

**BUSINESS LEASING AND FINANCE NEWS (BLFN)**

**SPECIAL SUMMER EDITION 2011**

**BLFN'S 10<sup>TH</sup> YEAR**

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**FOUNDER'S NOTE:**

By [David G. Mayer](#)

**Unconventional**

This special summer edition of Business Leasing and Finance News focuses on investing and other financing of unconventional sources of natural gas. "Hydraulic fracturing" or "fracking" has become a game-changing method of extracting natural gas from rock formations referred to as shale.

Huge amounts of capital have been flowing into developing and operating drilling sites. Some governmental bodies, organizations and individuals have expressed concern over the environmental impacts of shale gas drilling and the associated hydraulic fracturing. The shale gas industry claims that it can and does manage the risk associated with drilling, supporting its contention with independent government data that shows that it has drilled a million wells without a confirmed case of drilling-related pollution in ground water. Lenders and investors have become aware of media reports warning of the potential environmental risks of fracking. They analyze these factors, among others, when determining whether to invest in fracking ventures.

The feature article examines how to apply environmental due diligence practices long used in financing oil and gas projects to identify and manage the environmental risks of financing unconventional recovery of natural gas and oil from shale. You can balance the risk factors when deciding the best practices for managing risk associated with investing in this massive energy resource.

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## FEATURE ARTICLE

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### **Financiers Drill Down to Manage Risk of Investments in Hydraulic Fracturing**

Just a few years ago, little was known by the public about “[hydraulic fracturing](#)” or “fracking.” Today, the technique for enhancing natural gas extraction has been discussed widely in media circles. Few people question the benefits of the new fuel resource and its potential contribution to meeting U.S. energy demands.

Still, concerns have been expressed over the possible environmental effects of fracking and shale gas drilling, even though the oil and gas industry has employed fracking techniques for many years without adverse effects.

With respect to extracting natural gas and oil from shale formations, lenders and investors can be reassured by taking appropriate due diligence steps to confirm operators use best practices in fracking. Transaction documents should reflect their standards and expectations of the proposed project. For decades, oil and gas lenders and investors have taken similar steps in financing conventional oil and gas drilling and production in the United States.

#### **Shale Opportunity**

A 2011 Department of Energy (DOE) report predicted natural gas produced from shale formations would increase from 16 percent of total U.S. gas production in 2009 to 47 percent in 2035. The Texas Barnett Shale is one of the best known shale plays. The Marcellus Shale, which stretches from New York through Pennsylvania and down to West Virginia and Ohio (in addition to small areas of four other states), is another well-known shale play. The same technique used to extract gas from shale is now being applied to allow for the removal of oil from shale, particularly from North Dakota’s Bakken shale formation and the Eagle Ford shale formation in south Texas.

*\*Term to Know:* “[s]hale is a sedimentary rock that is predominantly comprised of consolidated clay-sized particles. . . . The very fine sheet-like clay mineral grains and laminated layers of sediment result in a rock that has limited horizontal permeability and extremely limited vertical permeability.” See [Modern Shale Gas Development in the United States: A Primer, Office of Fossil Energy](#), National Energy Technology Laboratory, Department of Energy at page 14 (OFE Primer).

The number of shale “plays” (targeted exploration areas) for oil and gas has grown substantially over the past few years. Gas from shale can be used for such diverse purposes as fueling power plants, cooking, heating homes and businesses and energizing vehicles designed or converted to run on natural gas.

#### **Hydraulic Fracturing Explained**

The practice of hydraulic fracturing began in 1947 and is a process that combines water, sand and chemicals to drill thousands of feet into the ground, fracturing rock formations and releasing natural gas and oil. In a hydraulic fracturing job, “fracturing fluids,” or “pumping fluids,” consisting primarily of water and sand, are injected under high pressure into the producing formation. This process creates fissures that allow resources to move freely from rock pores where it is/they are trapped.” See [Hydraulic Fracturing: Unlocking America’s Natural Gas Resources](#), The American Petroleum Institute at page 5 (July 19, 2010) and the OFE Primer (discussing the fundamentals of hydraulic fracturing and shale drilling).

#### **Risk Management in Deploying Capital**

According to one [industry organization](#), “[h]ydraulic fracturing is a safe, well-regulated [and an] environmentally sound practice.” One large oil company, for example, has established five onshore tight/shale oil and gas operating principles that provide a tested framework for protecting water, air, wildlife and the communities in which the company operates. Another [company](#) developing shale projects states on the homepage of its website that “we are committed to safe operations ... and respect for the environment in which we conduct our business.”

Financing of oil and gas projects in the United States has generally been preceded by certain steps taken by lenders and investors to review environmental practices of the company and the field in which the party is investing or financing. In performing environmental due diligence, lenders and investors may review environmental policies and practices of the operating company. They can also draft related agreements requiring operators to manage environmental risk and adhere to safe environmental practices.

