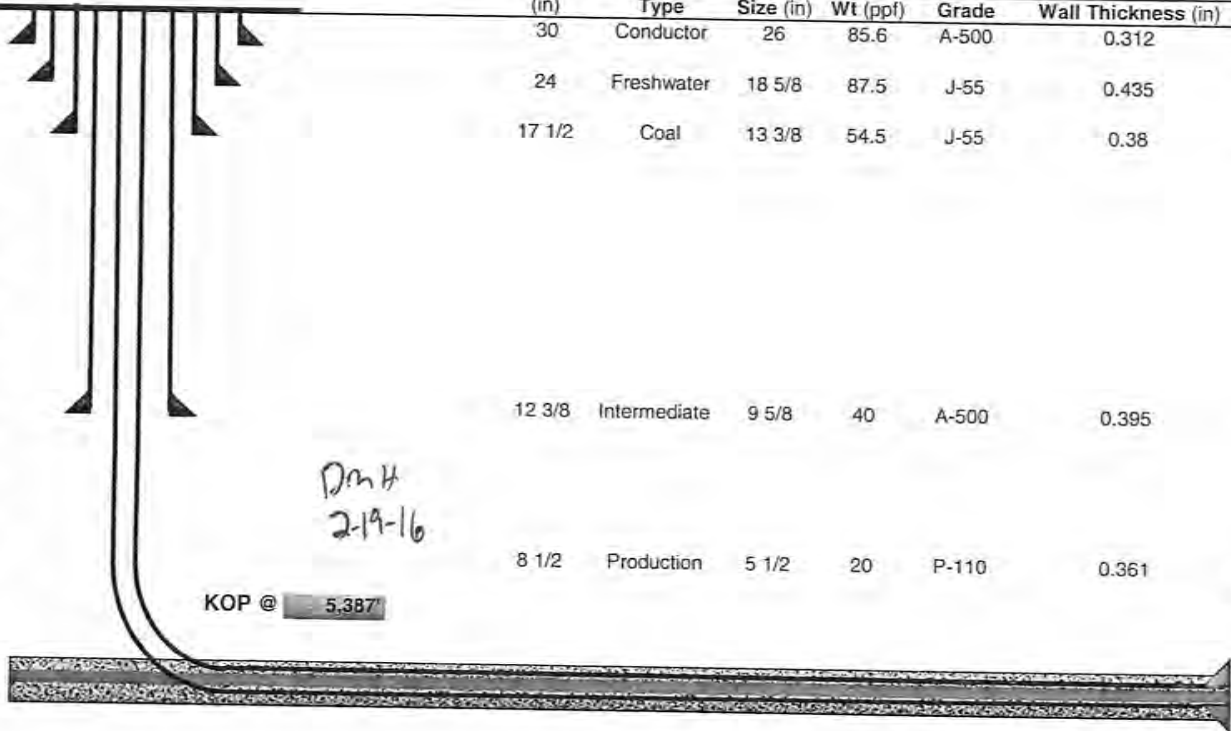
EQT Production

Big Run Quad  
Wetzel County, WV

Azimuth 332  
Vertical Section 5273

Note: Diagram is not to scale

Formations	Top TVD	Base TVD	Hole Size (in)	Casing				Top of Cement	Method
				Type	Size (in)	Wt (ppf)	Grade		
Conductor	80		30	Conductor	26	85.6	A-500	0.312	Surface Displacement
Freshwater Casing	320		24	Freshwater	18 5/8	87.5	J-55	0.435	Surface Displacement
Base Fresh Water	630								
Coal Casing	765		17 1/2	Coal	13 3/8	54.5	J-55	0.38	Surface Displacement
<b>Maxton</b>	1692	1736							
<b>Big Lime</b>	1808	1861							
<b>Weir</b>	2190	2218							
<b>Gantz</b>	2364	2402							
Base Red Rock	2546								
<b>Fifty foot</b>	2515	2560							
<b>Thirty foot</b>	2586	2620							
<b>Gordon</b>	2633	2678							
Intermediate Casing	2728		12 3/8	Intermediate	9 5/8	40	A-500	0.395	Surface Displacement
<b>Forth Sand</b>	2720	2731							
<b>Bayard</b>	2772	2845							
<b>Warren</b>	3229	3275							
<b>Speechley</b>	3379	3393							
<b>Balltown A</b>	3768	3785							
<b>Riley</b>	4228	4241							
<b>Benson</b>	4880	4919							
<b>Alexander</b>	5228	5254							
<b>Sonyea</b>	6418	6588							
<b>Middlesex</b>	6588	6633							
Production Casing	12660	MD	8 1/2	Production	5 1/2	20	P-110	0.361	500' above top Producing Zone Displacement
<b>Genesee</b>	6633	6710							
<b>Genesee</b>	6710	6744							
<b>Tully</b>	6744	6767							
<b>Hamilton</b>	6767	6859							
<b>Marcellus</b>	6859	6911							
<b>Onondaga</b>	6911								



Land curve @ 6,626' ft TVD  
7,230' ft MD

Est. TD @ 6,626' ft TVD  
12,660' ft MD

5,430' ft Lateral

Proposed Well Work:  
Drill and complete a new horizontal well in the Middlesex formation.  
Drill the vertical to an approximate depth of 5387'.  
Kick off and drill curve. Drill lateral in the Middlesex. Cement casing.

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FEB 25 2016

4710303058



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west virginia department of environmental protection

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

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

March 18, 2014

Nabors Completion & Production Services Company  
1380 Route 286 Hwy E #121  
Indiana PA 15701

Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

- Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,

James Peterson  
Environmental Resources Specialist / Permitting

Promoting a healthy environment.

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Office of Oil & Gas  
FEB 25 2016

05/06/2016



west virginia department of environmental protection

Office of Oil and Gas  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0450  
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Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
dep.wv.gov

**BEFORE THE OFFICE OF OIL AND GAS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE OF WEST VIRGINIA**

**IN THE MATTER OF A VARIANCE FROM ) ORDER NO. 2014 - 17**  
**REGULATION 35 CSR § 4-11.4/11.5/14.1 )**  
**AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE )**  
**THE OPERATIONAL )**  
**REGULATIONS OF CEMENTING OIL )**  
**AND GAS WELLS )**

**REPORT OF THE OFFICE**

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

**FINDINGS OF FACT**

- 1.) Nabors Completion & Production Services Co. proposes the following cement blend:
  - 2% Calcium Chloride (Accelerator)
  - 0.25 % Super Flake (Lost Circulation)
  - 94% Type "1" Cement
  - 5.20 % Water
- 2.) Laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

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**CONCLUSIONS OF LAW**

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

**ORDER**

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

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



James Martin, Chief  
Office of Oil and Gas

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Office of Oil & Gas

FEB 25 2016

05/06/2016

WW-9  
(2/15)

API Number 47 - 103 - 03058  
Operator's Well No. 512916

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name EQT Production Company OP Code 306686

Watershed (HUC 10) Willey Fork of North Fork Fishing Creek Quadrangle Big Run

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

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: n/a

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

Proposed Disposal Method For Treated Pit Wastes:

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

*DMH*  
*2-19-16*

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

Will closed loop system be used? If so, describe: \_\_\_\_\_

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

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

Additives to be used in drilling medium? See Attached

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

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

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

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

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

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

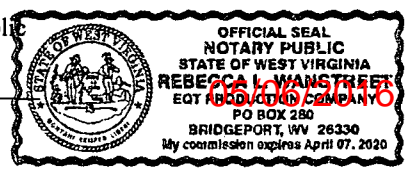
Company Official Signature *Victoria J. Roark*  
Company Official (Typed Name) Victoria J. Roark  
Company Official Title Permitting Supervisor

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Office of Oil & Gas  
FEB 25 2016

Subscribed and sworn before me this 10 day of February, 20 16

Rebecca L. Wanstreet Notary Public

My commission expires 4-7-20



WW-9

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

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

Additives to be used in drilling medium?

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

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<b>EQT Production Water plan</b> <b>Offsite disposals for Marcellus wells</b>
----------------------------------------------------------------------------------

**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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Proposed Revegetation Treatment: Acres Disturbed 6.9 Prevegetation pH 5.2

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type Granular 10-20-20

Fertilizer amount 1/3 lbs/acre

Mulch 2 Tons/acre

Seed Mixtures

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

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: 

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

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FEB 25 2016

Title: Oil + Gas Inspector

Date: 2-19-16

Field Reviewed?  Yes  No



Where energy meets innovation.™

# Site Specific Safety Plan

EQT BIG177 Pad

Jacksonburg

Wetzel County, WV

For Wells:

512915 512916

Date Prepared:

February 9, 2016

[Signature]  
EQT Production

[Signature]  
WV Oil and Gas Inspector

Title

Title

Date

Date

2-10-16

2-19-16

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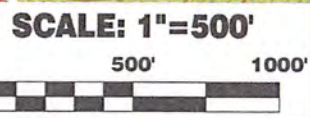
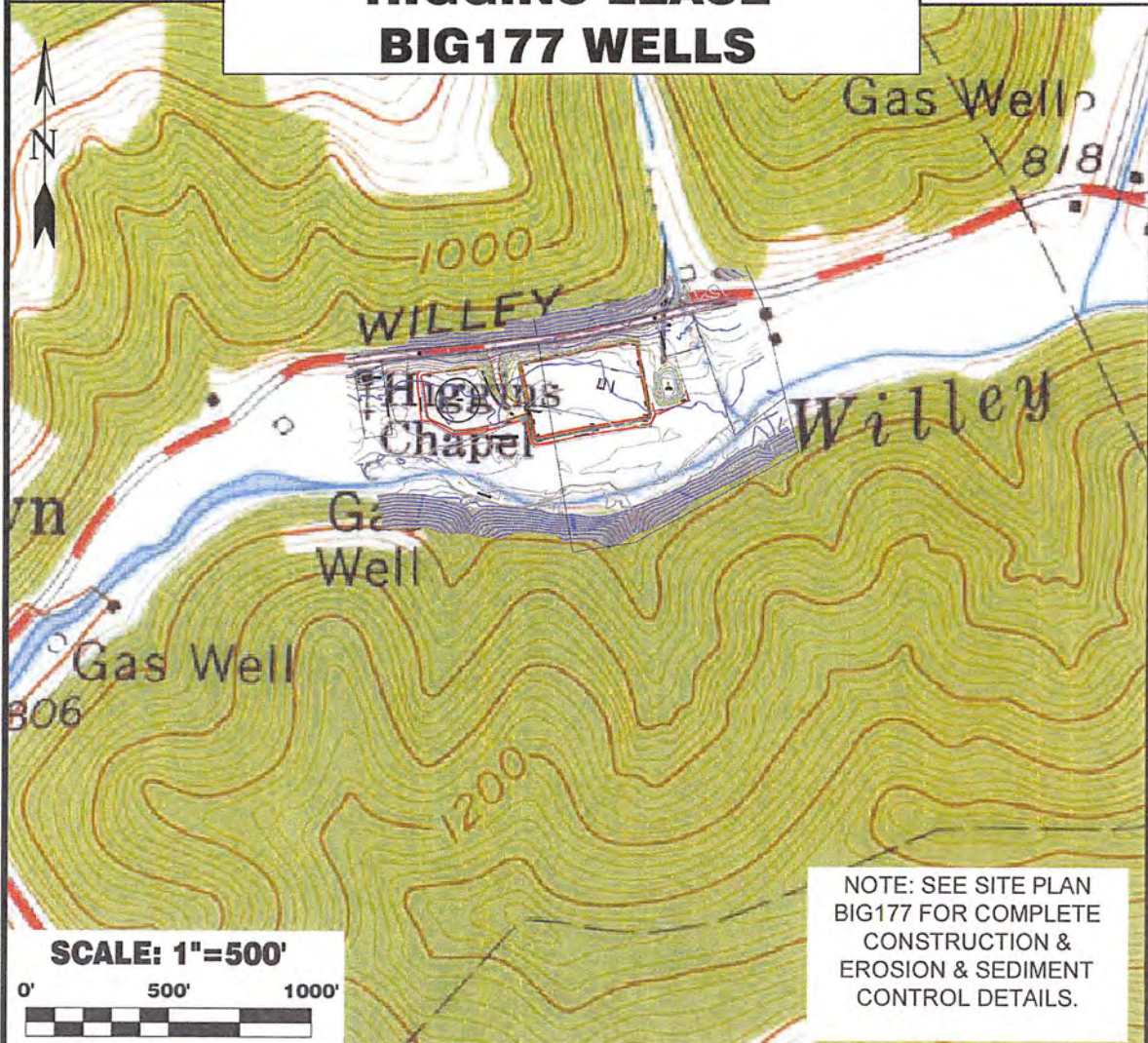
FEB 25 2016

