

Digging Deeper

Background

- Looking at wells
 - o Regulations
 - o Compliance

EQT vertical well site in Kanawha
State Forest





Maintenance issues



- Prior to looking at sites
 - o Determining sites to examine
 - o Issues with compliance

Map Layers

- ☐ Bing street map
- ☐ Bing aerial
- ☐ simplified
- ☒ topo
- ☐ hillshade
- ☐ 1996 aerial
- ☐ 2003 aerial
- ☐ 2007 aerial
- ☐ 2009 aerial
- ☐ 2011 aerial
- ☐ received < 60 days
- ☐ horizontal wells
- ☒ by well status
- ☒ by permit type
- ☒ other oil&gas wells
- ☒ WV marcellus density

Attribute Search

Results

Legend

Zoom to Location

About

Oil&Gas Layers

Oil and Gas Permits, by Well Status

- Drilling or Under Construction
- Active Well
- Abandoned Well
- Plugged
- Future Use

EQT abandoned
vertical well in
Kanawha
county



Cabot vertical shale well site in
Putnam county, 47-079-01314



Exposed pit liner

Citizen Monitoring Class

- Materials available online
 - o Videos
 - o Exercises
 - o Background materials
 - o Handouts

Tools

- Online state databases
 - o West Virginia Geological and Economic Survey
 - o Office of Oil and Gas

Geological and Economic Survey

- Pipeline
- Pipeline Plus



"Pipeline"

Select County: (097) Upshur

Enter Permit #: 03708

Get Data

Reset

Select Data types:

- ☒ Location ☐ Production ☐ Logging
☒ Owner/Completion ☐ Stratigraphy ☐ Sample
☒ Pay/Show/Water ☐ Logs ☐ Btn Hole Loc

[Table Descriptions](#)
[County Code Translations](#)
[Permit-Numbering Series](#)
[Usage Notes](#)
[Contact Information](#)
[Disclaimer](#)
[WVGES Main](#)
["Pipeline-Plus" New](#)

WV Geological & Economic Survey:

Well: County = 97 Permit = 03708

Report Time: Wednesday, June 19, 2013 6:46:16 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LOH_DD	UTME	UTMH
4709703708	Upshur	3708	Banks	Rock Cave	Crawford	38.792958	-80.347711	556647.4	4294003.3

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_HUM	CO_HUM	LEASE	LEASE_HUM	MINERAL_OWNI	OPERATOR
4709703708	1/13/2011	Dvtd Orgnl Loc	Completed	Tall Trees & Land LLC	8H	831679	Tall Trees & Land LLC	1-265868/1-264856/1-265868	James Michael McKisic	Chesapeake Appalachia, LL

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF	G_A
4709703708	1/13/2011	7/18/2010	1664	Ground Level	Cave Run	Marcellus Sh	Marcellus Sh	Development Well	Development Well	Gas	Rotary	Fractured	6932	11887	11887	2716	

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QHTY
4709703708	1/13/2011	Water	Fresh Water	Vertical			350	Pennsylvanian System					
4709703708	1/13/2011	Pay	Gas	Deviated	7179	Marcellus Sh	7501	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	7579	Marcellus Sh	7901	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	7979	Marcellus Sh	8301	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	8379	Marcellus Sh	8701	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	8779	Marcellus Sh	9101	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	9179	Marcellus Sh	9501	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	9579	Marcellus Sh	9821	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	9899	Marcellus Sh	10141	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	10219	Marcellus Sh	10541	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	10619	Marcellus Sh	10941	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	11019	Marcellus Sh	11341	Marcellus Sh					
4709703708	1/13/2011	Pay	Gas	Deviated	11419	Marcellus Sh	11741	Marcellus Sh					

One of the wells at the Tall Trees site

Production Gas Information:

API	OPERATOR	PRD_YEAR	ANNUAL GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4709703708	Chesapeake Appalachia, LLC	2011	1896688	0	0	0	0	0	0	0	0	31481	69598	48196	40413

WR-35
Rev (9-11)

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas
Well Operator's Report of Well Work

DATE: 1-18-2012
API #: 47-097-03708

Pipeline Plus

Farm name: Tall Trees Operator Well No.: 8H (831679)

RECEIVED

LOCATION: Elevation: 1,664' Quadrangle: Rock Cave

APR 3 2012

District: Banks County: Upshur
Latitude: 4,196' Feet South of 38 Deg. 47 Min. 30 Sec.
Longitude 4,940 Feet West of 80 Deg. 20 Min. 00 Sec.