Some of the questions that lenders and investors should focus on for shale projects include the following:

- What environmental risks arise in shale drilling and hydraulic fracturing in the relevant gas or oil field?
- What environmental issues have been raised or problems have occurred in the field and with the operator that is developing the field?
- What actions is the operator taking to manage environmental risks and ensure compliance with environmental regulations governing oil and gas drilling, fracking and shale drilling?
- What environmental due diligence should be conducted?
- What provisions should lawyers draft into agreements to reduce risk to the financial parties?

### **Review of Compliance with Groundwater and Surface Water Regulations**

To protect groundwater (water located underground in the spaces between soil or sand), operators insert piping in the ground and cement it in place. This “casing” extends down through the areas that contain drinkable groundwater.

At the federal level, the [Safe Drinking Water Act](#) provides, among other things, a regulatory system to protect groundwater when entities inject waste or other material underground. In 2005, Congress exempted most hydraulic fracturing from [regulation](#) under this Act. The exemption does not leave a regulatory void. States, such as Texas and Pennsylvania, maintain programs to regulate oil and gas drilling, including hydraulic fracturing, to protect groundwater resources.

The Pennsylvania regulatory program encourages companies to test groundwater and water wells within a certain distance from a drill site before drilling begins. Operators in the Marcellus Shale in Pennsylvania frequently test groundwater and water wells prior to drilling, taking advantage of the law and developing a baseline of environmental conditions. See [Pennsylvania Hydraulic Fracturing State Review](#), *Pennsylvania Dept of Environmental Protection* (Sept. 2010).

A portion of the hydraulic fracturing fluids return to the surface after fracking. Operators typically dispose of these fluids by injecting it into disposal wells or by treating and discharging the water to surface waters, such as rivers or lakes. See [Opportunity for Stakeholder Input on EPA’s Hydraulic Fracturing Research Study: Study Design](#), EPA (July 14, 2010). State and federal laws apply to the management of disposal wells and the treatment and discharge of wastewater into surface waters.

### **Liability Issues in Shale Gas Drilling: Lawsuits and Government Enforcement Actions**

In oil and gas drilling historically, oil companies have occasionally faced lawsuits from landowners alleging the occurrence of certain environmental impacts from drilling. For lenders and investors, reviewing the history of the company and the particular field being considered for funding has often been part of environmental due diligence.

In recent shale projects, landowners in Texas and Pennsylvania have sued shale operators alleging that their water wells have been contaminated with methane and other substances as a result of shale gas drilling. In Texas, landowners [have filed suits claiming](#) that operators have contaminated ground water by shale gas drilling, primarily in the Barnett Shale. In these cases, landowners have alleged a litany of grounds for liability. However, one of the challenges for these plaintiffs is proving that contamination actually arose from the drilling activities. This is particularly difficult where wells have been properly cased to protect groundwater.

In addition to proof challenges in lawsuits, proving a shale gas well caused groundwater contamination may be challenging in government enforcement actions. In Texas and Pennsylvania, federal and state agencies have taken action in a few cases against shale gas operators who have allegedly violated environmental laws and regulations. These agencies have sought to require remedial action by and impose civil penalties on the operators. In one case in Texas, the Railroad Commission of Texas concluded that methane detected in landowner wells did not arise from nearby hydraulic fracturing. However, the EPA has pursued enforcement against the same company claiming the site contamination did arise from the company's drilling activities. Enforcement actions have been brought in Pennsylvania as well. In one case, the state environmental agency has taken [action](#) against an operator asserting it allowed natural gas to enter water wells in Bradford County, PA.

*\*Insight Point:* Although these actions may affect the scope of diligence for investors and lenders, they do not tend to interfere with closing transactions. Regardless of whether these challenges have any merit, the operating company and their investors establish programs to protect the environment and, by extension, the interests of the investors, lenders and operating company with respect to drilling a particular well.

## **Regulations and Drilling Bans**

Despite the low incidence of alleged environmental impact from shale drilling, some state and local governments have attempted to delay or ban shale gas drilling and fracking in their jurisdictions. This effort has occurred regardless of evidence that the same drilling techniques have been conducted at thousands of locations without affecting surface water or groundwater.

One concern was the use of certain chemicals in fracking water to enhance the fracking process. In Texas, Governor Perry [signed HB 3328](#) that, starting September 1, 2011, requires disclosure of chemicals used in hydraulic fracturing. The bill was directed at resolving the issues raised regarding fracking chemicals and allowing shale drilling and fracking to continue in shale plays in Texas.

The approach in [New York](#) has been different. There, the state imposed a temporary ban on hydraulic fracturing. It took this action in large part out of what the agency claimed was a concern of potential impact on the watershed that supplies the City of New York. Recently, the [New York Department of Environmental Conservation](#) announced plans to allow hydraulic fracturing, but with significant limitations. Hydraulic fracturing would not be permitted in watersheds that supply drinking water to the City of New York. Fracking also would be banned in the City of Syracuse water shed, over primary aquifers, and on state-owned lands.

Other state [legislatures](#) and cities have attempted to impose [new disclosure requirements](#), bans or other new regulations on shale gas drilling. In Pennsylvania, a state statute makes it difficult for cities to regulate oil and gas activities, generally reserving this authority for the state.

