ADDENDUM INDEX

NEWS

June 21

EPA Says Wyoming to Complete Investigation Of Possible Contamination Near Pavillion

From Environment Reporter

By Alan Kovski

The Environmental Protection Agency said June 20 it will let Wyoming take the lead on investigating a possible case of groundwater contamination from natural gas drilling involving hydraulic fracturing near the town of Pavillion.

EPA said it stood behind its work and data, but it also said it would not finalize its study or seek peer review of its draft study, nor would it rely upon the conclusions in the draft report. Instead, the agency will provide support to Wyoming in a continuation of the investigation.

Sens. David Vitter (R-La.) and James Inhofe (R-Okla.) welcomed the agency's decision as an abandonment of what they described as a politicized investigation

spurred by an interest in regulating hydraulic fracturing, or fracking. EPA's investigation had lacked scientific credibility, they said.

Wyoming will conclude the investigation and release a final report by Sept. 30, 2014, EPA said.

“It is in everyone's best interest--particularly the citizens who live outside of Pavillion--that Wyoming and the EPA reach an unbiased, scientifically supportable conclusion,” Wyoming Gov. Matt Mead (R) said in a statement released with the EPA announcement.

EPA Takes Criticism on Expertise

The primary criticism of EPA in both its Pavillion investigation and other actions on hydraulic fracturing is that state officials have far greater expertise on the subject, given their decades of regulating oil and gas operations.

In reaction to EPA's change of course on Pavillion, Rep. Chris Stewart (R-Utah) issued a statement saying he was glad to see that the agency “conceded that state-level expertise and capabilities are most appropriate for overseeing safe and responsible energy production.”

The EPA draft report on Pavillion, released in December 2011, included a tentative conclusion that pollutants found in the aquifer used for Pavillion drinking water likely resulted from hydraulic fracturing to obtain gas from deeper geologic layers. The study came in for much criticism.

The EPA draft was followed by U.S. Geological Survey reports that released some data which complicated the picture, seeming to overlap the data EPA had released but not entirely. USGS avoided trying to draw conclusions about the sources of the contaminants it listed (43 ER 2484, 9/28/12).

Fracturing, a common practice for stimulation of oil and gas wells, involves forcing water, sand, and chemical additives into the ground under pressure to create fractures through which hydrocarbons can flow. Many critics of the practice had suggested the Pavillion case might become the first confirmed case of fracking causing water contamination.

Company Cooperates in Wyoming

EPA said it will continue to work on a research program on the risks posed by hydraulic fracturing to drinking water. The agency will release a draft report on that study in late 2014. EPA also is working on a guidance for fracturing when diesel fuels are involved, a regulatory effort that is intended to be concluded by the end of 2013.

For the oil and gas industry, the subject has been an embarrassing one. The industry estimates it has fracked more than 1.2 million wells over the decades without a single confirmed contamination case, yet concerns have spread.

Encana Corp. gas wells fell under suspicion as pollution sources because of their proximity to EPA's investigation site. In his June 20 statement, Mead said Encana and EPA worked with him in charting the new course for the investigation.

Encana said it will give $1.5 million to the Wyoming Natural Resource Foundation to be used for further investigation and other purposes.

The announcement from EPA on the Pavillion, Wyo., study of possible groundwater contamination is available at http://1.usa.gov/11Qztn7.

Newsroom

News Releases - Water

EPA Initiates Hydraulic Fracturing Study: Agency seeks input from Science Advisory Board

Release Date: 03/18/2010

Contact Information: Enesta Jones (MEDIA CALLS ONLY), jones.enesta@epa.gov, 202-564-7873, 202-564-4355, Lina Younes (PUBLIC INQUIRIES ONLY), younes.lina@epa.gov, 202-564-9924

WASHINGTON – The U.S. Environmental Protection Agency (EPA) announced that it will conduct a comprehensive research study to investigate the potential adverse impact that hydraulic fracturing may have on water quality and public health. Natural gas plays a key role in our nation's clean energy future and the process known as hydraulic fracturing is one way of accessing that vital resource. There are concerns that hydraulic fracturing may impact ground water and surface water quality in ways that threaten human health and the environment. To address these concerns and strengthen our clean energy future and in response to language inserted into the fiscal year 2010 Appropriations Act, EPA is re-allocating $1.9 million for this comprehensive, peer-reviewed study for FY10 and requesting funding for FY11 in the president's budget proposal.