103-03058

Form WW-9

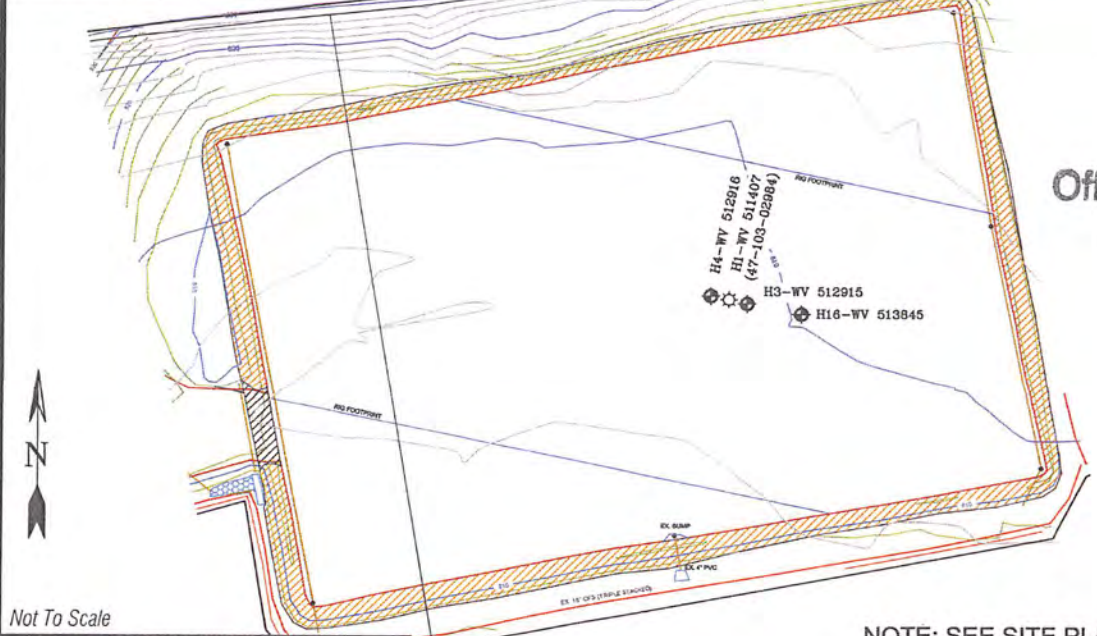
# HIGGINS LEASE BIG177 WELLS

page of



NOTE: SEE SITE PLAN  
BIG177 FOR COMPLETE  
CONSTRUCTION &  
EROSION & SEDIMENT  
CONTROL DETAILS.

Detail Sketch for Proposed BIG177 Wells



Not To Scale

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**Professional Energy Consultants**  
A DIVISION OF SMITHLAND SURVEYING, INC.

**SLS**  
SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.

(004) 482-5534 WWW.SLSURVEYS.COM

DRAWN BY K.D.W.	FILE NO. 6806	DATE 09-09-15	CADD FILE: 680680177REC.dwg
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NOTE: SEE SITE PLAN  
BIG177 FOR COMPLETE  
CONSTRUCTION &  
EROSION & SEDIMENT  
CONTROL DETAILS.

05/06/2016

WW-6A1  
(5/13)

Operator's Well No. 512916

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

see attached

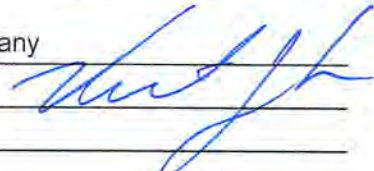
**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

**Received  
Office of Oil & Gas  
FEB 25 2016**

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: EQT Production Company  
 By: Victoria J. Roark   
 Its: Permitting Supervisor





103-03058

February 24, 2016

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

Re: BIG177, well 512916 (47-103-003058)  
Grant District, Wetzel County

Dear Mr. Martin,

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark  
Permitting Supervisor-WV

Received  
Office of Oil & Gas  
FEB 25 2016

05/06/2016

## Well Designation: - 512916

Lease No.	Leasehold - Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
103021	<u>Coastal Forest Resources Co DBA Coastal Timberlands Co. (current royalty owner)</u> ✓		min pd 1/8th	
	James V. Higgins (original lessor)	The Philadelphia Company of West Va.		DB 60/414
	The Philadelphia Company of West Va.	Pittsburgh & West Virginia Gas Company		DB 98/146
	Pittsburgh & West Virginia Gas Company	Equitable Gas Company		DB 187/321
	Equitable Gas Company	Equitrans, Inc.		OG 71A/453
	Equitrans, Inc.	Equitrans, LP		DB 105/908
	Equitrans, L.P.	EQT Production Company		DB 131A/81
993308	✓ Coastal Forest Resources Co.; d/b/a Coastal Timberlands Co., etal(original lessor and current royalty owner)	EQT Production Company	min pd 1/8th	OG147A/664
1009272	✓ Kevin S. Goff (original lessor and current royalty owner)	EQT Production Company	min pd 1/8th	OG 163A/843
102894	<u>EQT Production Company (current royalty owner)</u> ✓		in fee	
	J. B. Hicks (original lessor)	The Philadelphia Company of West Va.		OG 47/441
	The Philadelphia Company of West Va.	Pittsburgh & West Virginia Gas Company		OG 22A/352
	Pittsburgh & West Virginia Gas Company	Equitable Gas Company		DB 187/321
	Equitable Gas Company	Equitrans, Inc.		OG 71A/453
	Equitrans, Inc.	Equitrans, LP		DB 105/908
	Equitrans, L.P.	EQT Production Company		DB 131A/81

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Office of Oil & Gas  
FEB 25 2016

05/06/2016

COASTAL FOREST RESOURCES COMPANY  
d/b/a COASTAL TIMBERLANDS COMPANY  
178 ACRES±

LATITUDE 39° 35' 00"

### EQT PRODUCTION COMPANY HIGGINS LEASE 217 ACRES± WELL NO. WV 512916

NAD'27 S.P.C.(FT) N. 396,140.102 E. 1,694,435.934  
NAD'27 GEO. LAT-(N) 39.582573 LONG-(W) 80.584155  
NAD'83 UTM (M) N. 4,381,520.422 E. 535,727.679

**LANDING POINT**

NAD'27 S.P.C.(FT) N. 401,413.33 E. 1,693,381.03  
NAD'27 GEO. LAT-(N) 39.583853 LONG-(W) 80.587918  
NAD'83 UTM (M) N. 4,381,660.93 E. 535,403.86

**BOTTOM HOLE**

NAD'27 S.P.C.(FT) N. 401,413.33 E. 1,690,831.80  
NAD'27 GEO. LAT-(N) 39.589930 LONG-(W) 80.597170  
NAD'83 UTM (M) N. 4,383,108.61 E. 534,602.87

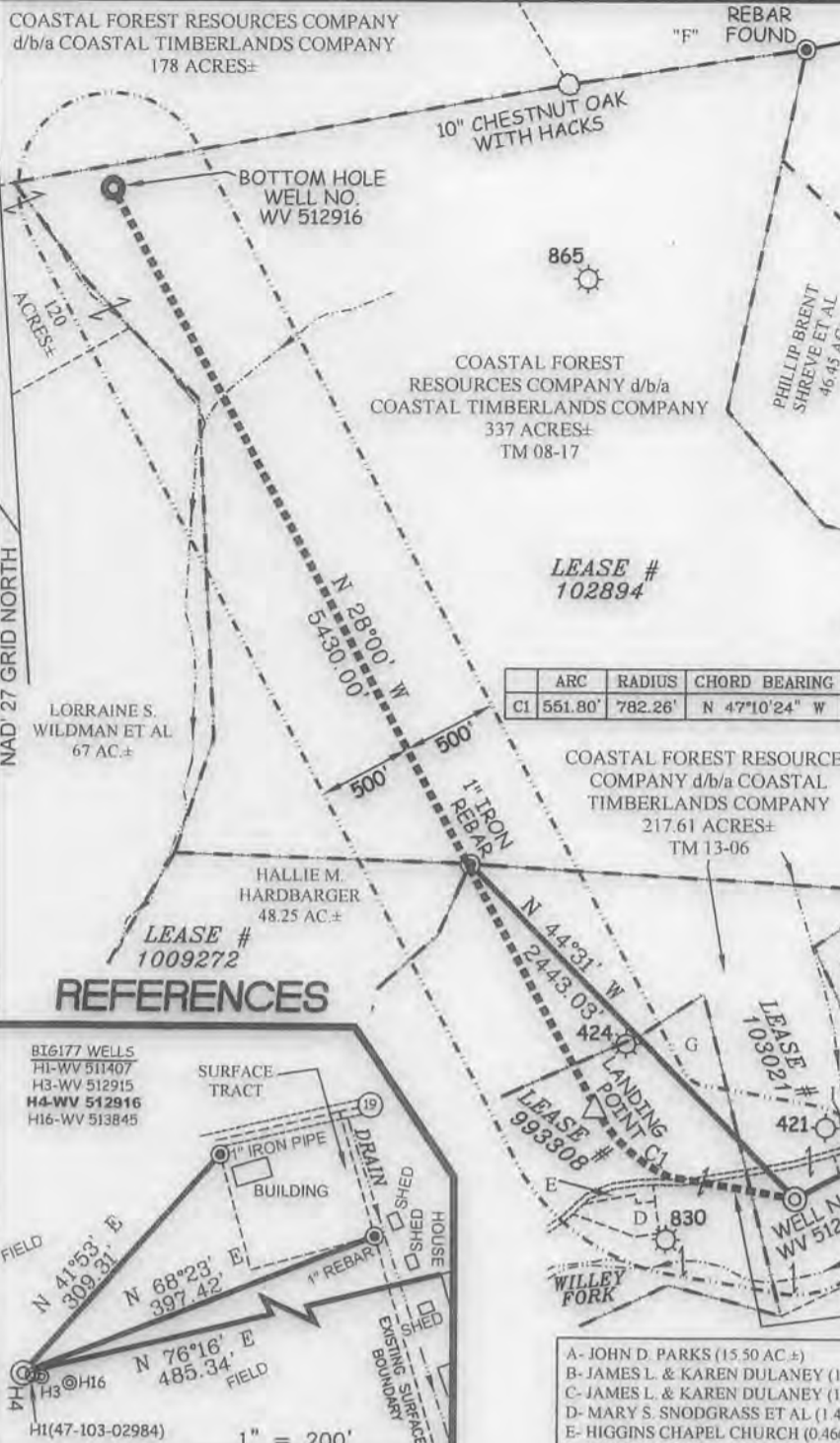
ROYALTY OWNERS		
COASTAL FOREST RESOURCES CO. d/b/a COASTAL TIMBERLANDS CO. ET AL	57.5 AC±	LEASE NO. 983308
KEVIN GOFF	48.25 AC±	LEASE NO. 1009272
EQT PRODUCTION COMPANY	300 AC±	LEASE NO. 102894

**LEGEND**

LEASE LINE	---
SURFACE LINE	----
WELL LATERAL	- - - -
OFFSET LINE	----
TIE LINE	----
CREEK	~~~~~
ROAD	====
COUNTY ROUTE	⊕
PROPOSED WELL	⊙
EXISTING WELL	⊗
PERMITTED WELL	⊘
TAX MAP-PARCEL	TM 00-00

**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD. SEE REFERENCE BOX FOR EXISTING DWELLING LESS THAN 625' FROM CENTER OF PROPOSED PAD.