In Texas, the City of Fort Worth has enacted an ordinance with additional [restrictions on shale drilling](#) within the city limits, and the City of Dallas has [appointed a task force](#) that may also propose placing limits on shale drilling.

## **Investment Risk Management**

For investment and lending in the shale drilling industry, it is important to separate fact from fiction in reports of environmental risks connected to drilling shale wells.

*\*Action Point:* As a driller, lender or investor, remain informed regarding current environmental and regulatory regimes. Drillers and investors may even consider actively participating in legislative and regulatory processes in the area where wells have and/or will be drilled to determine if such programs would significantly affect the economics of drilling.

In financing transactions, the well-advised lender or investor should first consider the importance of conducting appropriate due diligence with respect to environmental compliance by the operators of the relevant field. Such due diligence includes a review of agreements, permits, operational history, technical drilling plans and the operator's environmental management policies and procedures.

*\*Tip:* As a lender or investor, your environmental due diligence for shale drilling and hydraulic fracturing may (and probably should) include asking, and obtaining satisfactory answers to, questions such as:

- How is the operator complying with casing requirements for wells being drilled?
- How are fracking chemicals being managed?
- How is wastewater being managed?
- Have there been notices of violations or enforcement actions brought against the operator in the relevant field or other areas of current or historical operation?
- Have any lawsuits been filed against the operator in the field being evaluated or in other fields?

*\*Action Item:* In your capacity as a lender or investor, you should plan to engage knowledgeable environmental attorneys and consultants early in the assessment of an oil and gas fracking opportunity. The experts should help you assess and manage any plausible risks in financing or investing in shale plays. Lenders and investors can ask their independent experts to review and confirm that the operator has established and is in compliance with best practices for fracking at the date of financing or investment and thereafter.

### **Contractual Protections of Lenders and Investors**

In addition to diligence, lawyers can draft terms in transaction documents and financing agreements to address environmental risks, including:

- **Definitions.** The first contractual issue is to provide definitions of relevant environmental terms, including local, state and federal laws affecting the drilling project.
- **Representations and Warranties.** Representations and warranties make a statement of fact, speaking at one point in time or specified periods of time. Requests for disclosure may include such issues as agency enforcement actions, notices of investigations, spills and releases of wastewater, chemicals, fuel and other contaminants and pollutants, investigations of contamination and any litigation or administrative proceedings.
- **Indemnification.** Lenders and investors can obtain comprehensive indemnification language to mitigate damages arising out of environmental liability. Indemnification requires one party to protect another person or entity from loss or liability asserted by a third party or other indemnified party.
- **Insurance Coverage.** Insurance provisions can provide a means to protect parties from contractual claims and insurable losses. The policies should be reviewed to determine the extent that they will cover claims of third parties and any remediation obligations that could arise.

*\* Warning:* Laws and court rulings may require inclusion of specific language or reference to statutes to enforce provisions requiring the indemnifying party to cover the loss or damages of the other party. Knowledgeable counsel can assist you in avoiding pitfalls or traps in indemnification language.

- **Covenants.** Environmental covenants can keep lenders and investors apprised of environmental risks. They can require operators to demonstrate compliance with laws and regulations and report certain spills or releases of wastewater, chemicals, fuel and other contaminants and pollutants, actions, landowner claims and notices of investigations that may lead to environmental liability, remediation, investigations of contamination and any litigation or administrative proceedings affecting a drill site and surrounding area.

## Conclusion

In light of the increasing attention shale drilling is receiving, prudent lenders and investors should evaluate and mitigate any environmental risks that may arise with each shale investment. The future may burn bright for shale drilling, but appropriate environmental risk management practices are important when loaning or investing money in the gas or oil shale business.

Thanks to [Scott Deatherage](#) and [Bill Church](#) in the Dallas office of Patton Boggs LLP for contributing this article.

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## Notable Patton Boggs Publications

- "Leasing Wind Energy Facilities Becomes a Reality," by David G. Mayer and Joel Bannister, *LNJ Equipment Leasing Newsletter* (March 2011).
- "[2011 State of the Union Analysis](#)," by Patton Boggs' [Public Policy Group](#) (Jan. 26, 2011).
- "[EPA Greenhouse Gas Regulations and How They May Affect Coal-Fired Power Plants](#)," *Coal Age Magazine* by [Mark N. Savit](#) and [Scott D. Deatherage](#) (Jan. 2011).
- "[Can My Midsize Wind Project Get Financing?](#)" by [David G. Mayer](#) and [Joel Bannister](#) of Patton Boggs, and [Robert Gay](#), President of Monarch Wind Power, *North American Windpower* (Dec. 2010).

## Thanks to BLFN's Team

Thanks to the *BLFN's* team at Patton Boggs LLP. The team includes the Patton Boggs staff: our Senior Communications Specialist, Natalie V. Gewargis, our project manager Melissa Green, and our subscription coordinator Penny Utley. Thanks also to [Douglas C. Boggs](#), a Business Group/Securities partner, for his review of this issue of *BLFN*.

All the best,

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