"Our research will be designed to answer questions about the potential impact of hydraulic fracturing on human health and the environment," said Dr. Paul T. Anastas, assistant administrator for EPA's Office of Research and Development. "The study will be conducted through a transparent, peer-reviewed process, with significant stakeholder input."

EPA is in the very early stages of designing a hydraulic fracturing research program. The agency is proposing the process begin with (1) defining research questions and identifying data gaps; (2) conducting a robust process for stakeholder input and research prioritization; (3) with this input, developing a detailed study design that will undergo external peer-review, leading to (4) implementing the planned research studies.

To support this initial planning phase and guide the development of the study plan, the agency is seeking suggestions and comments from the EPA Science Advisory Board (SAB)—an independent, external federal advisory committee. The agency has requested that the Environmental Engineering Committee (EEC) of the SAB evaluate and provide advice on EPA's proposed approach. The agency will use this advice and extensive stakeholder input to guide the design of the study.

Hydraulic fracturing is a process that drills vertical and horizontal cracks underground that help withdraw gas, or oil, from coalbeds, shale and other geological formations. While each site is unique, in general, the process involves vertical and horizontal drilling, taking water from the ground, injecting fracturing fluids and sands into the formation, and withdrawing gas and separating and managing the leftover waters.

A federal register notice was issued March 18, announcing a SAB meeting April 7-8.

More information on hydraulic fracturing: http://www.epa.gov/ogwdw000/uic/wells_hydrofrac.html

More information on the SAB and the supporting documents: http://www.epa.gov/sab

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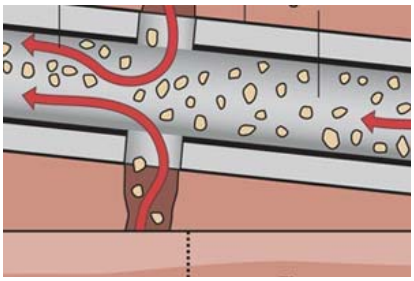
01/22/2015 Medford, Mass. Company Settles with EPA for Oil Spill
01/21/2015 EPA Selected as ACT-IAC Igniting Innovation 2015 Awards Top 30 Finalist
01/21/2015 EPA, States and Automotive Industry to Reduce Copper in Motor Vehicle Brake Pads
01/21/2015 Urban Waters Federal Partnership Initiates San Antonio River Basin Project

Fracking
Gas Drilling's Environmental Threat

EPA Wants to Look at Full Lifecycle of Fracking in New Study

by Nicholas Kusnetz
ProPublica, Feb. 9, 2011, 1:32 p.m.



The EPA has proposed examining every aspect of hydraulic fracturing, from water withdrawals to waste disposal, according to a draft plan the agency released Tuesday. If the study goes forward as planned, it would be the most comprehensive investigation of whether the drilling technique risks polluting drinking water near oil and gas wells across the nation.

The agency wants to look at the potential impacts on drinking water of each stage involved in hydraulic fracturing, where drillers mix water with chemicals and sand and inject the fluid into wells to release oil or natural gas. In addition to examining the actual injection, the study would look at withdrawals, the mixing of the chemicals, and wastewater management and disposal. The agency, under a mandate from Congress, will only look at the impact of these practices on drinking water.

The agency's scientific advisory board will review the draft plan on March 7-8 and will allow for public comments then. The EPA will consider any recommendations from the board and then begin the study promptly, it said in a news release. A preliminary report should be ready by the end of next year, the release said, with a full report expected in 2014.

A statement from the oil and gas industry group Energy in Depth gave a lukewarm assessment of the draft.

"Our guys are and will continue to be supportive of a study approach that's based on the science, true to its original intent and scope," the statement read. "But at first blush, this document doesn't appear to definitively say whether it's an approach EPA will ultimately take."