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
<u>P.O. Box 18496</u>				
<u>Oklahoma City, OK 73154-0496</u>	<u>20"</u>	<u>20'</u>	<u>20'</u>	<u>driven</u>
Agent: <u>Eric Gillespie</u>	<u>13 3/8"</u>	<u>470'</u>	<u>470'</u>	<u>480 cf</u>
Inspector: <u>David Jackson</u>	<u>9 5/8"</u>	<u>2162'</u>	<u>2162'</u>	<u>962 cf</u>
Date Permit Issued: <u>10/27/2010</u>	<u>5 1/2"</u>	<u>11888'</u>	<u>11887'</u>	<u>1796 cf</u>
Date Well Work Commenced: <u>7/18/2010</u>				
Date Well Work Completed: <u>1/13/2011</u>				
Verbal Plugging:	Completion report for that Tall Trees well			
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): <u>6,932'</u>				

Office of Oil and Gas

- Permits
- Wells
- Map Search
- Violations
- UIC well data

Disclaimer:

Per §22-6-6. Permit required for all well work; permit fee; application; soil erosion control plan

(a) It is unlawful for any person to commence any well work, including site preparation work, which involves any disturbance of land, without first securing a well work permit from the director of the WVDEP Office of Oil and Gas.

The appearance of an API number on the web page does not signify that a permit has been issued. The API number is used as a tracking mechanism until the permit has been issued. Under no circumstances should well work be commenced without a signed permit.

API	Permit Number	Permit Type	Current Operator	Farm Name	Well Number	Permit Activity Type	Permit Activity Date
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Modification Denied 1	12/02/2009
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Signed Rec Plan Received	12/02/2009
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Application Received	12/10/2009
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permits Issued	12/29/2009
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Plat Approved	12/29/2009
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Modification Received 1	02/16/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Signed Rec Plan Received	02/16/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permit Modification Approved 1	02/17/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Modification Received 1	03/17/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permit Modification Approved 1	04/08/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permits Commenced	07/18/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Casing Approved	07/19/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Modification Received 1	07/21/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permit Modification Approved 1	07/23/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Plat Approved	07/23/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Modification Received 1	09/13/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Casing Approved	10/27/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permit Modification Approved 1	10/27/2010
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Permits Completed	01/13/2011
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	Completion Report (WR35) Received	04/03/2012
097-03708	1	HORMV	CHESAPEAKE APPALACHIA, L.L.C.	TALL TREES & LAND LLC	831679	DMR (WR34) Received	01/08/2013

Details on permitting for that Tall
Trees well

Well Search

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Per §22-6-6. Permit required for all well work; permit fee; application; soil erosion control plan.

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API	Last Permit Issue Date	Farm Name	Well Number	Operator	Status
097-03708	12/29/2009	TALL TREES & LAND LLC	831679	CHESAPEAKE APPALACHIA, L.L.C.	Active Well

The operator listed above is the CURRENT operator of the well.

This operator may or may not have recorded production for this well for the years listed below.

The production listed below spans this well's entire lifetime, regardless of the operator who originally recorded a particular year's production numbers.

Well Lifetime Gas Production

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Reporting Operator
2012	32,533	39,542	37,970	33,808	32,478	28,782	30,742	28,928	26,624	26,916	25,024	24,942	368,289	CHESAPEAKE APPALACHIA, L.L.C.
2011	0	0	0	0	0	0	0	0	31,481	69,598	48,196	40,413	189,688	CHESAPEAKE APPALACHIA, L.L.C.

