

Hydraulic Fracturing: Chemical Disclosure and Groundwater Protection Priorities



October 18, 2011

Joe Lee, Past President
Ground Water Protection Council

Who is the GWPC?

GWPC is the National Association of State
Ground Water and Underground Injection
Control Agencies

Our Mission is to Promote the Protection and
Conservation of Ground Water Resources for all
Beneficial Uses, Recognizing Ground Water as a
Critical Component of the Ecosystem

To provide a forum for stakeholder
communication and research in order to improve
governments' role in the protection and
conservation of ground water

Hydraulic Fracturing and GWPC

- **1997** – GWPC submitted an amicus brief in the LEAF case
- **2000** – Passed a resolution calling on congress to clarify status of HF relative to SDWA
- **2000** – Passed a resolution calling for the banning of diesel fuel use in HF in coalbed methane zones that are also USDWs
- **1998 to 2009** Conducted surveys related to hydraulic fracturing regulation
- **2009** - Provided congressional testimony to House Environment and Natural Resources committee
- **2009 to 2011**– Held HF sessions at UIC Conferences, Annual Forums, NGWA Meeting and RBDMS Fall Training
- **2009** - Published 2 reports that included significant discussions of HF (Shale Gas Primer) and (State Regulations Designed to Protect Water Resources)
- **2010** - Submitted comment letter to EPA about the scope of HF study
- **2010** – GWPC Board passed Resolution 10-1: with states, develop HF Registry
- **2011** – Working with states and EPA concerning diesel fuel use guidance
- **2011**– Developing RBDMS HF Schema
- **2011** – Published a two state study of contamination incident investigations (categorized by oilfield practice) (*September, 2011*)
- **2011**– Launched FracFocus Hydraulic Fracturing Chemical Disclosure Registry
- **2011** – GWPC Board passed Resolution 11-3: reporting all intentional chemicals

Studies

- University of Texas (HF efficiency)
- Resources for the Future (Risk analysis)
- Massachusetts Institute of Technology (Water usage)
- Many others (Fluid management, geochemical interaction, federal lands, safety.....)
- U.S. Environmental Protection Agency, Science Advisory Board (Evaluation of contamination probabilities) Final 2014
- U.S. Department of Energy, Science & Environmental Advisory Board (Recommendations for future actions) August 2011 @ www.shalegas.energy.gov/resources/081111_90_day_report.pdf

Regulations

- ▶ **USEPA and State Regulatory Actions**
 - **Diesel fuel use in HF (Guidance)**
September, 2011
 - Status
 - Legal questions
 - State implementation
 - **State disclosure regulations**
 - Pennsylvania, Montana, Wyoming, Texas, New Mexico, California, Colorado, West Virginia, Oklahoma, Arkansas, Louisiana.....

– Why FracFocus?–

To provide factual information to the public about the process of hydraulic fracturing and the chemicals used in that process

http://fracfocus.org/

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Frac Focus
Chemical Disclosure Registry

HYDRAULIC FRACTURING
HOW IT WORKS

GROUNDWATER
PROTECTION

CHEMICAL
USE

REGULATIONS
BY STATE

FIND A WELL
BY STATE

FREQUENT
QUESTIONS

WELCOME

Welcome to FracFocus, the hydraulic fracturing chemical registry website. This website is a joint project of the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission.

On this site you can search for information about the chemicals used in the hydraulic fracturing of oil and gas wells. You will also find educational materials designed to help you put this information in perspective.

[LEARN MORE >](#)

Looking for information about a well site near you?



[FIND A WELL](#)

Search for nearby well sites that have been hydraulically fractured to see what chemicals were used in the process.

FAQs

◀ 1 / 3 ▶

Q. I know there are wells in my area that have been fractured, but when I search for them I get no results. Why?

A. The most likely reasons are that either the wells were fractured before January 1, 2011 or they have not yet been entered into the system. Only wells fractured after January 1st will be entered into the system and since the uploading of records began only recently it will take some time before a large number of wells is available. Please keep checking back as wells are added on a daily basis.

[All FAQs >](#)

Is groundwater protected?

