Balancing the Barnett Conundrum

by Melinda Kaitcer

» Perplexing legal issues that have bubbled up along with the Barnett Shale's natural gas bounty now depend on the Texas Supreme Court to shape the boom's future. What's it all about? Here's a short course to help you follow this high-level shale game.

Ever since Mitchell Energy drilled its first discovery well in 1982 and completed it using nitrogen foam fracture stimulation, the technology and the production of the now-legendary natural gas play known as the Barnett Shale has sustained a steady and dramatic climb. With ideas and technical advances previously unthinkable in the oil and gas exploration industry, this unprecedented growth, both in technology and production, has brought with it sticky new legal issues that Texas courts are now untangling against a backdrop of dire predictions and prospective fortunes gained or lost.

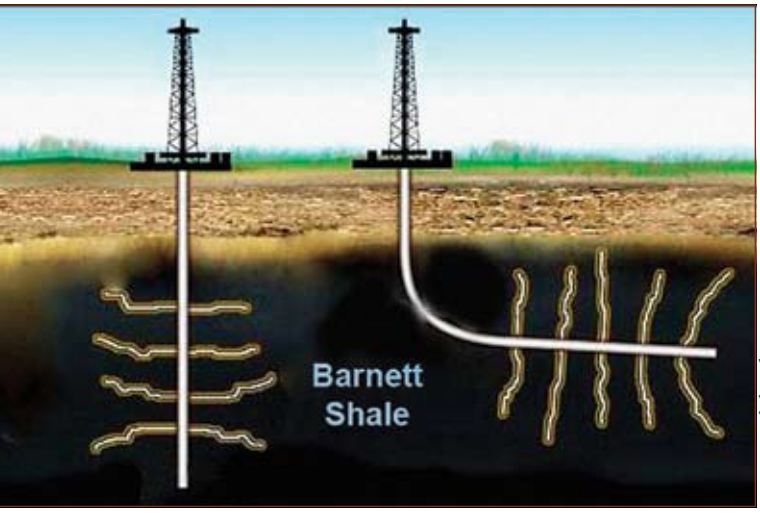
As technological advances, such as horizontal drilling and hydraulic fracture stimulation (known as "fracing"), have continued to evolve, Barnett Shale revenues have reached into the billions, adding millions to state and local tax coffers, and making millionaires out of more than a few unsuspecting landowners. According to a report published by one independent Fort Worth oil and gas company, horizontal well technology with hydraulic fracture stimulation has increased well production by an average of 500 percent.

For the uninitiated, here's how this new technology works. Horizontal drilling allows operating companies to access areas covered by urban sprawl. Technology now enables drilling vertically about 6,000 feet down into the shale, and then turn a sharp corner to create an L-shaped well that can then travel horizontally for distances in excess of 2,500 feet. Once drilled, this wellbore is encased in steel pipe. To frac the well, an explosive charge is set off to perforate this casing and reach the natural fractures in the shale, which are then "shot" at selected intervals. Next, a mixture of 3 to 5 million gallons of water combined with a sand-like mixture, called proppant, is forced under extremely high pressure into the well bore through the perforations. The force of the water naturally finds existing fractures and opens new fractures in the shale. The immense pressure also wedges the proppant into these newly enlarged cracks to keep them open and provide the gas with an escape route. The gas that is drawn to the surface is then "captured."

With this technology, Barnett Shale profits have continued to rise with seemingly no end in sight, but along with these staggering profits have risen new areas of conflict without clear legal precedent. With much at stake, all eyes in this escalating fracas are on the Texas Supreme Court, as it deliberates over a South Texas case that promises to draw a few important lines through the Barnett Shale's considerable gray area.

"With any new technology, the way the laws begin to be implemented and developed is through either legislative action or court action," said Adam Haynes of the Texas Independent Producers and Royalty Owners Association (TIPRO) "And in this case, laws seem to be generating through individual court actions."

So what's the brouhaha? Are we in dire need of a legal leash for the greedy, as one side of this hot debate claims — or are we threatening to kill the goose that laid the golden egg, forcing all of Texas to assuage the unfounded complaints of a whiny few, as the other side rebuts? The issue is what the legal eagles are defining as subsurface trespass. In question is whether the hydraulic fracture



Courtesy: City of Fort Worth

"FRACING" THE BARNETT SHALE / *Horizontal drilling and hydraulic fracture stimulation allow access to areas covered by urban sprawl, but is it legal?*

stimulation is allowing operating companies to, by virtue of where the fractures actually go, access and "steal" natural gas that rightfully belongs to neighboring properties, as well as county roads, state highways, city streets, public parks and other municipal properties. By also debating the "rule of capture," which says that the operating company has ownership of anything that comes out of the hole, both sides of this trespass issue are equally vehement in their respective positions.