ARC	RADIUS	CHORD BEARING	LENGTH
C1	551.80'	782.26'	N 47°10'24" W 540.43'

**REFERENCES**

- BT6177 WELLS
- H1-WV 511407
- H3-WV 512915
- H4-WV 512916
- H16-WV 513845



**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING, INC.

**SLS**  
SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.

(304) 462-5634 WWW.SLSURVEYS.COM

- A- JOHN D. PARKS (15.50 AC ±)
- B- JAMES L. & KAREN DULANEY (14.10 AC ±)
- C- JAMES L. & KAREN DULANEY (14.12 AC ±)
- D- MARY S. SNODGRASS ET AL (1.45 AC ±)
- E- HIGGINS CHAPEL CHURCH (0.466 AC ±)
- F- DANNY STOCKSLAGER ET AL (170 AC ±)
- G- COASTAL FOREST RESOURCES COMPANY d/b/a COASTAL TIMBERLANDS COMPANY (55.06 AC ±) TM 13-6.1
- H- IKEY J. & TINA M. WILLEY (2.15 AC ±)
- I- EQT GATHERING, LLC (0.418 AC ±)



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE OCTOBER 02, 20 13  
REVISED 03/26/14, 09/09/14, 08/25/15 & 09/14/15  
OPERATORS WELL NO. WV 512916  
API WELL NO. 47-103-03058H6A  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 6806P512916R8  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY 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 809' (GROUND) 811' (PROPOSED) WATERSHED WILLEY FORK OF NORTH FORK FISHING CREEK  
DISTRICT GRANT COUNTY WETZEL QUADRANGLE BIG RUN 7.5'

SURFACE OWNER COASTAL FOREST RESOURCES CO. d/b/a COASTAL TIMBERLANDS CO. ACREAGE 27± OF 217±  
ROYALTY OWNER HIGGINS FAMILY TRUST ACREAGE 242.5 **05/06/2016**

PROPOSED WORK: LEASE NO. 103021  
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 MIDDLESEX  
ESTIMATED DEPTH 6619'

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

COUNTY NAME PERMIT

**Coal Owners**

Coastal Forest Resources Co  
fka Coastal Lumber Company  
C/O Edward G. Kraynok  
P.O. Box 709  
Buckhannon, WV 26201

CNX Land LLC  
Attn: Analyst  
Engineering & Ops Support Dept. Coal  
CNX Center, 1000 Consol Energy Drive  
Canonsburg, PA 15317

Irrevocable Intervivos Trust of Billy Higgins  
Frances J & William P. Higgins, co-trustees  
531 Franklin Terrace  
Washington, PA 15301

WPP, LLC  
C/O George Angus  
5260 Irwin Road  
Huntington, WV 25705

Deanna Merle Weber  
633 Carothers Road  
Weirton, WV 26062

Doris E. Hamilton  
55 Parker Street  
Wheeling, WV 26003-7404

Robin Barr  
4060 S.W. County Road 232  
Bell, FL 32619

Murray American Energy, Inc  
1 Bridge Street  
Monongah WV 26554

Murray American Energy, Inc  
C/O Murray Energy Corporation  
46226 National Road  
St Clairsville, OH 43950

**Additional Coal Owners: CBM**

CNX Gas Company, LLC  
Attn Analyst Engineering & Operations Support Dept. Coal  
Casey Saunders  
1000 Consol Energy Drive  
Cannonsburg, PA 15317

**Received**  
**Office of Oil & Gas**

**FEB 25 2016**

WW-6B  
(04/15)

API NO. 47- 103 - 03058  
OPERATOR WELL NO. 512916  
Well Pad Name: BIG177

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

1) Well Operator: EQT Production Company 306686 103-Wetzel 4-Grant 254-Big Run  
Operator ID County District Quadrangle

2) Operator's Well Number: 512916 Well Pad Name: BIG177

3) Farm Name/Surface Owner: Coastal Forest Resources  
DBA Coastal Timberlands Co. Public Road Access: Rt. 19

4) Elevation, current ground: 809.0 Elevation, proposed post-construction: 811.0

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Middlesex, 6626, 45, 2620

8) Proposed Total Vertical Depth: 6626

9) Formation at Total Vertical Depth: Middlesex

10) Proposed Total Measured Depth: 12660

11) Proposed Horizontal Leg Length: 5430

12) Approximate Fresh Water Strata Depths: 170,280,480,630

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

14) Approximate Saltwater Depths: 1135, 1450

15) Approximate Coal Seam Depths: 100,153,431,541

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

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

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**FEB 25 2016**

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	26	New	A-500	85.6	80	80	98 ft <sup>3</sup> / CTS
Fresh Water	18 5/8	New	J-55	87.5	320	320	519 ft <sup>3</sup> / CTS
Coal	13 3/8	New	J-55	54.5	765	765	644 ft <sup>3</sup> / CTS
Intermediate	9 5/8	New	A-500	40	2728	2728	1072 ft <sup>3</sup> / CTS
Production	5 1/2	New	P-110	20	12660	12660	500' above top producing zone
Tubing	2 3/8		J-55	4.7			May not be run, if run set 100' from TD.
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	30	.312	-	18	Class A	1.18
Fresh Water	18 5/8	24	.435	2250	1800	See Variance	1.19
Coal	13 3/8	17 1/2	.38	2700	2160	See Variance	1.19
Intermediate	9 5/8	12 3/8	.395	3950	3160	Class H	1.07
Production	5 1/2	8 1/2	.361	12640	10112	Class H	1.07/1.86
Tubing	2 3/8	NA	.19	7700			
Liners							

**PACKERS**

Kind:	n/a			
Sizes:	n/a			
Depths Set:	n/a			

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 FEB 25 2016

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

Drill and complete a new horizontal well in the Middlesex Formation. Drill the vertical to an approximate depth of 5387'. Kick off and drill curve. Drill the lateral in the Middlesex. Cement casing.

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 internal casing pressure is expected to be approximately 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 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): 6.9

22) Area to be disturbed for well pad only, less access road (acres): 6.5

23) Describe centralizer placement for each casing string:

- Freshwater: Bow spring centralizers – One at the shoe and one spaced every 500’.
- Coal: Bow spring centralizers – One at the shoe and one spaced every 500’.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500’.
- Production: One solid body cent spaced every joint from production casing shoe to KOP

24) Describe all cement additives associated with each cement type:

Conductor: Class A no additives  
Freshwater (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries, .25% Flake Loss Circulation Material (LCM)  
Coal (Type 1 Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries, .25% Flake Loss Circulation Material (LCM)  
Intermediate (Class H Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries. 0.25% flake. Loss Circulation Material (LCM) .6% Super FL-300 (fluid loss/lengthens thickening time)  
Production:  
Lead (Type H Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50:50 POZ (extender)  
Tail (Type H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation.  
60 % Calcium Carbonate. Acid solubility.

25) Proposed borehole conditioning procedures:

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

\*Note: Attach additional sheets as needed.



February 12, 2016

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

Re: Revision of BIG177(47-103-03058, 03057)

Dear Mr. Smith,

Enclosed is an updated WW-6B, schematics, WW-6A1, Site Safety plan, mylar plat and W-9). EQT is moving these wells per Docket No. 250, issued by the Shallow Gas Well Review Board, a signed agreement with WPP, to move to their preferred azimuth.

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark', is written over a light blue horizontal line.

Vicki Roark  
Permitting Supervisor-WV

Enc.

**Received**  
**Office of Oil & Gas**  
FEB 25 2016



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

Date of Notice Certification: ~~NOV 17 2014~~

API No. 47 - 103 - 03058  
Operator's Well No. 512916  
Well Pad Name: BIG177

**Notice has been given:**

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

State:	<u>WV</u>	UTM NAD 83 Easting:	<u>4,381,517.00</u>
County:	<u>Wetzel</u>	UTM NAD 83 Northing:	<u>535,717.30</u>
District:	<u>Grant</u>	Public Road Access:	<u>Rt. 19</u>
Quadrangle:	<u>Big Run 7.5</u>	Generally used farm name:	<u>Coastal Forest Resources Co dba Coastal Timberlands Co</u>
Watershed:	<u>Willey Fork of North Fork Fishing Creek</u>		

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED OR</p> <p><input checked="" type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
<p>Received Office of Oil &amp; Gas NOV 18 2014</p>	

**Required Attachments:**

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

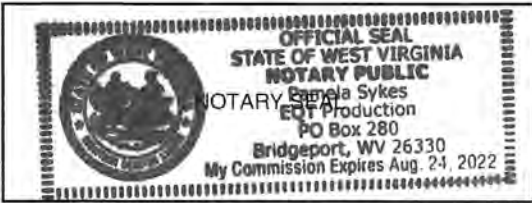
05/06/2016

**Certification of Notice is hereby given:**

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

Well Operator: EQT Production Company  
By: Victoria J. Roark  
Its: Permitting Supervisor  
Telephone: 304-848-0076

Address: P.O. Box 280  
Bridgeport, WV 26330  
Facsimile: 304-848-0040  
Email: vroark@eqt.com



Subscribed and sworn before me this 13 day of Oct., 2014  
[Signature] Notary Public  
My Commission Expires 8-24-22

**Oil and Gas Privacy Notice:**

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

Received  
Office of Oil & Gas  
NOV 18 2014

WW-6A  
(9-13)

API NO. 47 - 103 - 03058  
OPERATOR WELL NO. 512916  
Well Pad Name: BIG177

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

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

Date of Notice: \_\_\_\_\_ Date Permit Application Filed: \_\_\_\_\_

Notice of: **NOV 17 2014** **NOV 17 2014**

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

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

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

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

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

SURFACE OWNER(s)  
Name: Coastal Forest Resources Co  
Address: dba Coastal Timberlands Co  
P.O. Box 709  
Buckhannon, WV 26201

Name: 0  
Address: 0  
0  
0

SURFACE OWNERS(s) (Road and/or Other Disturbance)  
Name: Coastal Forest Resources Co  
Address: dba Coastal Timberlands Co  
P.O. Box 709  
Buckhannon, WV 26201

Name: 0  
Address: 0  
0  
0

SURFACE OWNER(s) (Impoundments/Pits)  
Name: Coastal Forest Resources Co  
Address: dba Coastal Timberlands Co  
P.O. Box 709  
Buckhannon, WV 26201

COAL OWNER OR LESSEE  
Name: CNX Land Resources, Inc  
Address: Ryan Arp  
1000 Consol Energy Dr  
Canonsburg, PA 15317  
See attached for additional coal owners.

COAL OPERATOR  
Name: 0  
Address: 0  
0  
0

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)  
Name: Ike Willey  
Address: HC 62 Box 92  
Pine Grove, WV 26419  
See Attached

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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**Additional Coal Owners**

WPP, LLC  
C/O George Angus  
5260 Irwin Road  
Huntington, WV 25705

Billy James Higgins  
531 Franklin Terrace  
Washington, PA 15301

Deanna Merle Weber  
633 Carothers Road  
Weirton, WV 26062

Coastal Forest Resources Co  
fka Coastal Lumber Company  
C/O Edward G. Kraynok  
P.O. Box 709  
Buckhannon, WV 26201

Robin Barr  
4060 S.W. County Road 232  
Bell, FL 32619

Murray American Energy, Inc  
1 Bridge Street  
Monongah WV 26554

Murray American Energy, Inc  
C/O Murray Energy Corporation  
46226 National Road  
St Clairsville, OH 43950

**Additional Coal Owners: CBM**

CNX Gas Company, LLC  
Attn Analyst Engineering & Operations Support Dept. Coal  
Ryan Arp  
1000 Consol Energy Drive  
Cannonsburg, PA 15317

**Additional Water Purveyors**

Sarah Bates  
HC 62 Box 93  
Pine Grove, WV 26419

Mary Eastham  
HC 62 Box 90  
Pine Grove, WV 26419

Higgins Chapel, Church of Christ  
12597 Willey Fork Rd.  
Pine Grove, WV 26419

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**Notice is hereby given:**

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

**This Notice Shall Include:**

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

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

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

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

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

**Well Location Restrictions**

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

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

**Water Well Testing:**

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

**Water Testing Laboratories:**

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

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

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

**Written Comment:**

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

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

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.

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

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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Notice is hereby given by:

Well Operator: EQT Production Company Address: 115 Professional Place P.O. Box 280  
Telephone: 304-848-0082 Bridgeport, WV 26330  
Email: Vroark@eqt.com Facsimile: 304-848-0041

**Oil and Gas Privacy Notice:**

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

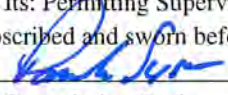
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete.



By: Victoria Roark

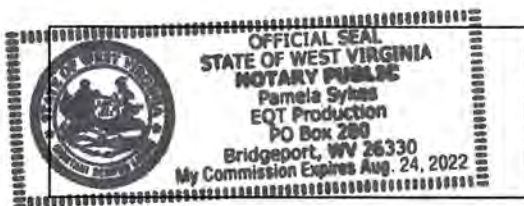
Its: Permitting Supervisor

Subscribed and sworn before on 13 day of Oct, 2014



Notary Public

My Commission Expires 8-24-22



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**WELL INFORMATION AND FINAL WATER WELL SAMPLE DATA SHEET**

**OPERATOR:** EOT Production Company  
**LEASE NAME AND NUMBER:** HIGGINBOTHAM LEASE B16177

COMMENTS

The initial field and/or mapping review of the area surrounding the proposed well site revealed the below listed surface owner(s) that were potentially utilizing groundwater (potable) for Human Consumption or other purposes within 2500' of the proposed well site. (For location of each site see attached area map.)