Groundwater Protection: Priority Number One

Oil and natural gas producers have stringent requirements for how wells must be completed. The genesis of these requirements is water safety.

Casing is the first line of defense used to protect freshwater aquifers.

Welcome Hydraulic Fracturing Casing & Cement State Regulations Chemical Use

FracFocus Elements

- ▶ Hydraulic Fracturing: How it Works
- ▶ Groundwater Protection
- ▶ Regulations by State
- ▶ Chemical Use
- ▶ Frequent Questions
- ▶ Find a Well by State

- ▶ These elements describe the fracturing process, the methods used to protect groundwater, why chemicals are used and which chemicals are used. To find information about the state regulatory agencies and their regulations. We also provide answers to frequently asked questions and provide a means for the public to pose questions about hydraulic fracturing. The site also allows a person to see the hydraulic fracturing records of individual wells



Groundwater PROTECTION & WATER USAGE

Pure, clean groundwater. Nothing can replace it. This is why fresh-water aquifers are protected through strictly regulated exploration and production practices.

[ABOUT GROUNDWATER PROTECTION >](#)

Groundwater Protection

Hydraulic Fracturing Water Usage

Groundwater & Aquifers

Groundwater Quality & Testing

Well Construction & Groundwater Protection

Fluid Flow in the Subsurface (Darcy's Law)

Looking for information about a well site near you?



Search for nearby well sites that have been hydraulically fractured to see what chemicals were used in the process.

HYDRAULIC FRACTURING WATER USAGE



Hydraulic fracturing requires large quantities of water.

Oil and natural gas producers have developed multiple ways to obtain the water necessary for wells that are hydraulically

HOW CASING PROTECTS GROUNDWATER



Casing is a process that is regulated by the state for each hydraulically fractured well site.

Well casing acts as a protective barrier between hydraulic

Find a Well

SEARCH OPTIONS

STATE:

Colorado

COUNTY:

Choose a County

WELLS IN COUNTY:

Choose a Well Name

OPERATOR:

Anadarko Petroleum Corporation

API WELL NUMBER:

WELL NAME:

SEARCH

RESET

(Note: One search option is required to do a search.)

All FracFocus well site information is voluntarily provided by participating oil and natural gas operators. Wells hydraulically fractured after January 1, 2011 will be added to the database over time.

See the full list of [participating production companies](#).

LATEST WELLS



API Number: 3002536929
Well Name: Pitchblende 27 Fed #1H
Operator: EOG Resources, Inc.



API Number: 4304750776
Well Name: NBU 921-17B
Operator: Anadarko Petroleum Corporation



API Number: 3001538291
Well Name: Elk Wallow 11 State #4H
Operator: EOG Resources, Inc.



API Number: 4304751248

Select a combination of criteria from the listed fields and click on the search button

Find a Well

 [Back To Search](#)

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	API No.	Job Date	State	County	Operator	WellName	Well Type	Latitude	Longitude	Datum
	05-001-09723	1/8/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 3-9	Gas	39.982340	-104.898600	NAD83
	05-001-09724	1/8/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 5-9	Gas	39.982383	-104.898600	NAD83
	05-001-09721	1/8/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 6-9	Gas	39.982252	-104.898599	NAD83
	05-001-09719	1/14/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 11-9	Gas	39.982210	-104.898599	NAD83
	05-001-09722	1/17/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 12-9	Gas	39.982169	-104.898599	NAD83
	05-001-09725	1/11/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 21-9	Gas	39.982295	-104.898600	NAD83
	05-001-09720	1/20/2011	Colorado	Adams	Anadarko Petroleum Corp...	TALON VIEW 22-9	Gas	39.982129	-104.898598	NAD83
	05-001-08991	4/25/2011	Colorado	Adams	Anadarko Petroleum Corp...	YORK NORTH 13-12 #3	Gas	39.977350	-104.957217	NAD83
	05-001-09111	4/20/2011	Colorado	Adams	Anadarko Petroleum Corp...	DREYER #1	Gas	39.989650	-104.684286	NAD83
	05-069-06420	1/29/2011	Colorado	Larimer	Anadarko Petroleum Corp...	ENCORE 4-12	Gas	40.420216	-104.954907	NAD83
	05-069-06423	1/29/2011	Colorado	Larimer	Anadarko Petroleum Corp...	ENCORE 18-12	Gas	40.420161	-104.954909	NAD83
	05-069-06407	1/25/2011	Colorado	Larimer	Anadarko Petroleum Corp...	MIRACLE 10-12	Gas	40.413925	-104.953288	NAD83

