

Potential Impacts of Hydraulic Fracturing on Drinking Water Resources: Study Update

Jeanne Briskin, Research Coordinator



A Year in Review

Progress Report
release*



↑
Technical
Roundtables*/
Docket opens

↑
Technical
Roundtable*

****Webinars conducted to
provide updates***

Progress Report

- Includes project-specific updates
 - Research approach
 - Status as of Sept. 2012
 - Next steps
- Does not include research results
- Available at www.epa.gov/hfstudy



A Year in Review

Progress Report
release*



SAB forms ad hoc
expert panel



SAB Panel
Consultation



↑
Technical
Roundtables*/
Docket opens

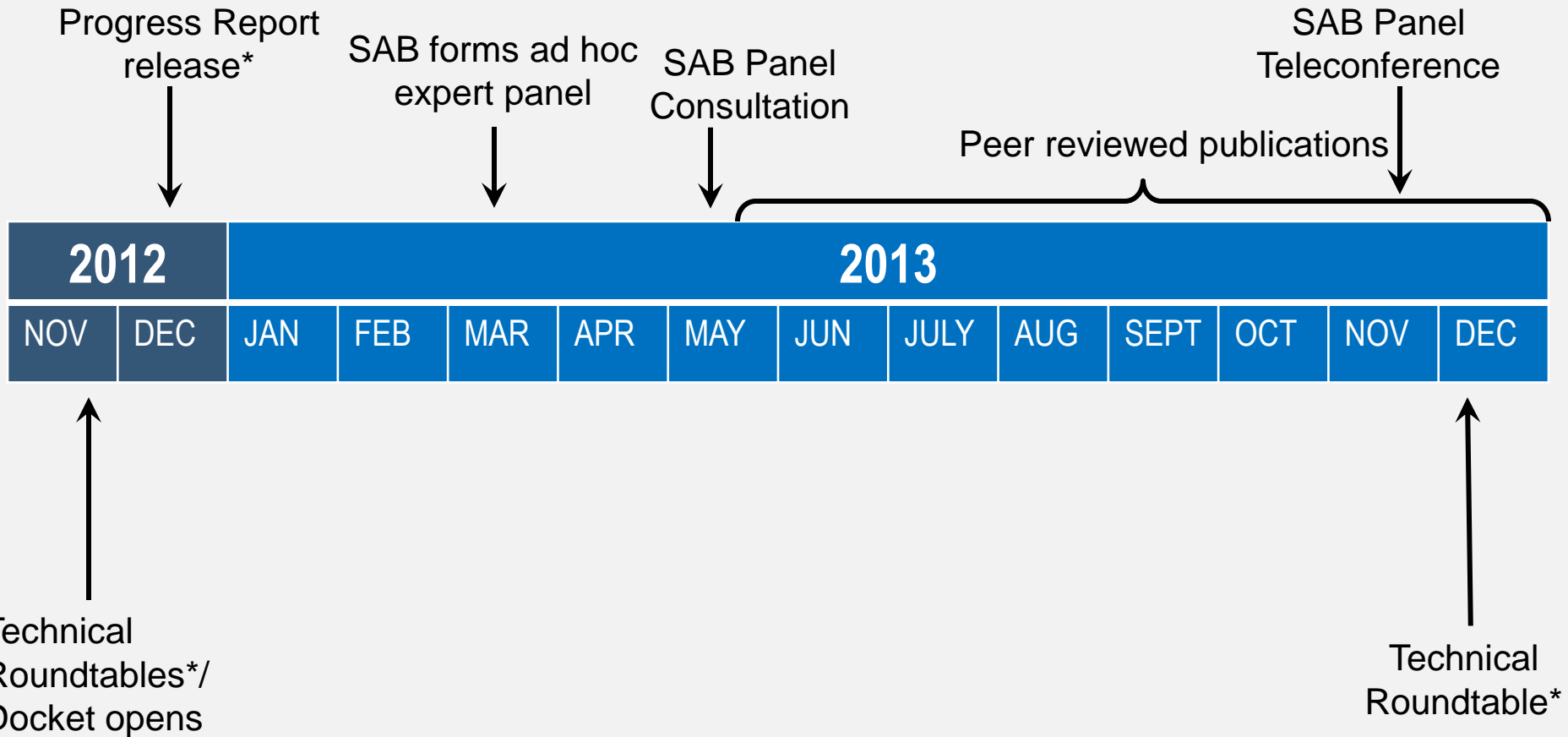
↑
Technical
Roundtable*

****Webinars conducted to
provide updates***

Science Advisory Board (SAB)