The study, announced in March, comes amid rising public concern about the safety of fracking, as ProPublica has been reporting for years. While it remains unclear whether the actual fracturing process has contaminated drinking water, there have been more than 1,000 reports around the country of contamination related to drilling, as we reported in 2008. In September 2010, the EPA warned residents of a Wyoming town not to drink their well water and to use fans while showering to avoid the risk of explosion. Investigators found methane and other chemicals associated with drilling in the water, but they had not determined the cause of the contamination.

Drillers have been fracking wells for decades, but with the rise of horizontal drilling into unconventional formations like shale, they are injecting far more water and chemicals underground than ever before. The EPA proposal notes that 603 rigs were drilling horizontal wells in June 2010, more than twice as many as were operating a year earlier. Horizontal wells can require millions of gallons of water per well, a much greater volume than in conventional wells.

One point of contention is the breadth of the study. Chris Tucker, a spokesman for Energy in Depth, said he understands the need to address any stage of the fracking that might affect drinking water, but he's skeptical that water withdrawals meet the criteria.

"The only way you can argue that issues related to water demand are relevant to that question is if you believe the fracturing process requires such a high volume of water that its very execution threatens the general availability of the potable sources," he wrote in an e-mail.

The EPA proposal estimates that fracking uses 70 to 140 billion gallons of water annually, or about the same amount used by one or two cities of 2.5 million people. In the Barnett Shale, in Texas, the agency estimates fracking for gas drilling consumes nearly 2 percent of all the water used in the area.

The EPA proposes using two or three "prospective" case studies to follow the course of drilling and fracking wells from beginning to end. It would also look at three to five places where drilling has reportedly contaminated water, including two potential sites in Pennsylvania's Marcellus Shale, and one site each in Texas, Colorado and North Dakota.

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EPA Study of Hydraulic Fracturing and Drinking Water Resources

Office of Science Policy



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United States Environmental Protection Agency

Hydraulic Fracturing Study

In its FY2010 Appropriations Committee Conference Report, Congress directed EPA to study the relationship between hydraulic fracturing and drinking water, using:

- Best available science
- Independent sources of information
- Transparent, peer-reviewed process
- Consultation with others