If the search produces results they will be presented as a list from which you can choose a record to view. Click on the pdf logo to see the record.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	2/20/2011
State:	Pennsylvania
County:	Elk
API Number:	37-047-24494
Operator Name:	Seneca Resources
Well Name and Number:	Owls Nest 1H
Longitude:	-78.93563
Latitude:	41.475655
Long/Lat Projection:	NAD83
Production Type:	Gas
True Vertical Depth (TVD):	5,800
Total Water Volume (gal)*:	4,978,125

Hydraulic Fracturing Fluid Composition:

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
Water	Seneca	Carrier / Base Fluid			100.00%	87.58671%	
Sand (Proppant)	Halliburton Energy Services	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	11.27599%	
15% HCl Acid***	Halliburton Energy Services	Solvent	Hydrochloric Acid	7647-01-0	15.00%	0.15320%	
HAI-OS	Halliburton Energy Services	Corrosion Inhibitor	Propargyl alcohol	107-19-7	10.00%	0.00009%	
			Methanol	67-56-1	60.00%	0.00051%	
GBW-30	Halliburton Energy Services	Gel Breaker	Carbohydrates		95.00%	0.00002%	
			Hemicellulase enzyme	9012-54-8	15.00%	0.00000%	
SP	Halliburton Energy Services	Gel Breaker	Sodium persulfate	7775-27-1	100.00%	0.00002%	
LGC-38 UC	Halliburton Energy Services	Liquid Gel Concentrate	Guar gum	9000-30-0	60.00%	0.00092%	
			Naptha, hydrotreated heavy	64742-48-9	60.00%	0.00092%	
LP-65	Halliburton Energy Services	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00146%	
BE-9M	Halliburton Energy Services	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00146%	
			Methanol	67-56-1	30.00%	0.00668%	
FR-66	Halliburton Energy	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.02075%	