- On May 7-8, 2013, the SAB Hydraulic Fracturing Research Advisory Panel provided consultation on EPA's study
- In general, panel members:
 - Were impressed with EPA's accomplishments regarding the study given the time and other resource constraints, including the thoroughness and complexity of the research
 - Acknowledged the challenge EPA faces in presenting findings to a broad audience
- Panel members recommended that EPA:
 - Capture basin specific trends and location specific conditions (geology, hydrology)
 - Use professional judgment when making assumptions and interpreting results
 - Write clearly and provide enough detail to inform the public and prevent misinterpretation of data and images, including assumptions and uncertainty
 - Continue to stay informed about new industry practices and technologies
 - Manage expectations about what will be included in the report of results

A Year in Review



****Webinars conducted to provide updates***

Research Projects and Products

17 research projects are expected to produce >30 peer-reviewed journal papers or EPA reports

- Most will undergo an internal (EPA) and an external (journal or letter) peer review
- To date, 5 papers have been published in scientific journals
 - Subsurface migration modeling (3)
 - Analytical method development (2)

These products will be considered together with scientific literature in the draft assessment report

- Draft assessment report is a HISA

Peer Reviewed Publications

Analytical method development:

- DeArmond, P. D. and DiGoregoria, A. L. 2013. Characterization of liquid chromatography-tandem mass spectrometry method for the determination of acrylamide in complex environmental samples. *Analytical and Bioanalytical Chemistry* 405 (12): 4159-66.
- DeArmond, P. D. and DiGoregoria, A. L. 2013. Rapid liquid chromatography-tandem mass spectrometry-based method for the analysis of alcohol ethoxylates and alkylphenol ethoxylates in environmental samples. *Journal of Chromatography A* 1305:154-63.

Subsurface migration modeling:

- Rutqvist, J., Rinaldo, A. P., Cappa, F., Moridis, G.J. 2013. Modeling of fault reactivation and induced seismicity during hydraulic fracturing of shale-gas reservoirs. *Journal of Petroleum Science and Engineering* 107: 31-44.
- Kim, J. and Moridis, G. J. 2013. Development of the T+M coupled flow–geomechanical simulator to describe fracture propagation and coupled flow–thermal–geomechanical processes in tight/shale gas systems. *Computers and Geosciences* 60: 184-198.
- Moridis, G. J. and Freeman, C. M. 2013. The RealGas and RealGasH2O Options of the TOUGH+ Code for the Simulation Of Coupled Fluid And Heat Flow in Tight/Shale Gas Systems. *Computers and Geosciences*. (Accepted/ currently in press. *Manuscript available online*)

A Year in Review

Progress Report
release*

SAB forms ad hoc
expert panel

SAB Panel
Consultation

SAB Panel
Teleconference

Peer reviewed publications



Technical
Roundtables*/
Docket opens

Analytical Chemical
Methods*

Well Construction/
Operation and
Subsurface
Modeling*

Subsurface
Modeling
Follow up *

Water Acquisition
Modeling*

Wastewater Treatment and
Related Modeling*

Case
Studies*

Docket
closes

Technical
Roundtable*

***Webinars conducted to
provide updates**

2013 Technical workshop series

Next Steps

EPA will continue to conduct research, analyze information and literature, and engage stakeholders

- Completed research will undergo peer review
- Exchange information with industry, academia, states, NGOs, tribes, and public
- Update SAB panel on publications and research
- Release draft report in late 2014
 - The SAB Panel will peer review the draft report
 - The public will have an opportunity to provide written and oral comments