All amounts expressed in mcf (thousand cubic feet)

No Oil Production Reported

The West Virginia Department of Environmental Protection (WVDEP) makes oil and gas well information and production data available to the general public through this internet service free of charge.

The oil and gas related data originate from the information reported to the Office of Oil and Gas at WVDEP by West Virginia oil and gas operators. The WVDEP does not guarantee their accuracy, precision, or completeness.

Neither the West Virginia Department of Environmental Protection nor its staff members are liable or responsible for any damage or loss resulting from the use of these data or from inaccuracies contained in the data.

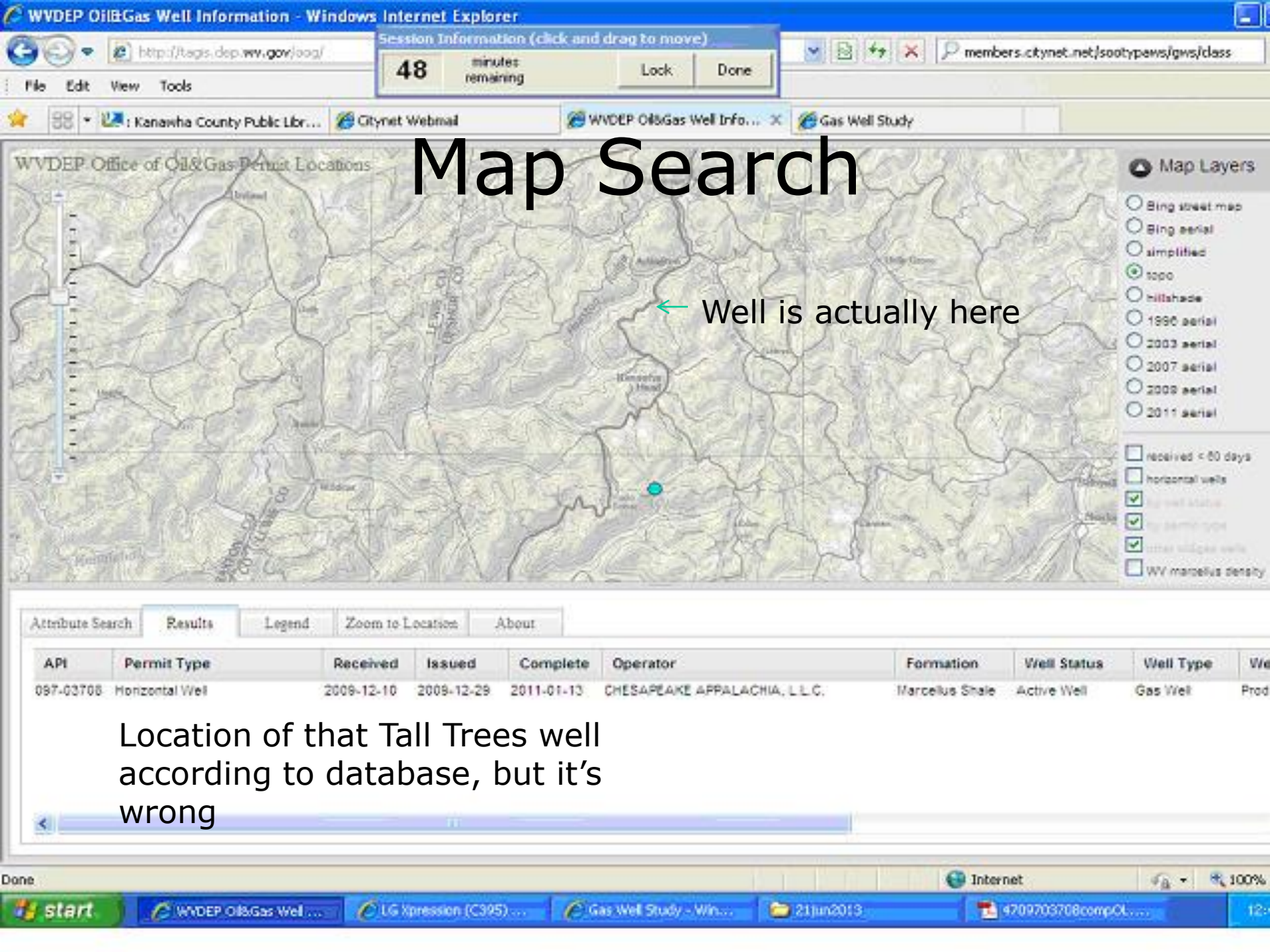
We encourage you to report any problems, inconsistencies, or errors noted in using this data to the Office of Oil and Gas so that we can correct them and provide better service.