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Public Health Concerns

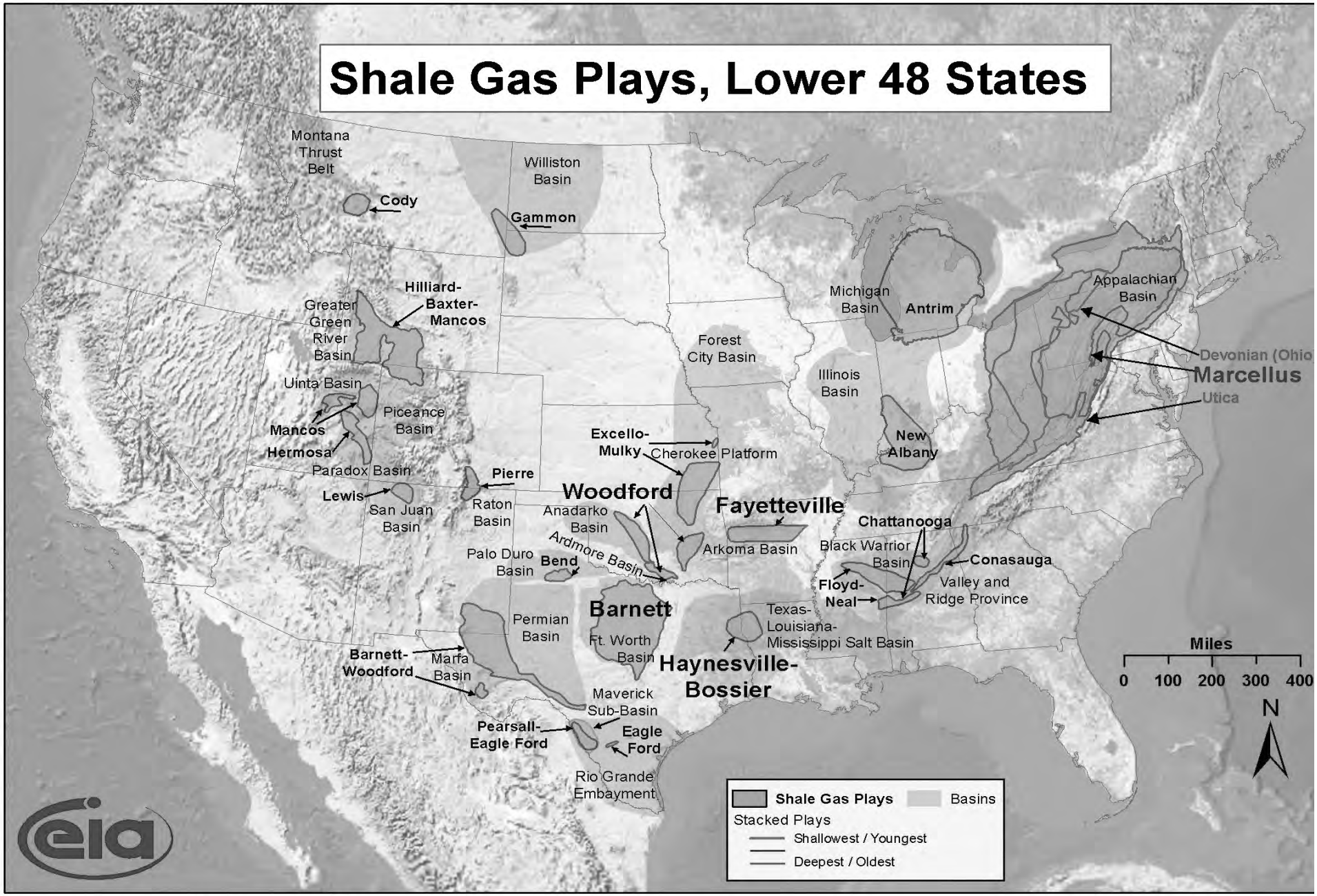
- Gas well blowouts, air emissions and fluid spills have occurred
- Contamination of drinking water due to fracturing operations has been reported
- Questions remain regarding how and why these impacts may be occurring

The public has a right to expect that public health and the environment are protected, and that their concerns are addressed

United States Environmental Protection Agency

Natural Gas Extraction

- Natural gas is an abundant domestic source of energy
  - Power generation, cooking and heating, transportation, fertilizer production, aviation, other uses
- Produces less CO_2 emissions on a BTU basis than coal or oil
- Application of **hydraulic fracturing** and **horizontal drilling** has enabled economic extraction of gas from shale formations deep below the surface
  - Rapid expansion across the U.S.
  - International growth



Source: Energy Information Administration based on data from various published studies.
Updated: March 10, 2010