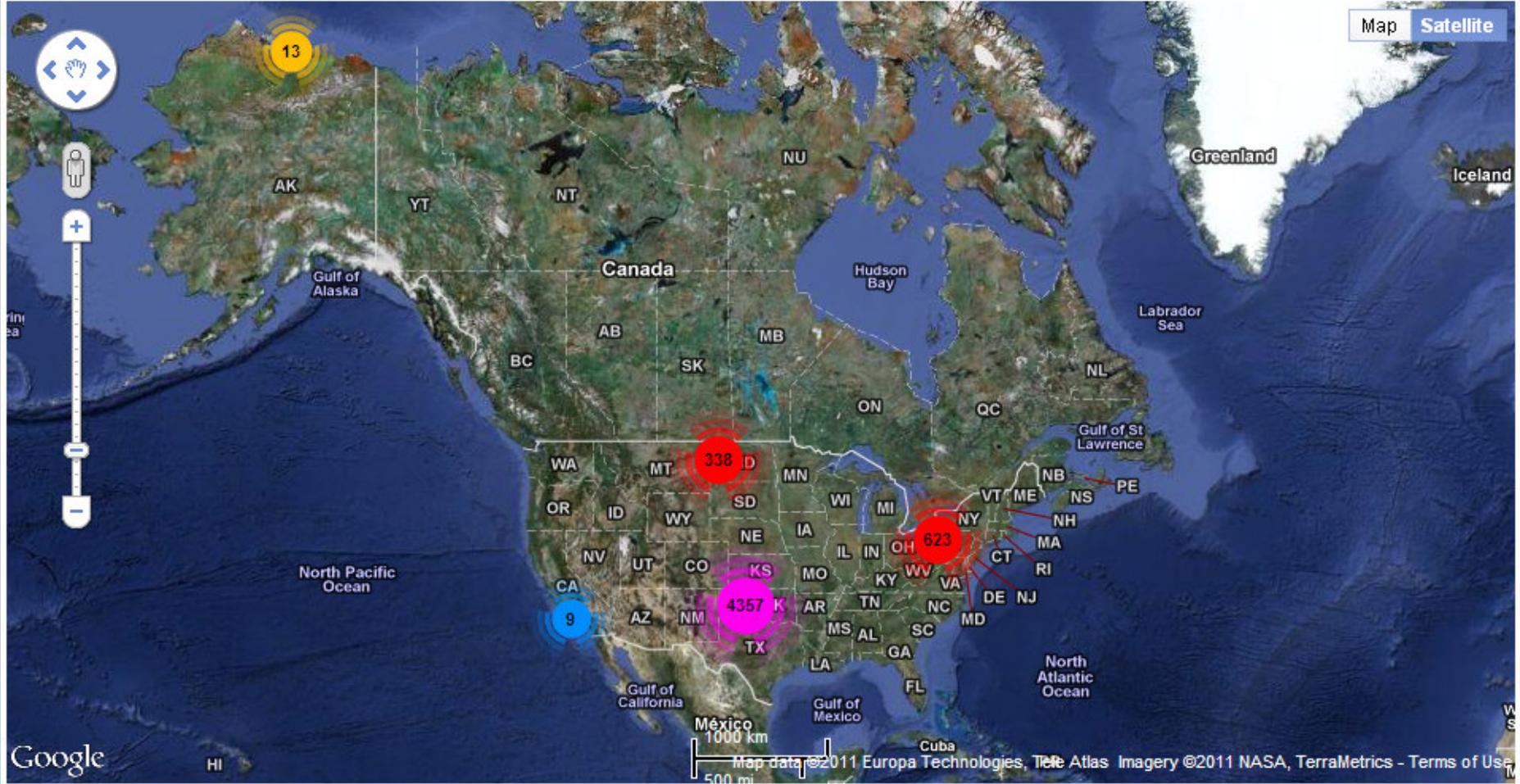
Find a Well

Map Search **Standard Search**

STATE: COUNTY: WELLS IN COUNTY: OPERATOR:

API WELL NUMBER: WELL NAME:

Search **Reset** Not Seeing Map Markers? Please Click The "Reset" Button (left).



Find a Well

Map Search **Standard Search**

STATE: COUNTY: WELLS IN COUNTY: OPERATOR:

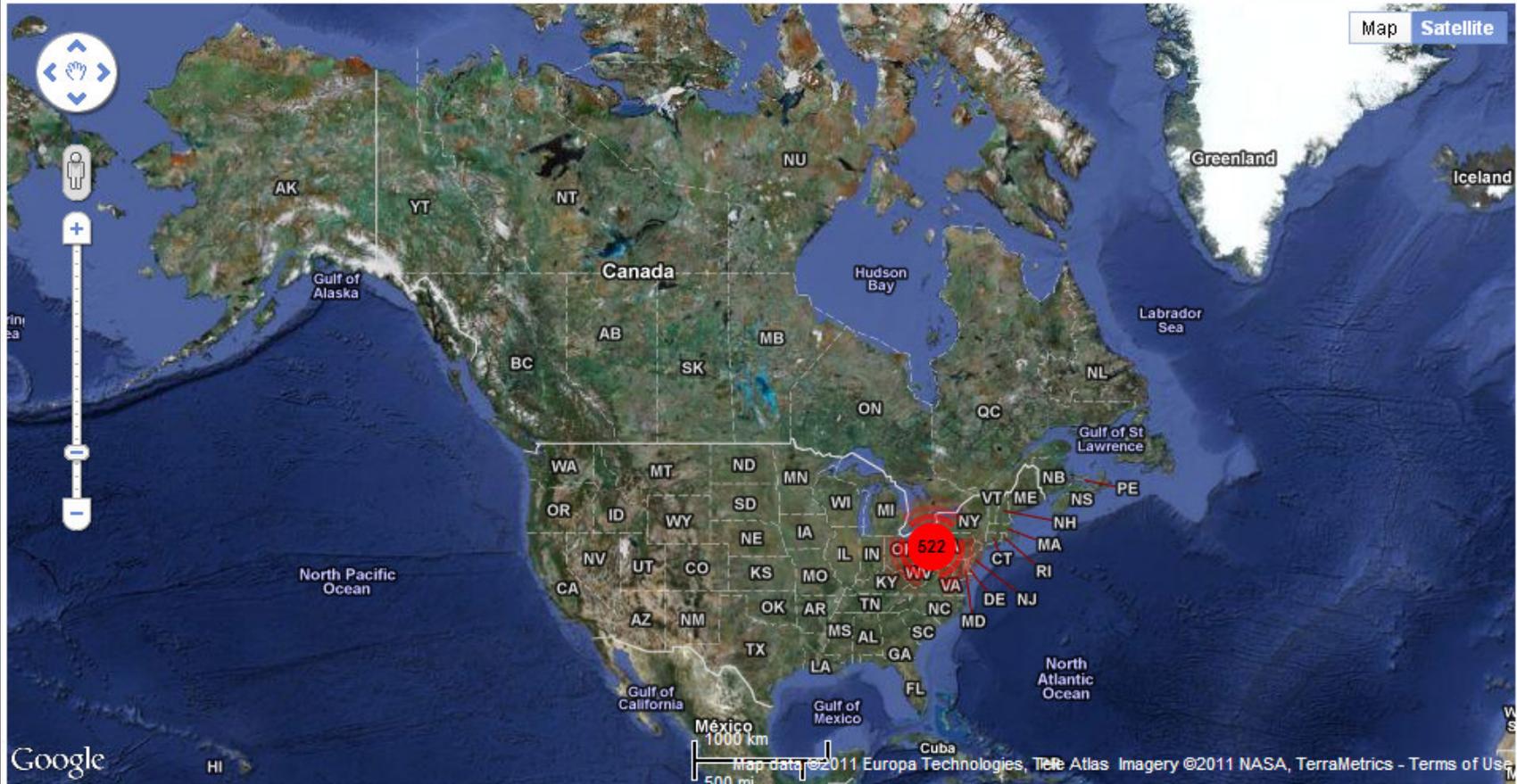
API WELL NUMBER:

WELL NAME:

Search

Reset

Not Seeing Map Markers? Please Click The "Reset" Button (left).



Select a combination of criteria from the listed fields and click on the search button and zoom in on map