Office of Oil and Gas
Department of Environmental Protection
601 57th St
Charleston, West Virginia 25304
Phone: (304) 926-0499
Fax: (304) 926-0452

Well information, including
production reports, for that Tall
Trees well

Producing Viking
Energy vertical well in
Putnam county –
production not reported
in 2008, 2009, and
2010





3/2012

N

abandoned tank

Actual location of 39-2319

39-2319

39-1198

© 2012 Google

Google earth

351 ft

Imagery Date: 3/26/2012



1990

38°29'46.14" N 81°43'42.00" W elev. 822 ft

Eye alt 2527 ft



Problems with Databases

- Incorrect information
 - o Location data
 - o Operator data
 - o Inspection data

FOIA Requests

- To DEP, forwarded to OOG
- For documents, forms, files



west virginia department of environmental protection
- Promoting a Healthy Environment

Preparing a FOIA

DEP Offices | Agency History | News | Outlook Web Access | Text size A A A

PIO Home Page

Youth Environmental
Program-YEP

InDEPth (Agency monthly
newsletter)

Enviro Fact Sheets

DEP Rules

2014 Proposed Rules

Annual Report

State of the Environment
report

Jobs

Narrative Water Quality
Permitting Guidance

Settlements, Orders out to
public notice

Home > Public Information Office > FOIA Request

FOIA Request

FREEDOM OF INFORMATION ACT (FOIA) REQUEST

Name:

Address:

Address2:

City:

State:

Zip Code:

Phone Number:

Email Address:

Under my rights through the FOIA, I hereby request the following:

- Keep it simple
- Be precise
- Be aware of cost of reproduction

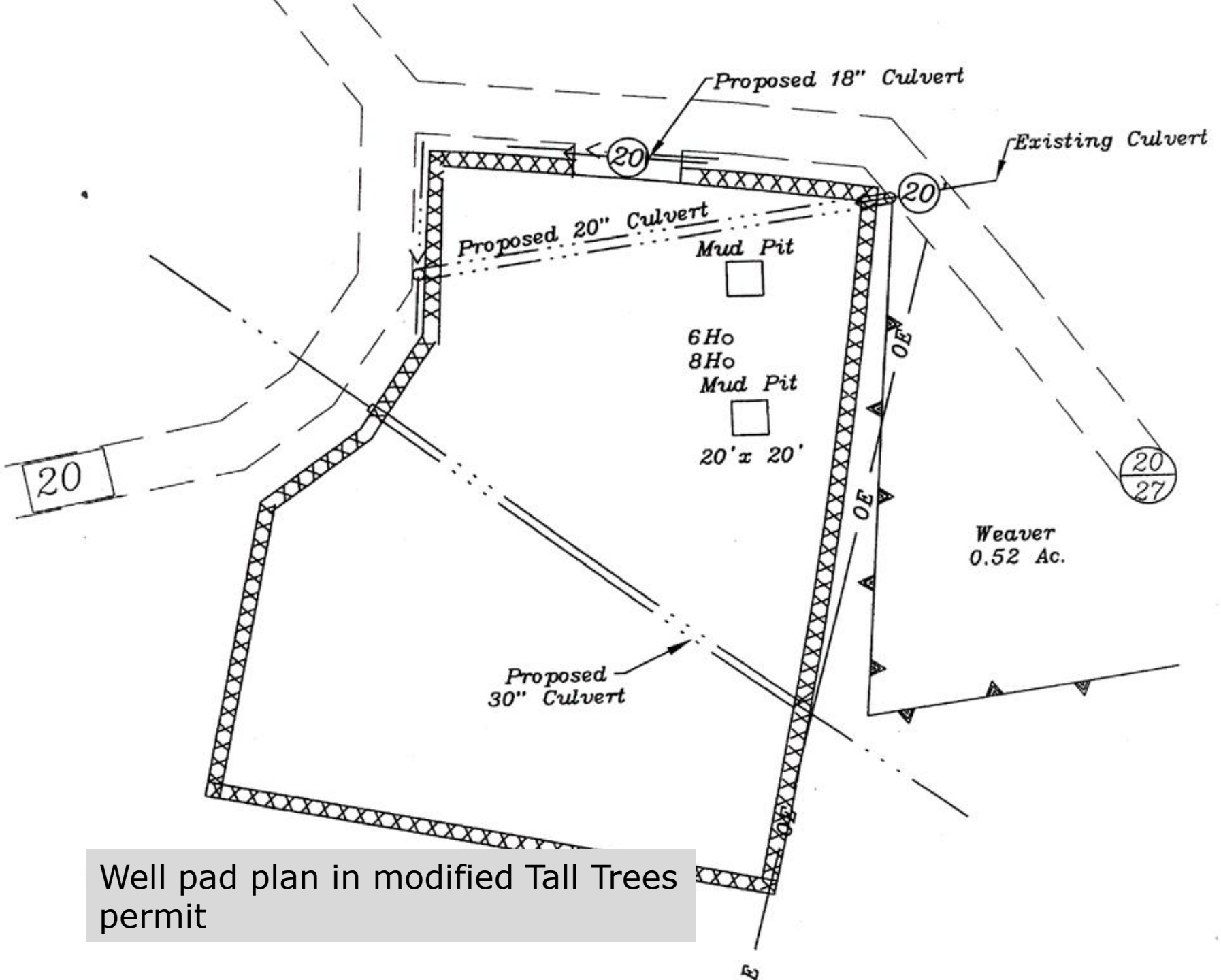


Addendum for Antero pads in Ritchie County, WV

Ireland Unit 1H	Permit #47-085-10005	Ness pad
Ireland Unit 2H	Permit #47-085-10006	Ness pad
Anna Unit 3H	Permit #47-085-10015	Eddy pad

The following outlines the process to be undertaken by Antero Resources prior to and during completion process of wells.

- Investigate all wells within 1320' of new wells when within the defined Alexander to Marcellus <1500' window and all Marcellus vertical wells
 - contact operator of all wells
 - confirm well status, producing horizon, well completion/stimulation information
 - discuss plans to stimulate the horizontal Marcellus wells and the plans for monitoring Potential impact on shallow wells
 - make sure all vertical Marcellus to Alexander wells have adequate wellhead equipment, Including pressure gauges
 - provide shallow well operator with frac dates and monitor during stimulation
 - if well waters out during frac, shut it in until after stimulations, and install adequate well Control equipment prior to swabbing in the impacted shallow well
- Control fracturing parameters during job to limit fracture height growth
 - limit rate and limit pressures for each segment of fracturing stages
- Tracers demonstrate that we rarely reach offset wells at 660' offset
 - will use tracers at each lateral



Well pad plan in modified Tall Trees permit

FOIA Document Delivery

- Paper copies
- Digital copies sent by email
- View at DEP in Charleston

Documents at DEP

- Paper (most recent in date)
- Limbo (documents about 2 years old out for scanning)
- On DEP's intranet
- Microfiche (the older storage system)
- Office working files such as spreadsheets

Paper Files

- Permit files – kept in paper form for about 2 years. Stored in OOG's file room.
- NOVs – like permits
- UIC – permitting documents kept in paper, compliance documents scanned and on intranet

File Structure Problems

- Complaints are filed according to date – no cross reference to well/operator. No copy in well's file.
- Inspections are filed with permit but on intranet are not searchable. NOVs resulting from inspection are searchable.