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Gas Well Field

Gas Well Pads in Wyoming

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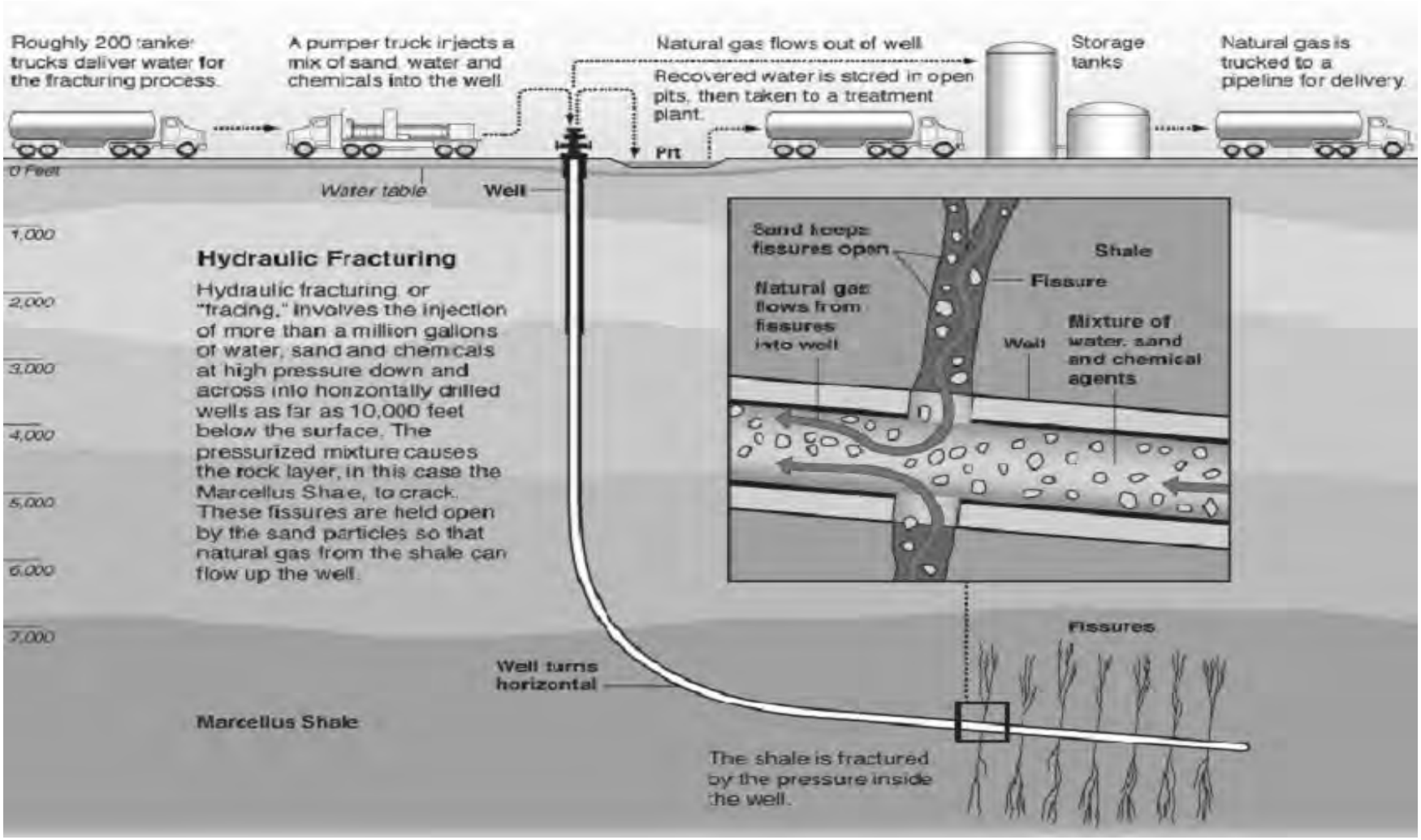
Highly Industrialized Process

Fleet of trucks used to transport water and fluids to well site

Hydraulic Fracturing Schematic



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Study Plan Development

- Initial recommendations by EPA's Science Advisory Board (April, 2010)
  - Focus on drinking water resources (quality and quantity)
  - Include case study approach
  - Stakeholder process important
- Study plan currently under development, to be provided to new SAB committee later this year

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Areas of Inquiry

- Where does the water come from?
  - **Water quantity and initial quality**
- What **chemicals** are going into the well bore?
  - Toxicity, physical characteristics, potential migration
- What are the **factors that influence chemical choice** and operating conditions?
- How do nearby **geological and manmade features** affect potential impacts (including location of aquifers, natural faults, existing wells, etc.)?
- **How are fluids handled** on and around the well pad?
- What is in the **wastewater** (flowback or produced water) and how is it handled?

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Study Plan Approach

- Primary focus on the potential impacts of hydraulic fracturing on drinking water resources
  - Review and analysis of available data
  - Case studies
  - Modeling – fate and transport
  - Analytical chemistry methods, evaluation of indicators

United States Environmental Protection Agency

Case Studies

- Opportunity to evaluate hydraulic fracturing in different parts of the U.S.
- Retrospective and prospective
- Identification and selection
  - Stakeholder suggestions
  - Vulnerable water resources
    - Proximity of other wells
    - Extent of activity (# wells/acre)
  - Geologic conditions
  - Geographic variations

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Fate and Transport

- Characterize fracturing fluids and their degradation products
- Determine the potential to mobilize chemicals from geological formations
- Model the fate and transport of chemicals in the subsurface
- Identify and refine methods for chemical analysis

