

**FROM THE BATTLE OF FREDERICKSBURG
TO *PROMISED LAND*—
AN HISTORICAL PERSPECTIVE
OF HYDRAULIC FRACTURING**

Stephen M. Testa, Executive Officer
State Mining and Geology Board
801 K Street, Suite 2015, Sacramento, CA 95814
stephen.testa@conservation.ca.gov

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The well enhancement technique known as hydraulic fracturing is a highly visible and controversial topic as evidenced by multitudes of news articles, regulatory workshops, local public hearings and documentaries and films such as *Gasland*, *FrackNation* and *Promised Land*. With all the media attention, one would think that hydraulic fracturing was some new innovative technology that has not undergone adequate environmental study and consideration.

With increasing interest in unconventional oil and gas resources, the combination of innovative developments in horizontal drilling with multi-phased high volume hydraulic fracturing is having a profound impact on the ability of the United States to become energy independent. Regions previously not noted for playing a significant role in the energy landscape now are the forerunners of our new independence. The concept of fracturing can be traced back to the mid-1860s.

Taking advantage of explosives technology from the Civil War, the Roberts Petroleum Torpedo Company developed an 1866 patent to stimulate recovery from shallow oil wells by *shooting* the well using nitroglycerin. This technique would continue to develop and subsequently be used for both oil and gas wells. By the 1930s, the concept developed to injecting a non-explosive fluid, or acid, enhancing production by creating a flow channel to the well. Other techniques such as water injection and squeeze-cementing techniques produced similar results. Other developments in the use of fluids and proppants, pumping and blending equipment, and fracture-treatment design, have all contributed to the dramatic increase in the num-

ber of producing fields nationwide, and the role unconventional resources will play in the future.

Hydraulic fracturing has its domestic roots in the late 1940s, and by the 1950s was also being developed in the Soviet Union, and by the 1970s and 1980s in Western Europe. Through technological innovations, it is now estimated that about 30 percent of all U.S. recoverable oil and natural gas reserves are accessible via hydraulic fracturing.