Other Resources

- Google Earth
- FracFocus

Google Earth

- View with date slider
- Sometimes able to see site features such as position of pits

4/2006

Date view set to 2006

Molly was standing here

Cabot vertical shale well seen
earlier – 47-079-01314

© 2012 Google

Image U.S. Geological Survey

Google earth

159 ft

Imagery Date: 3/31/2006



1990

38°30'06.21" N 81°45'17.65" W elev 1052 ft

Eye alt 1663 ft

Fracture Date:	3/1/2011
State:	WEST VIRGINIA
County:	UPSHUR
API Number:	4708703686
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	JAMES OGDEN 3H
Longitude:	-80.280048
Latitude:	38.815487
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	5,248
Total Water Pumped (gal):	8,586,000

FracFocus

- Searchable
- Downloadable files

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS#)	Maximum Ingredient Concentration in Additive (% by Mass)**	Maximum Ingredient Concentration in HF Fluid (% by Mass)**	Comments
Fresh Water		Carrier/Process Fluid				50.0000%	
Recycled Produced Water		Carrier/Process Fluid				10.0000%	
Sand (Proppant)		Proppant				10.08741%	
15% HCl Acid	CALFRAC		Water	007732-18-5	85.00%	0.58627%	
			Hydrochloric Acid	007647-01-0	15.00%	0.10346%	
DAP-103	CALFRAC	Iron Control Agent	Citric Acid	000077-92-9	60.00%	0.00230%	
DAP-923	CALFRAC	Corrosion Inhibitor	Methanol (Methyl Alcohol)	000067-56-1	60.00%	0.00018%	
			Ethoxylated Alcohols* C14-15	068951-67-7	30.00%	0.00009%	
			Modified Thiourea Polymer	068527-49-1	30.00%	0.00009%	
			Tall Oil Fatty Acids	061790-12-3	30.00%	0.00009%	
			Propargyl Alcohol (2-Propynol)	000107-19-7	10.00%	0.00003%	
			Alkenes* C>10 alpha-	064743-02-8	5.00%	0.00001%	
SCALETROL 720	BJ SERVICES COMPANY U S A	Scale Inhibitor	Ethylene Glycol	000107-21-1	35.00%	0.01038%	
			Diethylene Glycol	000111-46-6	5.00%	0.00148%	
ALPHA 114	BJ SERVICES COMPANY U S A	Bactericide	Glutaraldehyde (Pentanediol)	000111-30-8	15.00%	0.00211%	
			Dimethyl benzyl ammonium chloride	000139-08-2	5.00%	0.00070%	
DWP-901	CALFRAC	Breaker	Ammonium Persulfate	007727-54-0	100.00%	0.03038%	

- Some reports have errors – wrong product name or missing product name



BJ SERVICES COMPANY

MATERIAL SAFETY DATA SHEET

Region
USA

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name: **CI-14**
Item Number: 499779
Product Use: Corrosion inhibitor
Supplier: BJ Services Company
11211 FM 2920
Tomball, Texas 77375
(281)351-8131

**IN CASE OF EMERGENCY CALL: (800) 424-9300 for
CHEMTREC
(703) 527-3887 for
International**

HMIS HAZARD INDEX

HEALTH: 2
FLAMMABILITY: 3
REACTIVITY: 0
PERSONAL PROTECTION: h

2 COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	CAS#	Percent	Hazard
Methanol	000067-56-1	60-100	Flammable toxic
Propargyl alcohol	000107-10-7	1.5	Toxic

Putting It All Together

- Area drilling history and infrastructure
- Operator compliance
- Abandoned and orphaned wells
- Plugged wells