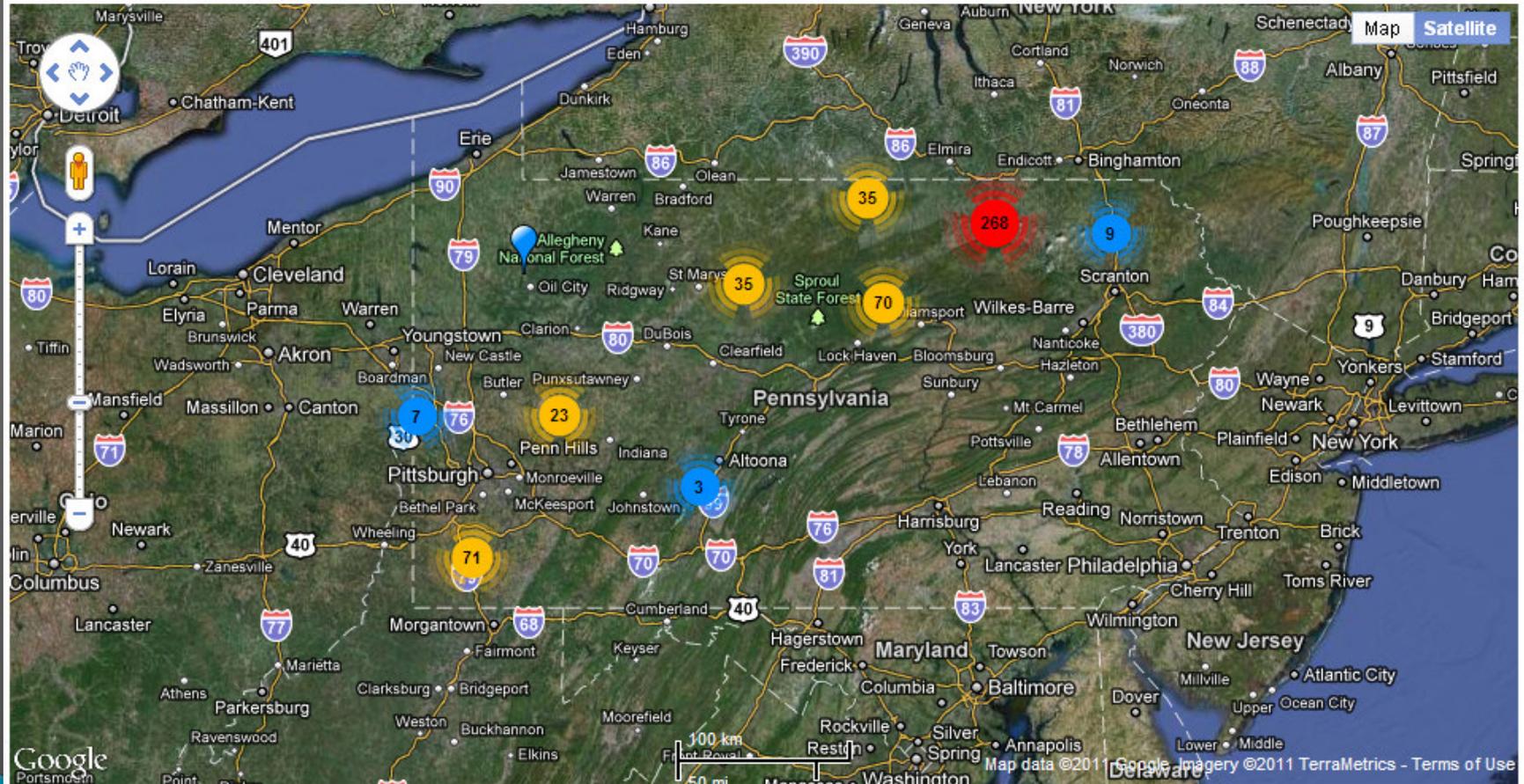
Find a Well

Map Search **Standard Search**

STATE: COUNTY: WELLS IN COUNTY: OPERATOR:

API WELL NUMBER: WELL NAME:

Search **Reset** Not Seeing Map Markers? Please Click The "Reset" Button (left).



Number and colors in circles indicate number of wells reported in that area given the zoom / scale resolution