INDIVIDUAL CONTACTED OR NOTIFIED

Site: 1 Spacing 2050 Owner/Occupant: Elias Leasure  
Address: PO Box 156 Big Run, WV 26361 Ph: (304)889-2609  
Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: Water well  
If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
Comments: Tax Map 8 Par. 46  
Northing: 39.584318  
Easting: 80.577311

Site: 2 Spacing 1800 Owner/Occupant: Judy Utt  
Address: HC 62 box 125 Pine Grove, WV 26419 Ph: \_\_\_\_\_  
Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: \_\_\_\_\_  
If No, declined by who Judy Utt Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
Comments: Tax Map 8 Par. 43  
Northing: \_\_\_\_\_  
Easting: \_\_\_\_\_

Site: 3 Spacing 1800 Owner/Occupant: Judy Utt  
Address: HC 62 box 125 Pine Grove, WV 26419 Ph: \_\_\_\_\_  
Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: \_\_\_\_\_  
If No, declined by who Judy Utt Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
Comments: Tax Map 8 Par. 43  
Northing: \_\_\_\_\_  
Easting: \_\_\_\_\_

Site: 4 Spacing 2100 Owner/Occupant: Sherry Dulancy  
Address: HC 62 box 117 Pine Grove, WV 26361 Ph: (304)-889-3478  
Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: Water well  
If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
Comments: Tax Map 8 Par. 38  
Northing: 39.585187  
Easting: 80.577809

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Site: 5 Spacing 2300 Owner/Occupant: Karen Dulaney  
 Address: HC 62 box 118 Pine Grove, WV 26561 Ph: (304)-889-2701  
 Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: Water Well  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Tax Map 8 Par. 23.1  
Northing: 39.587092  
Easting: 80.557227

Site: 6 Spacing 625 Owner/Occupant: Ike Willey  
 Address: HC 62 box 92 Pine Grove, WV 26419 Ph: (304)-889-2760  
 Field Contact Date: 9-24-13 Sampled: No Date Sampled: N/A Source: Water well  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Tax Map 8 Par. 65  
Northing: 39.585086  
Easting: 80.581987

Site: 7 Spacing 700 Owner/Occupant: Sarah Bates  
 Address: HC 62 box 93 Pine Grove, WV 26419 Ph: (304)-889-3484  
 Field Contact Date: 10-3-13 Sampled: No Date Sampled: N/A Source: Water Well  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st 9-24-13 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Tax Map 8 Par. 35  
Northing: 39.  
Easting: 80.

Site: 8 Spacing 750 Owner/Occupant: Mary Eastum  
 Address: HC 62 box 90 Pine Grove, WV 26419 Ph: \_\_\_\_\_  
 Field Contact Date: 9-24-2013 Sampled: No Date Sampled: N/A Source: Water Well  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Northing: 39.582803  
Easting: 80.586893  
Shares well with chapel (neighboring parcel).

Site: 9 Spacing 2200 Owner/Occupant: Susan Lydick  
 Address: HC 62 box 71 Pine Grove, WV 26419 Ph: \_\_\_\_\_  
 Field Contact Date: 10-3-2013 Sampled: No Date Sampled: N/A Source: Water Well  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Northing: 39.579350  
Easting: 80.591143

Site: 10 Spacing 2450 Owner/Occupant: EOT Production Company  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: \_\_\_\_\_ Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: Creek  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Northing: 39.579793  
Easting: 80.591567  
Information taken, request of EOT.

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Site: 11 Spacing 2200 Owner/Occupant: EQT Production Company  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: 10-3-13 Sampled: No Date Sampled: N/A Source: Creek  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Northing: 39.583619  
Easting: 80.576493  
Information taken, request of EQT

Site: 12 Spacing 500 Owner/Occupant: EQT Production Company  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: 10-3-13 Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: Creek  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Northing: 39.582172  
Easting: 80.581666  
Information taken, request of EQT

Site: 13 Spacing 750 Owner/Occupant: Higgins Chapel, Church of Christ  
 Address: 12597 Willey Fork Rd. Pine Grove WV 26419 Ph: \_\_\_\_\_  
 Field Contact Date: 9-24-13 Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: Waterwell  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: Shares well with Mary Eastham  
Northing 39.582803  
Easting 80.586893

Site: 14 Spacing \_\_\_\_\_ Owner/Occupant: \_\_\_\_\_  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: \_\_\_\_\_ Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: \_\_\_\_\_  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: \_\_\_\_\_

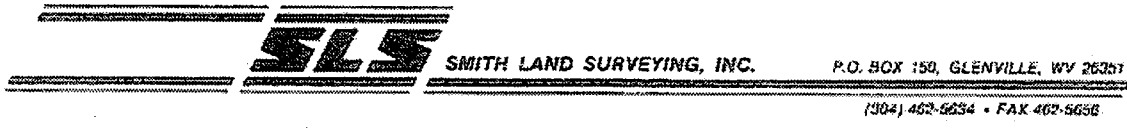
Site: 15 Spacing \_\_\_\_\_ Owner/Occupant: \_\_\_\_\_  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: \_\_\_\_\_ Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: \_\_\_\_\_  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: \_\_\_\_\_

Site: 16 Spacing \_\_\_\_\_ Owner/Occupant: \_\_\_\_\_  
 Address: \_\_\_\_\_ Ph: \_\_\_\_\_  
 Field Contact Date: \_\_\_\_\_ Sampled: \_\_\_\_\_ Date Sampled: \_\_\_\_\_ Source: \_\_\_\_\_  
 If No, declined by who \_\_\_\_\_ Letter/Notice Date: 1st \_\_\_\_\_ 2nd \_\_\_\_\_ Certified (3rd) \_\_\_\_\_  
 Comments: \_\_\_\_\_

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To Whom It May Concern:

Smith Land Surveying, Inc. of Glenville, WV has been contracted by:

EOT

To do some preliminary work for a proposed oil and gas well permit application.

Due to 1994 regulations set by the State of West Virginia Division of Environmental Protection, Department of Oil and Gas, operators are required to offer water testing for water wells or other non-public water sources that fall within 1500 feet of the proposed well, if they are requested to do so by the resident or owner. This test will only help ensure the water quality control, which in turn benefits you as the resident or landowner.

Since your residence falls within the 2500 foot radius, you are entitled to have your potable water source(s) sampled and analyzed at an independent lab. Your lab analysis results would then be mailed to your home. This is done at no expense to you.

Please notify Smith Land Surveying immediately if you are interested in having your potable water tested. Please have this letter with you at the time of contact so that the client and well number may be referenced.

Thank you for your cooperation in this matter. I look forward to hearing from you at your earliest convenience. If you have any questions, please feel free to contact me at:

Smith Land Surveying, Inc. Date: 9-24-13  
PO Box 150  
Glenville, WV 26351 Left/sent by: Nathan Spencer

(304) 462-5634 (voice)  
(304) 463-5656 (fax) Well Number: 511407 (Big 127)  
E-Mail mmurphy@slssurvey.com Site Number: Site # 223

\*If you do not have a water well or other non-public water source, please make note of it and include your name and address when you return this sheet.

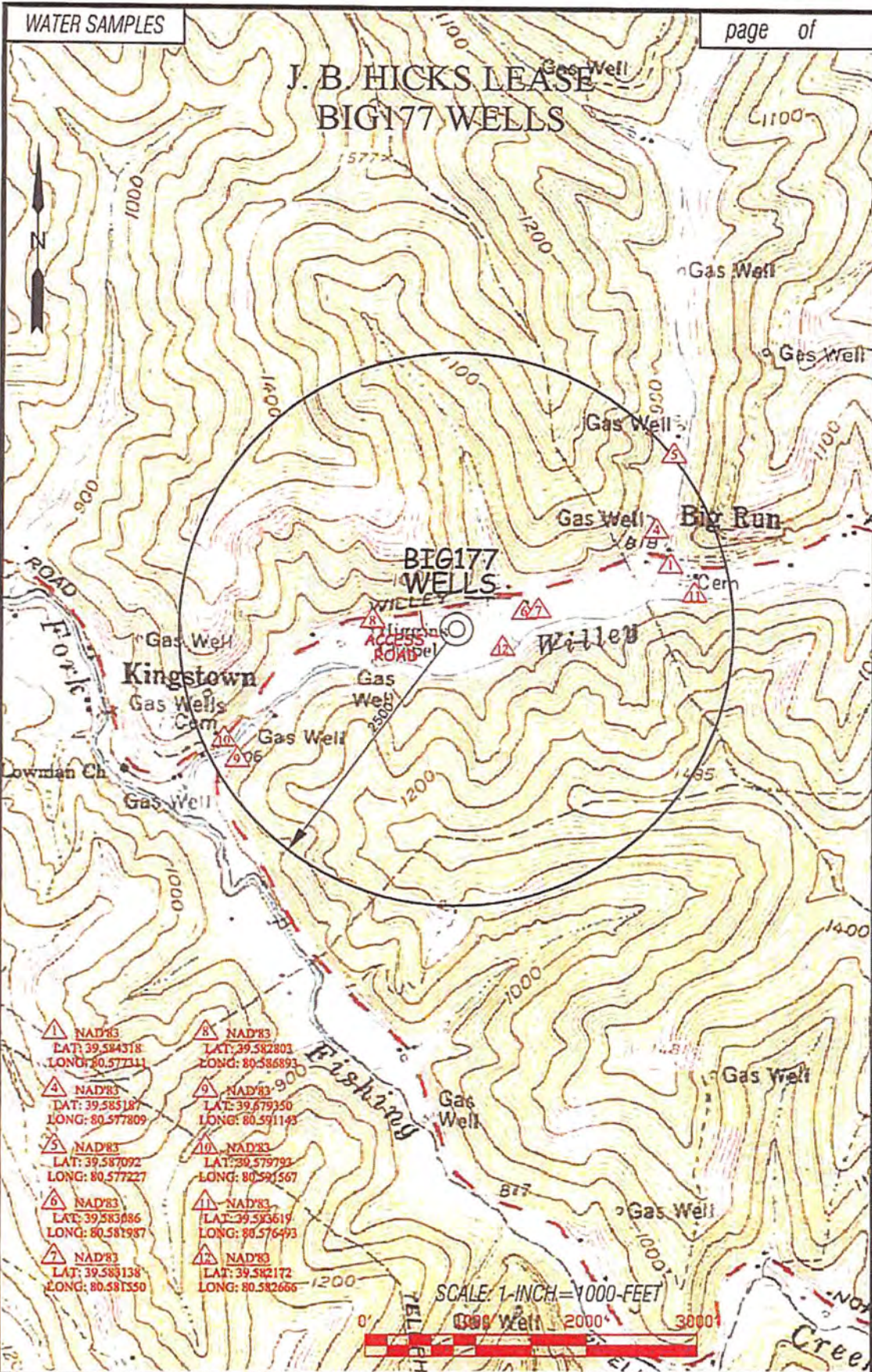
Received  
Office of Oil & Gas

NOV 18 2014

If you do not feel the need to have your Water well/spring/or other non-public water source sampled, please sign on the line below and return to the above address. This will signify that a sample has been offered to the surface owner and has been declined.

Signature: Judy Witt Date: 9/24/13

05/06/2016



- ▲ NAD83  
LAT: 39.584318  
LONG: 80.577111
- ▲ NAD83  
LAT: 39.582803  
LONG: 80.586893
- ▲ NAD83  
LAT: 39.585187  
LONG: 80.577809
- ▲ NAD83  
LAT: 39.579350  
LONG: 80.591143
- ▲ NAD83  
LAT: 39.587092  
LONG: 80.577227
- ▲ NAD83  
LAT: 39.579792  
LONG: 80.591567
- ▲ NAD83  
LAT: 39.583086  
LONG: 80.581987
- ▲ NAD83  
LAT: 39.583619  
LONG: 80.576493
- ▲ NAD83  
LAT: 39.589138  
LONG: 80.581350
- ▲ NAD83  
LAT: 39.582172  
LONG: 80.582666



Professional Energy Consultants  
SLS

Office

NOV 18 2014

TOPO SECTION OF:  
BIG RUN, WV 7.5' QUAD.