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Collaborations

- Industry and other stakeholders
  - Provided input on scope of study plan
  - Share information, access to sites
- Federal agencies
  - Review draft study plan
  - Access sites on public lands
  - Share data
- State and interstate agencies
  - Collaborate during case studies
  - Share data
- Technical workshops
  - Offer opportunity for input from scientists, engineers, other experts
  - Discuss wells and siting, water resource management, and chemical and analytical issues

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Outreach Strategy

Sector-Specific Webinars

- States
- Federal
- Industry
- NGOs

Public Meetings

- Region 6 Texas
- Region 8 Colorado
- Region 3 Pennsylvania
- Region 2 New York

Tribal Consultations

- August 2010

Technical Workshops

- Early 2011

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Public Meeting Comments

Citizens, Communities, Organizations

- Desires to boost economy
- Concerns for
  - Drinking water protection
  - Air emissions
  - Land disturbance
  - Wildlife
- Identification of chemical compounds
- Requests for EPA intervention

Industry

- Believes HF is a safe practice
- Willing to share data with EPA to support safety claims

State Regulators

- Believe states are adequately regulating
- Willing to share data with EPA

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Information Requests

- EPA issued a request to nine hydraulic fracturing companies to voluntarily submit information on hydraulic fracturing for the study (due 10/12/10)

- Information requested
  - **Chemical composition** of fracturing fluid products
  - Data on the **health and environmental impacts** of the products and constituent chemicals
  - Detailed information on the hydraulic **fracturing process**
  - **Sites** where the companies have fractured and where they will fracture

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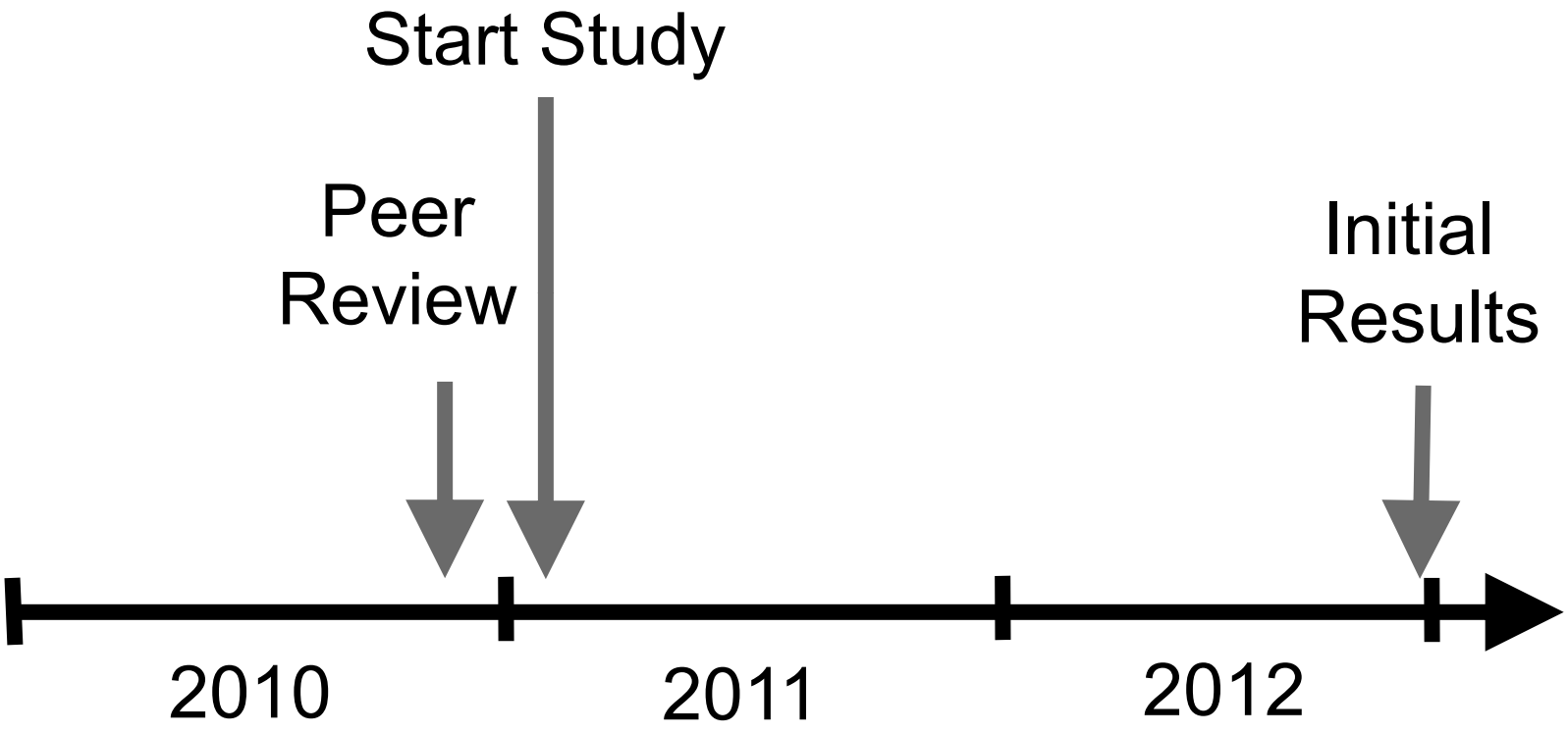
Study Timeline