Search Reset

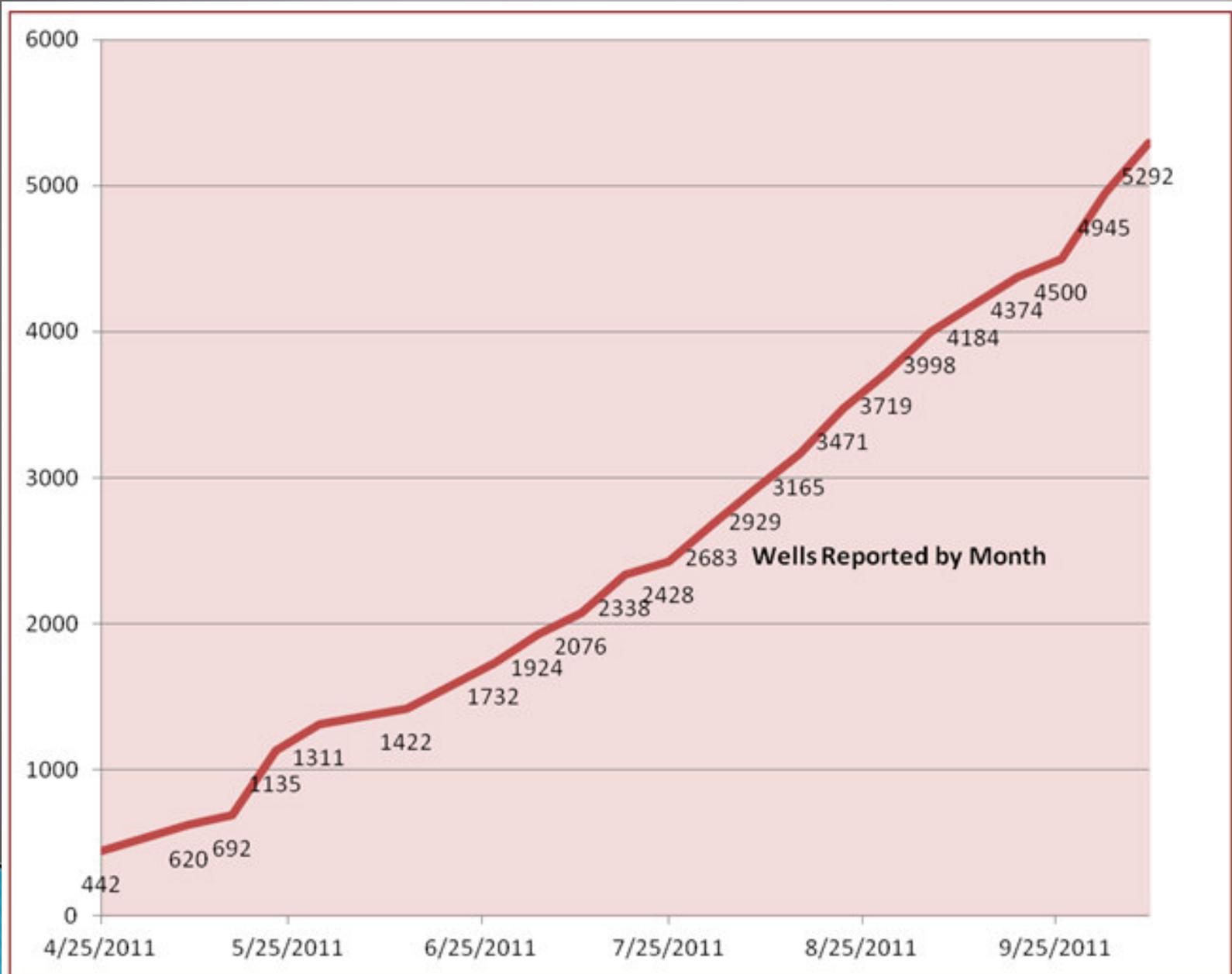
The image shows a satellite map of Bradford County, Pennsylvania, with numerous oil wells marked by blue pins. A pop-up window is open over a well near Standing Stone, displaying the following information:

PDF	
API Number:	3701521343
Well Name:	Allen Unit 3H
Operator:	Chief Oil & Gas
Job Date:	7/25/2011

The map includes labels for locations such as North Towanda, Towanda, Bradford County Airport, Wysox, Standing Stone, Asylum, and Camptown. Major roads like 220, 6, 187, 414, and 409 are also visible. A scale bar at the bottom indicates 2 km and 2 miles. The Google logo is in the bottom left corner, and map data is attributed to Google and TerraMetrics in the bottom right.

Select a well ("blue drop") and a description of the well comes up.

FracFocus: Growth Chart of Reported Wells



How Successful is FracFocus?

- ▶ Since April 11, 2011 FracFocus has:
 - Acquired 66 Participating companies (49 reporting to date)
 - Had over 5,200 hydraulic fracturing records loaded; and
 - Been visited by more than 65,000 people from 125 countries

- ▶ The future of FracFocus:
 - Easier search and record access capability
 - Operator tools to facilitate easier record uploads
 - Administrative tools to help operators manage their records
 - Communication with state database systems

FracFocus as a state reporting method

- ▶ Montana (Rule final)
- ▶ Louisiana (Rule pending)
- ▶ Texas (By statute, rule pending)
- ▶ New Mexico (Proposed rule)
- ▶ Under consideration
 - Colorado
 - Oklahoma
 - West Virginia
 - Others?

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www.gwpc.org



www.iogcc.org

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