DISTRICT	COUNTY	TAX MAP-PARCEL NO.
GRANT	WETZEL	8 - 18

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



**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

**Notice Time Requirement:** Notice shall be provided at least TEN (10) days prior to filing a permit application.

**Date of Notice:** 9/16/2014 **Date Permit Application Filed:** 9/26/14

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

**HAND DELIVERY**       **CERTIFIED MAIL RETURN RECEIPT REQUESTED**

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: Provided, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: Provided, however, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

**Notice is hereby provided to the SURFACE OWNER(s):**

Name:	<u>Coastal Forest Resources Co</u>	Name:	<u>0</u>
Address:	<u>W dba Coastal Timberlands Co</u>	Address:	<u>0</u>
	<u>P.O. Box 709</u>		<u>0</u>
	<u>Buckhannon, WV 26201</u>		

**Notice is hereby given:**

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

State:	<u>WV</u>	UTM NAD 83	Easting	<u>4,381,517.00</u>
County:	<u>Wetzel</u>		Northing	<u>535,717.30</u>
District:	<u>Grant</u>		Public Road Access:	<u>Rt. 19</u>
Quadrangle:	<u>Big Run 7.5</u>		Generally used farm name:	<u>Coastal Forest Resources Co dba Coastal Timberlands Co</u>
Watershed:	<u>Willey Fork of North Fork Fishing Creek</u>			

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx)

**Notice is hereby given by:**

Well Operator:	<u>EQT Production Company</u>	Authorized Representative:	<u>Victoria Roark</u>
Address:	<u>115 Professional Place, P.O Box 280</u>	Address:	<u>115 Professional Place, P.O Box 280</u>
	<u>Bridgeport, WV 26330</u>		<u>Bridgeport, WV 26330</u>
Telephone:	<u>304-848-0076</u>	Telephone:	<u>304-848-0076</u>
Email:	<u>vroark@eqt.com</u>	Email:	<u>vroark@eqt.com</u>
Facsimile:	<u>304-848-0041</u>	Facsimile:	<u>304-848-0041</u>

**Oil and Gas Privacy Notice:**

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

Received  
Office of Oil & Gas  
05/06/2016  
NOV 18 2014

103-03058

WW-6A4W  
(1/12)

Operator Well No. 512916

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF INTENT TO DRILL  
WAIVER

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: Provided, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: Provided, however, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

**Surface Owner Waiver:**

I, \_\_\_\_\_, hereby state that I have read the notice provisions listed above and hereby waive the notice requirements under West Virginia Code § 22-6A-16(b) for the tract of land as follows:

State:	<u>WV</u>	Easting:	<u>535,717.30</u>
County:	<u>Wetzel</u>	UTM NAD 83 Northing:	<u>4,381,517.00</u>
District:	<u>Grant</u>	Public Road Access:	<u>Rt. 19</u>
Quadrangle:	<u>Big Run 7.5</u>	Generally used farm name:	<u>Higgins</u>
Watershed:	<u>Willey Fork of North Fork Fishing Creek</u>		

Name: Coastal Forest Resources Company  
Address: d/b/a Coastal Timberlands Company  
P.O. Box 709  
Buckhannon, WV 26201

Signature: *Edward L. Krzywicki*  
Date: 12/11/13

**Oil and Gas Privacy Notice:**

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

Received  
Office of Oil & Gas  
NOV 18 2014

05/06/2016



103-03058

WW-6A5  
(1/12)

Operator Well No. 512916

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

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

Date of Notice: NOV 17 2014 Date Permit Application Filed: \_\_\_\_\_

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

CERTIFIED MAIL RETURN RECEIPT REQUESTED  HAND DELIVERY

NOV 17 2014

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

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

Name: Coastal Forest Resources Co Name: \_\_\_\_\_ 0  
Address: dba Coastal Timberlands Co Address: \_\_\_\_\_ 0  
P.O. Box 709 \_\_\_\_\_ 0  
Buckhannon, WV 26201

Notice is hereby given:

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

State: WV UTM NAD 83 Easting: 4,381,517.000000  
County: Wetzel Northing: 535,717.300000  
District: Grant Public Road Access: Rt. 19  
Quadrangle: Big Run 7.5 Generally used farm name: Coastal Forest Resources Co dba Coastal Timberlands Co  
Watershed: Willey Fork of North Fork Fishing Creek

This Notice Shall Include:

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

Well Operator: EQT Production Company Address: 115 Professional Place, P.O. Box 280  
Telephone: 304-848-0082 Bridgeport, WV 26330  
Email: vroark@eqt.com Facsimile: 304-848-0040

Oil and Gas Privacy Notice:

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

Received  
Office of Oil & Gas  
NOV 18 2014  
05/06/2016

WW-6RW  
(1-12)

EQT PRODUCTION COMPANY  
PO BOX 280  
BRIDGEPORT, WV 26330-0280

API NO. 47- 103-03058  
OPERATOR WELL NO. H4-512916  
Well Pad Name: BIG 177

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
**WELL LOCATION RESTRICTION WAIVER**

The well operator, EQT Production Company is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

**Well Location Restrictions**

Pursuant to West Virginia Code § 22-6A-12(a), Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements.

**WAIVER**

I, \_\_\_\_\_, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: \_\_\_\_\_  
County: Wetzel UTM NAD 83 Northing: \_\_\_\_\_  
District: Grant Public Road Access: CR 19 / Willey Fork Road  
Quadrangle: Big Run 7.5" Generally used farm name: \_\_\_\_\_  
Watershed: Willey Fork

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

**WELL SITE RESTRICTIONS BEING WAIVED**

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

Received  
Office of Oil & Gas  
NOV 18 2014

FOR EXECUTION BY A NATURAL PERSON  
Signature: Tina M. Willey  
Print Name: Tina M. Willey  
Date: 7-31-2013  
FOR EXECUTION BY A CORPORATION, ETC.  
Company: \_\_\_\_\_  
By: \_\_\_\_\_  
Its: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

DOCUMENT TYPE NS  
Pages Recorded 1  
Book Page 105-674  
Record Unit Fee \$5.00  
Additional Fee \$5.00

Wetzel County 02:26:17 PM  
Instrument No 154549  
Date Recorded 12/03/2013

Well Operator: EQT Production Company  
By: John W. Damato  
Its: Attorney-in-Fact

Signature: \_\_\_\_\_  
Telephone: \_\_\_\_\_

OFFICIAL SEAL  
COMMISSIONER FOR WEST VIRGINIA  
Bryson J. Karp  
Weston, WV  
My Commission Expires January 1, 2021

Subscribed and sworn before me this 31 day of July 2013  
[Signature] Notary Public  
My Commission Expires Jan 1 2021

**Oil and Gas Privacy Notice:**

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05/06/2016

WW-6RW  
(1-12)

EQT PRODUCTION COMPANY  
PO BOX 280  
BRIDGEPORT, WV 26330-0280

API NO. 47- 103 03058  
OPERATOR WELL NO. H4 - 512916  
Well Pad Name: BIG 177

# STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WELL LOCATION RESTRICTION WAIVER

The well operator, EQT Production Company is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

### Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements.

## WAIVER

I, \_\_\_\_\_, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through \_\_\_\_\_, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: \_\_\_\_\_  
County: Wetzel UTM NAD 83 Northing: \_\_\_\_\_  
District: Grant Public Road Access: CR 19 / Willey Fork Road  
Quadrangle: Big Run 7.5" Generally used farm name: \_\_\_\_\_  
Watershed: Willey Fork

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

### WELL SITE RESTRICTIONS BEING WAIVED

\*Please check all that apply

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

Received  
Office of Oil & Gas  
NOV 18 2014

### FOR EXECUTION BY A NATURAL PERSON

Signature: Joe Willey  
Print Name: Joe Willey  
Date: 7-31-2013  
FOR EXECUTION BY A CORPORATION  
Company: \_\_\_\_\_  
By: \_\_\_\_\_  
Its: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

Document Type: NS  
Pages Recorded: 1  
Book-Page: 105-673  
Recording Fee: \$5.00  
Additional Fee: \$6.00  
Date Recorded: 12/03/2013  
Instrument No: 154548  
WETZEL County 02:25:17 PM  
Carol S Haught

Well Operator: EQT Production Company  
By: John W. Damato  
Its: Attorney-in-Fact

Signature: \_\_\_\_\_  
Telephone: \_\_\_\_\_

OFFICIAL SEAL  
COMMISSIONER FOR WEST VIRGINIA  
Bryson J. Karp  
Weston, WV  
My Commission Expires January 1, 2021

Subscribed and sworn before me this 31 day of July 2013  
By TKK Notary Public  
My Commission Expires Jan 1 2021

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05/06/2016



103-03058

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

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

Earl Ray Tomblin  
Governor

Paul A. Mattox, Jr., P. E.  
Secretary of Transportation/  
Commissioner of Highways

April 16, 2014

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

Subject: DOH Permit for the	BIG177 Well Site, Wetzel County	
511407 BIG177H1	511408 BIG177H2	512915 BIG177H3
512916 BIG177H4	512917 BIG177H5	512918 BIG177H6
513836 BIG177H7	513837 BIG177H8	513838 BIG177H9
513839 BIG177H10	513840 BIG177H11	513841 BIG177H12
513842 BIG177H13	513823 BIG177H14	513844 BIG177H15
513845 BIG177H16	513846 BIG177H17	513847 BIG177H18

Dear Mr. Martin,

This well site will be accessed from existing Permit # 06-2013-0292 issued to EQT Production Company for access to the State Road for a well site located off of Wetzel County Route 19 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,  
*Gary K. Clayton*  
Gary K. Clayton  
Regional Maintenance Engineer  
Central Office Oil & Gas Coordinator

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

Received  
Office of Oil & Gas  
NOV 18 2014

**Anticipated Frac Additives**  
**Chemical Names and CAS numbers**

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

DMH  
11-18-14

RECEIVED  
Office of Oil and Gas  
NOV 25 2014  
NY Department of  
Environmental Protection

**PROJECT INFORMATION**

PROJECT NAME: BIG 177 H1-H6, H15, H16  
 TAX PARCEL: GRANT DISTRICT MAP 13-6, 13-6.1  
 SURFACE OWNER: CAPITAL FOREST RESOURCES COMPANY D/B/A CASUAL TIMBERLANDS COMPANY  
 GRANT DISTRICT WETZEL COUNTY, WV  
 TOTAL PROPERTY AREA: 27 ± ACRES OF 217 ± ACRES AND 55 ± ACRES  
 OIL AND GAS ROYALTY OWNER: HIGGINS FAMILY TRUST (LEASE No. 103021)  
 GRANT DISTRICT WETZEL COUNTY, WV  
 TOTAL PROPERTY AREA: 242.5 ± ACRES  
 SITE LOCATION: THE BIG 177 SITE IS LOCATED IN THE BOTTOM NORTH OF WILLEY FORK APPROXIMATELY 2,300 FT EAST OF THE CO. RT. 19 AND CO. RT. 15 INTERSECTION.

# BIG 177 H1-H6, H15, H16 SITE PLAN

## EQT PRODUCTION COMPANY

(PROPOSED WELL NO. WV 511407, WV 512915, WV 512916, WV 512917, WV 512918, WV 513844, WV 513845)



API# 10302984

SITUATE ON THE WATERS OF WILLEY FORK OF NORTH FORK FISHING CREEK IN GRANT DISTRICT, WETZEL COUNTY, WEST VIRGINIA.

**LOCATION COORDINATES**

BIG 177 H1-H6, H15, H16 WELL PAD ENTRANCE  
 LATITUDE: 39.56305 LONGITUDE: -80.58607 (NAD 83)  
 BIG 177 H1-H6, H15, H16 WELL PAD  
 LATITUDE: 39.56283 LONGITUDE: -80.58412 (NAD 83)  
 BIG 177 H1-H6, H15, H16 TANK PAD  
 LATITUDE: 39.56252 LONGITUDE: -80.58570 (NAD 83)

**SITE DISTURBANCE COMPUTATIONS**

PAD AREA = 6.5 ± ACRES\*  
 ACCESS ROAD = 0.4 ± ACRES  
 TOTAL SITE DISTURBANCE = 6.9 ± ACRES  
 \*INCLUDES AREA OF THE WELL PAD, TANK PAD, & STOCKPILES

**ENTRANCE PERMIT**

EQT PRODUCTION COMPANY WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-100) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**MISS UTILITY STATEMENT**

MISS UTILITY OF WEST VIRGINIA WAS NOTIFIED FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. TICKET #131831014. IN ADDITION, MISS UTILITY WILL BE CONTACTED PRIOR TO START OF THE PROJECT.

**FLOODPLAIN NOTE**

THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT IS LOCATED IN FEMA FLOOD ZONE "A". PER THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER 641002020C, DATED SEPT. 23, 2009. A FLOODPLAIN ANALYSIS FOR THE PROPOSED DISTURBANCE HAS BEEN PROVIDED BY NAVITE ENGINEERING, DATED AUGUST 1, 2013 SHOWING THE IMPACTS OF THE PROPOSED IMPROVEMENTS. PLEASE REFER TO THE ANALYSIS FOR ADDITIONAL INFORMATION.