Ohio.com

Akron Beacon Journal • **Tuesday, January 27, 2015**

Ohio.com News

EPA study on fracking threat to water will take years

By Bob Downing
Beacon Journal staff writer

Published: June 18, 2013 - 11:11 PM

CLEVELAND: The U.S. Environmental Protection Agency is analyzing the threat that hydraulic fracturing, or fracking, poses to drinking water, but that study won't be completed until 2016.

That assessment came Tuesday from Jeanne Briskin, coordinator of hydraulic fracturing research at the EPA's Office of Research and Development.

She was among the speakers at "Shale Gas: Promises and Challenges," a two-day conference staged by the National Academy of Engineering, held in Severance Hall, the home of the Cleveland Orchestra.

Case Western Reserve, Cleveland State and Kent State universities sponsored the conference, which attracted 850 people Tuesday.

Briskin said the EPA probably would complete and release a preliminary report in late 2014. It is "complex research," she said.

In 2010, Congress directed the agency to investigate the threat to groundwater and air from hydraulic fracturing in Ohio and other states.

Briskin outlined what her agency has done so far and the work that still must be completed. It is sampling water in two drilling counties in Pennsylvania plus in Colorado, North Dakota and Texas.

Nine energy companies and nine drilling-supply companies have cooperated with the EPA research, and 1,000 chemicals have been identified as being used in the fracking process, Briskin said.

Stanford University professor Mark Zoback expressed concern over injection wells that are used in Ohio and other states for disposal of liquid drilling wastes.

He said drillers are injecting “too much water too fast,” and that’s increasing underground pressure that can, in some cases, trigger small earthquakes, like those that hit Youngstown in late 2011.

It is probable that problem injection wells increasingly will be shut down to avoid future earthquake problems, he said. Drillers will have to avoid injecting near faults, limit injection rates or limit pressures to minimize problems.

He said the fracking process is little understood, calling it “a very complex phenomena.”

Zoback said the use of water, sand and toxic chemicals might cause “micro-mini earthquakes” that free up the natural gas thousands of feet below ground. He predicted that drillers will be able to extract twice the gas they’re getting now while using half as much water in the fracking as drilling technologies improve.

The biggest problem that energy companies face: “It’s well construction, well construction, well construction. Do it properly,” Zoback said.

Drilling is a process that absolutely can be done safely, but it is not always done that way, he said.

Utilities like Akron’s FirstEnergy Corp. are very interested in shale gas as a fuel, but price volatility is a concern, said Gary R. Leidich, a retired president of FirstEnergy Generation Corp.

The conference was organized in part because of Ohio’s role in the Utica shale boom, said Hunter Peckham, conference chair from Case Western Reserve.

The program was designed to address what he called the “legitimate concerns” surrounding shale gas drilling, he said,

The conference continues today.

Bob Downing can be reached at 330-996-3745 or bdowning@thebeaconjournal.com.

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