**ENVIRONMENTAL NOTES**

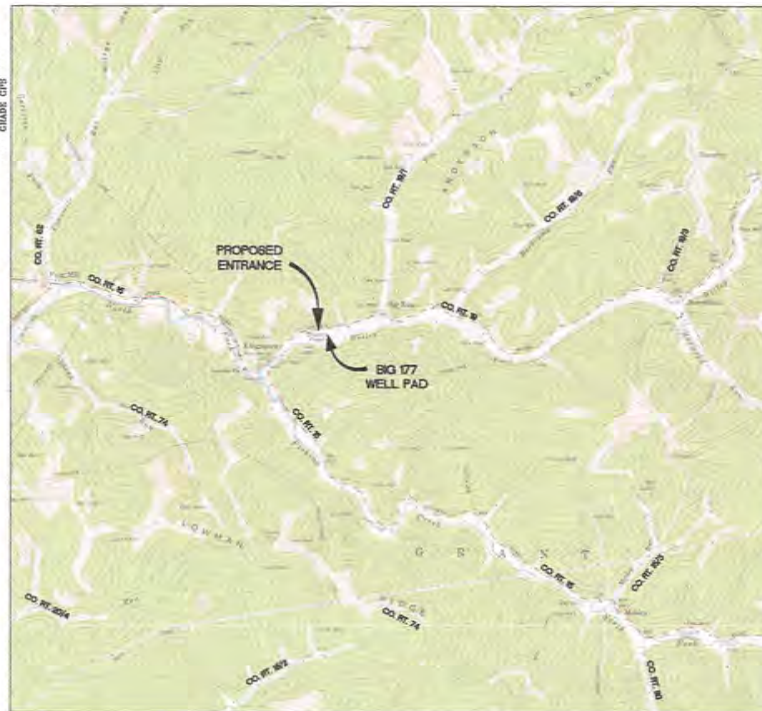
A WETLAND DELINEATION WAS PERFORMED ON SEPTEMBER 22, 2011; AND DECEMBER 14, 2012 AND DECEMBER 17, 2012 BY POTESTA & ASSOCIATES, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE FEBRUARY 4, 2013 REPORT PROJECT # 2101-11-147-1701 WAS PREPARED BY POTESTA & ASSOCIATES, INC. SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE REPORT DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP. IT IS STRONGLY RECOMMENDED THAT THE APPROPRIATE AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION DESCRIBED BY THIS REPORT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CHANGES.

**GENERAL DESCRIPTION**

THE WELL PAD AND TANK PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XV, Chapter 24-C)  
 Requires that you call two  
 business days before you dig in  
 the state of West Virginia.  
**IT'S THE LAW!**

GRID NORTH AND ELEVATIONS SHOWN THROUGHOUT ENTIRE CHAIRS, CITY



Electronic plans maybe viewed at: Q:\OIL GAS\ISAY FILES\REVIEWS\EQT

**OPERATOR**  
 EQT PRODUCTION COMPANY  
 OPERATOR ID: 308688  
 116 PROFESSIONAL PLACE  
 P.O. BOX 206  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 346-2870

**SURVEYOR/ENGINEER**  
 SMITH LAND SURVEYING, INC.  
 12 VANHORN DRIVE  
 P.O. BOX 150  
 GLENVILLE, WV 26351  
 PHONE: (304) 462-5834

**LIST OF DRAWINGS**

- 1 - COVER SHEET
- 2 - NOTES AND DETAIL SKETCH
- 3 - WELL PAD AND ACCESS ROAD DETAILS AND VOLUMES
- 4 - WELL PAD SECTION AND ROAD PROFILE AND SECTIONS
- 5 - WELL PAD RECLAMATION PLAN
- 6 - CONSTRUCTION DETAILS
- 7 - CONSTRUCTION DETAILS
- 8 - CONSTRUCTION DETAILS

LEGEND	
EX. INDEX CONTOUR	PROP. INDEX CONTOUR
EX. INTERMEDIATE CONTOUR	PROP. INTERMEDIATE CONTOUR
EX. SECONDARY LINE	PROP. CLOSING LIMITS
EX. RIGHT-OF-WAY LINE	PROP. LIMITS OF DISTURBANCE
EX. ROAD EDGE OF GRAVEL/PAVT	PROP. WELL PAD
EX. ROAD EDGE OF PAVTMENT	PROP. WELL HEAD
EX. ROAD CENTERLINE	PROP. 4" PVC DRAIN PIPE
EX. SITCHLINE	PROP. SWAP DRAIN
EX. CULVERT	PROP. CONTAINMENT BERM
EX. GUARDRAIL	PROP. PIT/IMPROVEMENT CL.
EX. FENCINGLINE	PROP. PERIMETER SAFETY FENCE
EX. GATE	PROP. ACCESS GATE WITH EMERGENCY LIFELINE
EX. OVERHEAD UTILITY	
EX. OVERHEAD UTILITY R/W	
EX. POWER POLE	
EX. GUY WIRE	
EX. TELEPHONE LINE	
EX. GASLINE	PROP. ROCK CONSTRUCTION ENTRANCE
EX. GASLINE R/W	
EX. WATERLINE	
EX. WATER WELL	
EX. GAS WELL	
EX. TREELINE	PROP. ROAD EDGE OF GRAVEL
EX. REFERENCE TREE	PROP. ROAD CENTERLINE
EX. DELINEATED STREAM	PROP. V-DITCH W/ CORN BANKS
EX. DELINEATED WETLAND/POND	PROP. DITCH RELIEF CULVERT (DRC)
EX. BUILDING	PROP. SW-BAF OUTLET PROTECTION
EX. BENCHES	PROP. GUARDRAIL
EX. TOP OF BANK	PROP. ROCK LEVEL SPREADER
EX. 100 YEAR FEMA FLOODPLAIN	PROP. EARTHEN DIVERSION BERM
EX. 100 YEAR FLOODPLAIN	PROP. ORANGE SAFETY FENCE
EX. 100' WETLAND/STREAM BUFFER	PROP. SUPER SILT FENCE
EX. FLOOD PROTECTION SETBACK	PROP. REINFORCED SILT FENCE
EX. 100 YEAR FLOODPLAIN	PROP. CAMOUF. ROCK DIVERSION
	PROP. CONCRETE/REINFORCED DEMATERING TRENCH
	PROP. CONCRETE/REINFORCED DEMATERING PIPE
	SECTION LINE
	ATCHLINE
	X-SECTION GRID INDEX
	X-SECTION GRID INTERMEDIATE
	X-SECTION PROPOSED GRADE
	X-SECTION EXISTING GRADE
	X-SECTION WATER SURFACE
	SPOT ELEVATION
	CENTER OF PAD



COVER SHEET  
**BIG 177**  
 GRANT DISTRICT  
 WETZEL COUNTY, WV

DATE: 05/09/2013  
 SCALE: 1" = 2000'  
 DESIGNED BY: CSK  
 FILE NO.: 8009  
 SHEET 1 OF 8  
 REV: 11/20/14

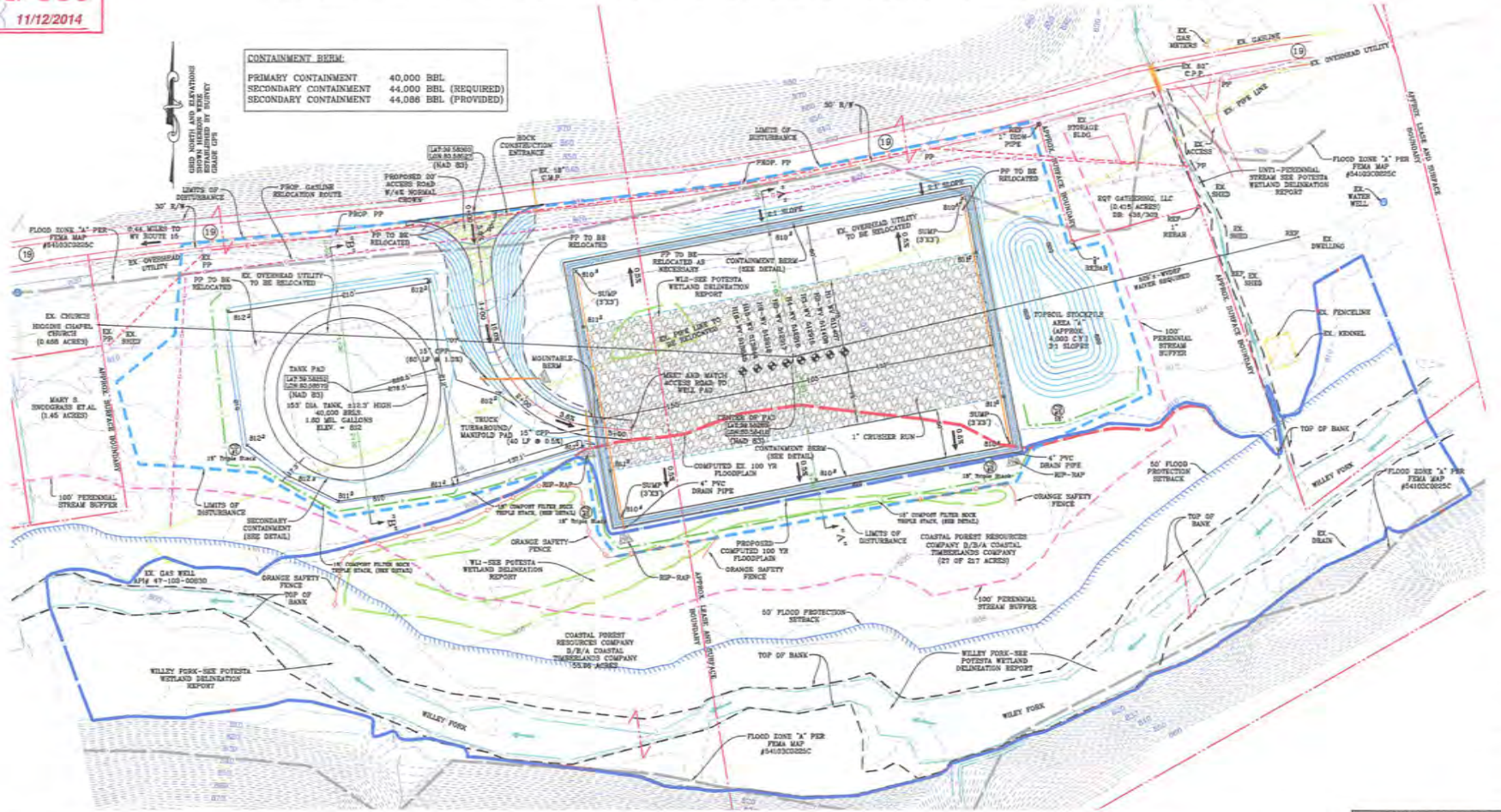


**APPROVED  
WVDEP OOG**

11/12/2014

## WELL PAD & ACCESS ROAD DETAILS

PROPOSED WELL NO. WV 511407, WV 511408, WV 512915, WV 512916, WV 512917, WV 512918, WV 513844, WV 513845



**CONTAINMENT BERM**

PRIMARY CONTAINMENT	40,000 BBL
SECONDARY CONTAINMENT	44,000 BBL (REQUIRED)
SECONDARY CONTAINMENT	44,088 BBL (PROVIDED)

**NOTE:**  
1. ALL PROPOSED DRAINAGE CULVERTS AND DRAIN PIPES SHALL HAVE ADEQUATE OUTLET PROTECTION (RIP-RAP) AS SHOWN ON THESE PLANS.

2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PROCTER.

3. TOPSOIL SHALL BE STRIPPED FROM ALL STOCKPILE AREAS PRIOR TO CONSTRUCTING STOCKPILES. AFTER STOCKPILES ARE CONSTRUCTED TOPSOIL IS TO BE REAPPLIED AT A DEPTH OF 6" SLOPES SHALL BE TRACKED BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR.

4. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.0 AND A FILL SHRINK FACTOR OF 1.0.

5. THERE WILL BE NO DISCHARGE FROM THE SUMPS DURING DRILLING OR COMPLETION.



**GENERAL NOTES AND ADDITIONAL DESIGN CONCERNS:**

1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON FIELD LOCATED MAPPING PROVIDED BY SLS, INC.
2. THE WETLAND AND STREAM DELINEATION SHOWN HEREON WAS PROVIDED BY SLS, INC. AND POTESTA.
3. THERE IS ONE OCCUPIED DWELLING WITHIN 600 FEET OF THE CENTER OF THE PROPOSED PAD. WILLY WARDEN IS REQUIRED.
4. THERE ARE NO APPARENT WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE CENTER OF THE PROPOSED PAD.
5. THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE "C" AND "A" PER FEMA FLOOD MAP #54100C025C. THE PROPOSED WELL PAD IS LOCATED IN FEMA ZONE "A". A FLOODPLAIN STUDY SHALL BE COMPLETED AND A FLOODPLAIN PERMIT SHALL BE OBTAINED FROM THE COUNTY FLOODPLAIN MANAGER.
6. ALL WETLAND AND STREAM IMPACTS SHALL BE PERMITTED THROUGH THE ARMY CORPS OF ENGINEERS.
7. THE ACCESS ROAD HAS BEEN DESIGNED TO ACCOMMODATE A 90-FT TRUCK.
8. THE CONTRACTOR AND OPERATOR SHALL MAINTAIN A MINIMUM OF 300' OF SIGHT DISTANCE. TREES AND BRUSH SHALL BE TRACKED AND REMOVED AS NECESSARY FOR THE DURATION OF THIS SITE.

**Original Stockpiles**

Name	CY
A	4000.0
Total	4000.0

**STREAM / WETLAND IMPACT**

Facil Wetland Impact (Square Feet)	
WL1 (Well Pad)	3,222
WL2 (Well Pad)	3,292
Total Area (Sq. Ft.)	6,454
Total Area (Acres)	0.14

**WV 177 PAD QUANTITIES**

Description	Cut (CY)	Fill (CY)	Spill (CY)	Borrow (CY)	Max. Slope (%)	Length of Slope (FT)
Access Road-A	1.3	4040.3	0.0	4038.0	15.0	75.0
Well Pad	1680.0	7357.5	0.0	5677.5	n/a	n/a
Well Pad Containment Berm	0.0	378.0	0.0	378.0	n/a	n/a
Tank Pad-A	250.0	3125.9	0.0	2836.9	n/a	n/a
Truck Turnaround Pad-A	0.0	917.1	0.0	917.1	n/a	n/a
Striped Topsoil (6")	3638.0	0.0	3638.0	0.0	n/a	n/a
Material Stockpiles	0.0	4000.0	0.0	4000.0	n/a	n/a
Total	5608.3	19618.8	3638.0	17848.5	n/a	n/a
Total Spill (CY)			-14210.5			



THIS DOCUMENT WAS REVIEWED BY SMITH LAND SURVEYING, INC. FOR: EQT PRODUCTION COMPANY

WELL PAD AND ACCESS ROAD DETAILS AND VOLUMES

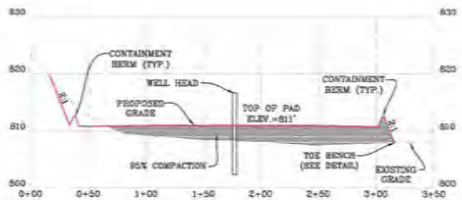
**BIG 177**  
GRANT DISTRICT  
WETZEL COUNTY, WV

DATE: 05/09/2013  
SCALE: 1" = 50'  
DESIGNED BY: CSK  
FILE NO.: 6806  
SHEET 3 OF 8  
REV: 11/10/14



**APPROVED**  
**WVDEP OOG**  
 11/12/2014

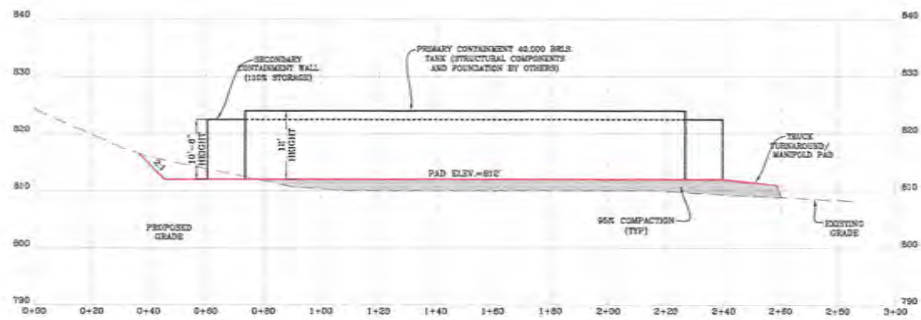
# WELL PAD SECTION AND ROAD PROFILE AND SECTIONS



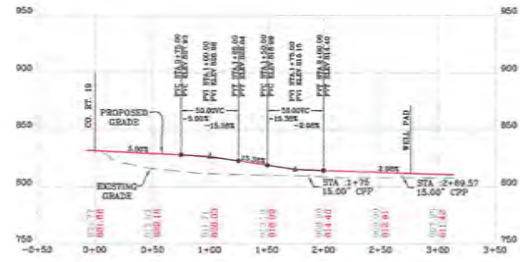
**WELL CROSS SECTION "A-A"**  
 SCALE HORIZ 1" = 50' VERT 1" = 10'

- NOTE:**
1. ALL PROPOSED DRAINAGE CULVERTS AND DRAIN PIPES SHALL HAVE ADEQUATE OUTLET PROTECTION (ZIP-RAP) AS SHOWN ON THESE PLANS.
  2. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN 12" LIFTS (9" RECOMMENDED) WITH A VIBRATING SHEEPSFOOT ROLLER TO 95% COMPACTION PER STANDARD PRACTICE.
  3. TOPSOIL SHALL BE STRIPPED FROM ALL STOCKPILE AREAS PRIOR TO CONSTRUCTING STOCKPILES. AFTER STOCKPILES ARE CONSTRUCTED TOPSOIL IS TO BE REAPPLIED AT A DEPTH OF 6". SLOPES SHALL BE TRACKED BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR.
  4. ALL EARTHWORK VOLUMES WERE CALCULATED USING A CUT SWELL FACTOR OF 1.0 AND A FILL SHRINK FACTOR OF 1.0.

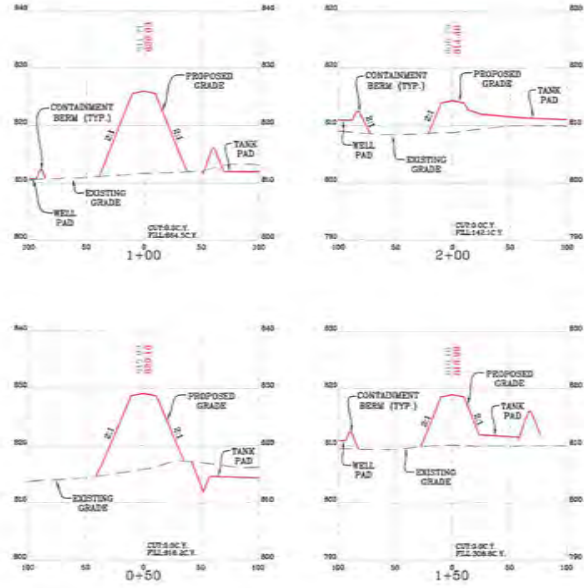
CONTAINMENT BERM:	
PRIMARY CONTAINMENT	40,000 BBL
SECONDARY CONTAINMENT	44,000 BBL (REQUIRED)
SECONDARY CONTAINMENT	44,000 BBL (PROVIDED)



**TANK PAD CROSS SECTION "B-B"**  
 SCALE HORIZ 1" = 20' VERT 1" = 10'



**WELL PAD ACCESS ROAD PROFILE**  
 SCALE HORIZ 1" = 50' VERT 1" = 50'



**WELL PAD ACCESS ROAD CROSS-SECTIONS**  
 SCALE HORIZ 1" = 50' VERT 1" = 10'



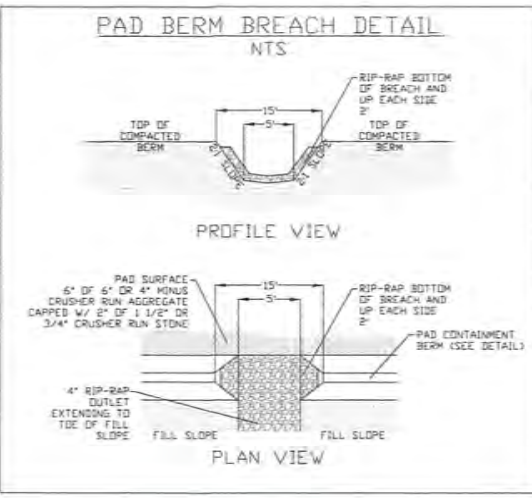
THIS DOCUMENT WAS  
 REVIEWED BY: SMITH  
 LAND SURVEYING, INC.  
 FOR: EQT PRODUCTION  
 COMPANY

WELL PAD SECTION AND ROAD PROFILE AND SECTIONS  
**BIG 177**  
 GRANT DISTRICT  
 WETZEL COUNTY, WV

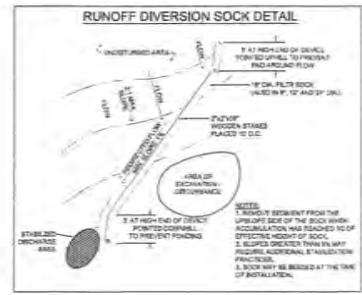
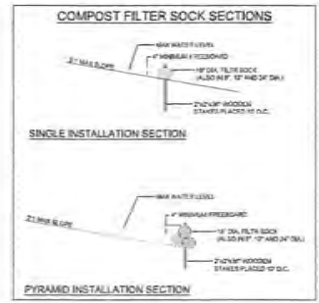
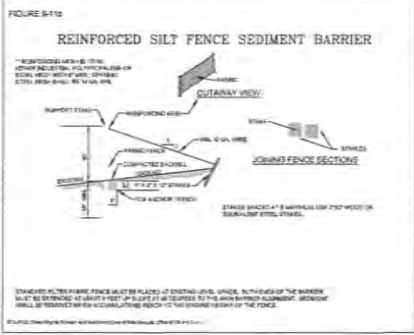
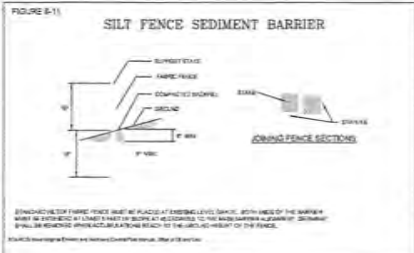
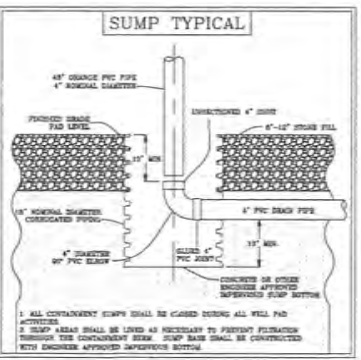
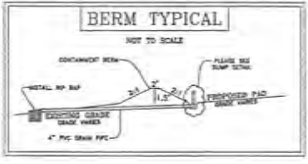
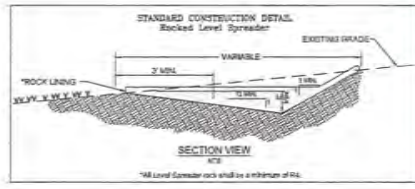
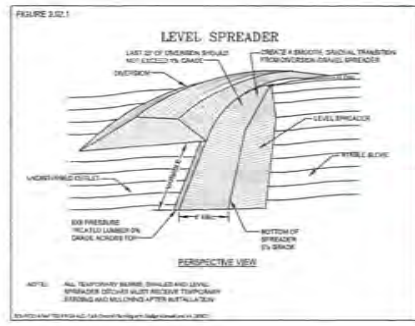
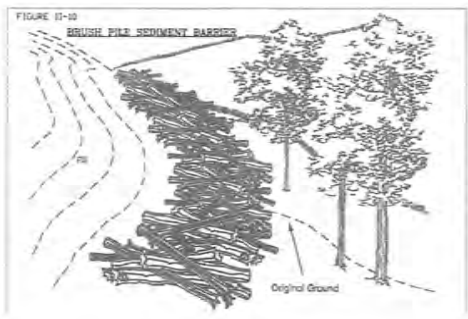
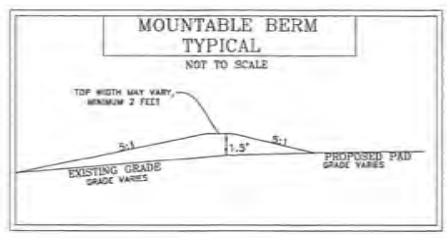
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 SCALE: AS SHOWN  
 DESIGNED BY: CSK  
 FILE NO: 6838  
 SHEET: 4 OF 8  
 REV: 11/20/14







**APPROVED**  
**WVDEP OOG**  
11/12/2014



Item	Quantity	Notes
4\"/>		

Blank forms shall meet minimums of Table 4.1. Design shall meet the following standards:  
 Designation: Blank Form  
 Material: 100% Recycled Paper  
 Weight: 16 lb/30 in. x 42 in. x 100 ft  
 Finish: Matte  
 Color: White  
 Recycled Content: 100%  
 FSC: C0C0C0  
 Manufacturer: Recycled Paper Products Co.

Blank forms shall be stored at existing level grade. Both ends of the roll shall be extended at least 8 feet to the slope at 45 degrees to the rolls end alignment. Maximum slope shall be 1:1 and shall not exceed manufacturer's maximum permissible slope length.  
 Rolls shall not be permitted to cross other rolls.  
 Installation shall be removed when it reaches 1/2 the above ground length of the roll and repaired in the manner described elsewhere in the plan.  
 Rolls shall be replaced weekly and after each rainfall event. Damaged rolls shall be replaced according to manufacturer's specifications or replaced within 24 hours of inspection.  
 Reusable filter socks shall be replaced after 6 months. Photodegradable socks after 3 years.  
 Polypropylene socks shall be replaced according to manufacturer's recommendations.  
 Upon installation of the area tributary to the sock, stakes shall be removed. The sock may be left in place and repaired or removed in the other case. The sock shall be cut open and the waste swept as a roll replacement.  
 In the event the ground is frozen, all water with safety caps shall be used instead of wooden stakes to anchor the filter sock. Once the ground thaws the filter anchors shall be removed and replaced with 2\"/>

1. All containment berms shall be closed during all well pad activities.
2. Sump areas shall be used as necessary to prevent filtration through the containment berm. Sump base shall be constructed with engineer approved waterproofing system.

STANDARD FILTER FABRIC SOCKS MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET TO THE SLOPE AT 45 DEGREES TO THE ROLL'S END ALIGNMENT. SECTION SHALL BE REPAIRED WEEKLY OR AFTER EACH RAINFALL EVENT TO THE UNLINED LENGTH OF THE SOCK.  
 Roll shall be replaced when it reaches 1/2 the above ground length of the sock.

STANDARD FILTER FABRIC SOCKS MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET TO THE SLOPE AT 45 DEGREES TO THE ROLL'S END ALIGNMENT. SECTION SHALL BE REPAIRED WEEKLY OR AFTER EACH RAINFALL EVENT TO THE UNLINED LENGTH OF THE SOCK.

NOTE: FILTER SOCKS MUST BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK MUST BE EXTENDED AT LEAST 8 FEET TO THE SLOPE AT 45 DEGREES TO THE ROLL'S END ALIGNMENT. SECTION SHALL BE REPAIRED WEEKLY OR AFTER EACH RAINFALL EVENT TO THE UNLINED LENGTH OF THE SOCK. A SOCK MAY BE REPAIRED AT THE TIME OF INSTALLATION.

**REVEGETATION**  
 Taken from the  
 West Virginia Erosion and Sediment Control Field Manual  
 West Virginia Division of Environmental Protection Office of Oil and Gas  
 Charleston, W.Va.  
 Section IV



**Temporary Seeding**

**a. General Conditions Where Practice Applies**  
 Where exposed soil surfaces are not to be fine-graded or worked for periods longer than 21 days. Temporary vegetative cover with sediment controls must be established where runoff will go directly into a stream. Immediately upon construction of the site (site includes road and location), vegetation must be established on road bank and location slopes. A permanent vegetative cover shall be applied to areas that will be left un-worked for a period of more than six months.

**b. Seed Mixtures and Planting Dates**  
 Refer to Tables 2 through 4 for recommended dates to establish vegetative cover and the approved lists of temporary and permanent plant species and planting rates. Table 3 shows recommended types of temporary vegetation, rates of application, and optimum seeding dates. In situations where another cover is desired, contact the local soil conservation district for seeding recommendations.

**c. Seed Application**  
 Apply seed by broadcasting, drilling, or by hydroseeding according to the rates indicated in Table IV-3. Perform all planting operations at right angles to the slope. Necessary site preparation and roughening of the soil surface should be done just prior to seeding. Seedbed preparation may not be required on newly disturbed areas.

**Permanent Seeding**

**a. General**  
 Permanent vegetative cover will be established where no further soil disturbance is anticipated or needed. Soil fertility and pH level should be tested and adjusted according to seed species planted. Planting of permanent vegetative covers must be performed on all disturbed areas after completion of the drilling process. Any site that contains significant amounts of topsoil shall have the topsoil removed and stockpiled when feasible. Topsoil should not be added to slopes steeper than 2:1 unless a good bonding to the sub-layer can be achieved. After proper grading and seeded preparation, the vegetation will reestablish ground cover for the control of surface water runoff erosion.

All required seeded preparation and loosening of soil by disk or cover tracking should be performed just prior to seeding. If seedbed preparation is not feasible, 50% more seed shall be added to the recommended rate shown in Tables IV-3 and IV-4. When hydroseeding, seedbed preparation may not be necessary if adequate site preparation was performed. Incorporate the appropriate amount of lime and/or fertilizer in the slurry mix when hydroseeding. When hydroseeding, first mix the lime, fertilizer, and hydro-mulch in the recommended amount of water. Mix the acid and limonites together within one hour prior to planting, and add to the slurry just before seeding. Apply the slurry uniformly over the prepared site. Ensure that agitation is continuous throughout the seeding operation and the mix is applied within one hour of initial mixing.

**b. Lime and Fertilizer**  
 1. Lime shall be applied to all permanent seedings. The pH of the soil is to be determined and lime applied accordingly. Once the pH is known, select the amount of lime to be applied from Table IV-5.  
 2. Fertilizer shall be applied to all permanent seedings. Apply the equivalent for 500 lbs. minimum 10-20-20 fertilizer per acre or use the amount of fertilizer and lime recommended by a certified soil test.  
 3. Application: For best results and maximum benefits, the lime and fertilizer are to be applied at the time of seedbed preparation.

**c. Permanent Seed Mixtures**  
 Planners should take full consideration the species makeup of the existing pasture and the landowner's future pasture management plans when recommending seed mixtures. Selection from Tables IV 4a and b. Permanent Seeding Mixtures Suitable for Establishment in West Virginia.

**Notes:**  
 1. All legumes must be planted with the proper inoculants prior to seeding.  
 2. Lathyrus is potentially poisonous to some livestock.  
 3. Only endophyte free varieties of Tall Fescue should be used. Tall Fescue and Crownvetch are also very invasive species, non-native to WV.  
 4. For unprepared seedbeds or seeding under the optimum timeframes, add 50% more seed to the specified rate. Mixtures in Table 4b are more wildlife and farm friendly; those listed in bold are suitable for use in shaded woodland settings. Mixtures in *italics* are suitable for use in filter strips.

**d. Seeding for Wildlife Habitat**  
 Consider the use of the native plants or locally adapted plants when selecting cover types and species for wildlife habitat. Wildlife friendly species or mixes that have multiple values should be considered. See wildlife friendly species/mixtures in Table IV-4b. Consider seedling or on-site maintenance techniques applicable to sites which may be difficult to maintain with equipment.

**Mulching**

**a. General Organic Mulches**  
 The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made from wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged. Due to the rate of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas. Depending on site conditions, in critical areas such as waterways or steep slopes, additional or substitute soil protective measures may be used if deemed necessary. Examples include jute mesh and soil stabilization blankets or erosion control matting. Areas that have been temporarily or permanently seeded should be mulched immediately following seeding. Mulches conserve desirable soil properties, reduce soil moisture loss, prevent crusting and sealing of the soil surface and provide a suitable microclimate for seed germination. Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay should be used and the area then seeded as soon as weather or seasonal conditions permit. Do not use fiber mulch (cellulose-hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch. Wood cellulose fiber mulch is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over the top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover. Use straw mulch during these periods and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas and areas susceptible to wind.

**b. Chemical Mulches, Soil Binders and Tackifiers**  
 A wide range of synthetic spray on materials are marketed to stabilize and protect the soil surface. These are mixed with water and sprayed over the top of the soil. They may be used alone in some cases as temporary stabilizers, or in conjunction with fiber mulch, straw or hay. When used alone most chemical mulches do not have the capability to insulate the soil or retain soil moisture that organic mulches have.

**c. Specifications**  
 From Table IV-6 select the type of mulch and rate of application that will best suit the conditions at the site.

**d. Anchoring**  
 Depending on the field situation, mulch may not stay in place because of wind action or rapid water runoff. In such cases, mulch is to be anchored mechanically or with mulch netting.  
 1. Mechanical Anchoring: Apply mulch and pull mulch anchoring tool over the mulch. When a disk is used on the disk straight and pull across slope. Mulch material should be tacked into the soil above three inches.  
 2. Mulch netting: Follow manufacturer's recommendation when positioning and stapling the mulch netting in the soil.

Table IV-1  
Recommended Seeding Dates

Planting Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods
April 15 - August 1	HIGH RISK - moisture stress likely
October 1 - December 1	HIGH RISK - freeze damage to young seedlings
December 1 - March 1	Good seeding period. Dormant seeding

Table 2  
Acceptable Fertilization Recommendation

Species	N (lbs/acre)	P2O5 (lbs/acre)	Complete (lbs. per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	50	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-15-19

Table 3  
Temporary Cover

Species	Seeding Rate (lbs./acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Brome	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Data	56	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Lucerne	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	158	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Barnyard	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	25	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Data	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

Table 4a  
Permanent Seeding Mixture

Species/Mixture	Seeding Rate (lbs./acre)	Soil Drainage preference	pH Range
Crownvetch /	10 - 13	Well - Mod. Well	5.0 - 7.5
Tall Fescue /	30		
Crownvetch /	15 - 15	Well - Mod. Well	5.0 - 7.5
Perennial Ryegrass /	20		
Florges or Perennial Pea /	20	Well - Mod. Well	4.0 - 8.0
Tall Fescue /	18		
Ladino Clover /	25		
Wieria Legumosa /	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue /	2		
Tall Fescue /	40		
Ladino Clover /	3	Well - Mod. Well	5.0 - 7.5
Arthrop /	10		
Crownvetch /	10		
Tall Fescue /	25	Well - Mod. Well	5.0 - 7.5
Reitro /	3		
Tall Fescue /	40		
Birdfoot Trefoil /	10	Well - Mod. Well	5.0 - 7.5
Reitro /	3		
Sorrel (Legumosa) /	25		
Tall Fescue /	30	Well - Mod. Well	4.5 - 7.5
Reitro /	3		
Reitro /	3		
Tall Fescue /	1	Well - Mod. Well	5.0 - 7.5
Creeping Red /	50		
Tall Fescue /	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass /	10		
Tall Fescue /	10		
Lathyrus Cytisus *	20	Well - Poorly	5.0 - 8.0

\* Lathyrus Florges is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures listed in bold are suitable for use in shaded woodland settings; those in *italics* are suitable for use in filter strips.

Table 4b  
Wildlife and Farm Friendly Seed Mixtures

Species/Mixture	Seeding Rate (lbs./acre)	Soil Drainage preference	pH Range
KY Ryegrass /	20		
Reitro /	3	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdfoot Trefoil /	2 / 10		
Alfalfa /	5	Well - Mod. Well	6.5 - 8.0
Tanacet /	5		
Birdfoot Trefoil /	8	Well - Poorly	5.5 - 7.5
Orchardgrass /	10		
Ladino Clover /	2	Well - Mod. Well	5.5 - 7.5
Reitro /	3		
Orchardgrass /	10		
Ladino Clover /	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass /	10	Well - Mod. Well	5.5 - 7.5
Perennial Ryegrass /	10		
Creeping Red Fescue /	30	Well - Mod. Well	5.5 - 7.5
Perennial Ryegrass /	10		
Orchardgrass or KY Ryegrass /	20	Well - Mod. Well	5.0 - 7.5
Birdfoot Trefoil /	10		
Reitro /	5	Well - Mod. Well	5.5 - 7.5
Orchardgrass /	20		
Ladino Clover /	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass /	10		

\* Lathyrus Florges is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframes, add 50% more seed to the specified rate. Mixtures listed in bold are suitable for use in shaded woodland settings; those in *italics* are suitable for use in filter strips.

Table IV-5  
Lime and Fertilizer Application Table

Soil pH	Lime in Tons per Acre	Fertilizer, lbs. per Acre (10-20-20 or Equivalent)
Above 6.0	2	500
5.0 to 6.0	3	500
Below 5.0	4	500

The pH can be determined with a portable pH testing kit or by sending the soil sample to a soil testing laboratory. When 4 tons of lime per acre are applied it must be incorporated into the soil by tilling, backhoeing or tracking up and down the slope.

Table IV 6  
Mulch Materials Rates and Uses

Mixture	Minimum Rate per acre	Contract	Remarks
Hay or Straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	100 to 150 bales	Cover all	For hydroseeding
Poly Fiber	1000 to 1500 lbs	Disturbed Areas	
Wood - Cellulose			
Recycled Paper			

Tables IV 1-4 taken from Natural Resources Conservation Service Manual "Critical Area Planting"



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CONSTRUCTION DETAILS  
**BIG 17**  
 GRANT DISTRICT  
 WETZEL COUNTY, WV

DATE: 05/09/2013  
 SCALE: N/A  
 DESIGNED BY: CSK  
 FILE NO: 6009  
 SHEET: 8 OF 8  
 REV: 11/30/14