Amidst all the flying fur and kicked-up dust, several serious questions now emerge in the areas of technology, trespass, and transgression. By examining the South Texas case commonly referred to as "the Garza case" (formally styled as Coastal Oil & Gas Corporation and Coastal Oil & Gas USA, L.P. vs. Garza Energy Trust, et al) that is currently before the Texas Supreme Court, as well as another one recently filed in Johnson County by Fort Worth attorney Jerry Loftin, we gain the opportunity for a little education while we all wait for the Supreme Court decision on the Garza case, which could create an entirely new system of torts using fracs and subsurface trespass as fodder.

It all began when the 332nd District Court of Hidalgo County found in favor of the plaintiff, Garza Energy Trust, to the tune of a $14 million judgment — $10 million of which was punitive — for subsurface trespass by fracture treatment. On appeal in 2005, the Texas Appellate Court of Corpus Christie upheld this lower court decision to recognize subsurface trespass as a cause of action. Now a second appeal has found its way to the Texas Supreme Court. At press time, all evidence had been presented, oral arguments had been heard, and both sides were waiting anxiously for the decision that will drive their future.

What are the rules, anyway?

Guided by policies and regulations imposed and governed by the Texas Railroad Commission, oil and gas operating companies must have a permit to drill in the Barnett Shale. This way, the Railroad Commission can keep tabs on the drilling locations and compliance with a strict set of rules.

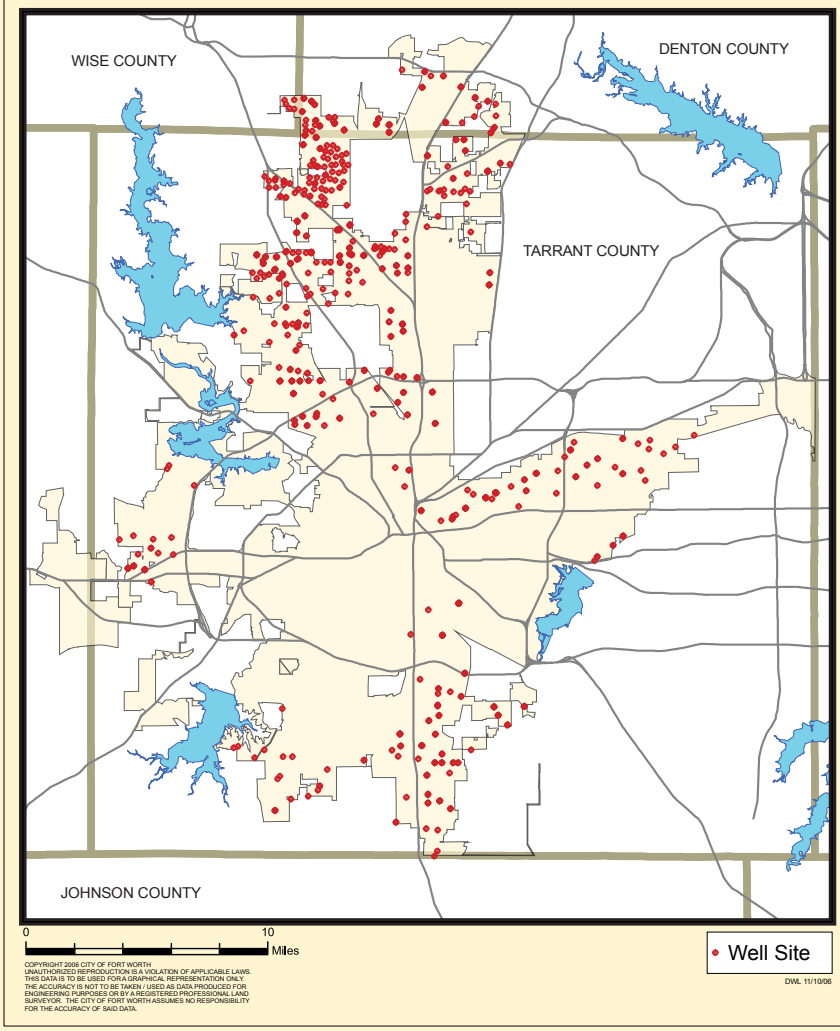
Stacie Fowler, director of intergovernmental and public relations for the Railroad Commission of Texas, outlines some of these rules regarding the Barnett Shale field. According to Fowler, the rule known as the Barnett Shale spacing rule dictates that a producing natural gas well cannot be closer than 330 feet to the lease line. (If an operating company wants an exception to this rule, it must file an application for an exception that notifies everyone who would be affected. The company must also prove that such an exception is necessary to either prevent waste or the confiscation of property.) According to Fowler, if these rules are not followed, after due process, a violating well can be sealed or shut down and the property rights of concerned parties determined in civil court. The drilling permit may be ultimately canceled.

The next logical question to ask is how does the Railroad Commission (RRC) enforce these rules. "Most wells producing from the Newark East Barnett Shale are horizontal wells," Fowler explained. "The RRC requires that directional surveys establishing the path of a well bore be run for horizontal wells. An RRC-approved third-party directional survey company submits these surveys to the RRC. An engineer reviews each well for compliance with field rules."

So for each well permit, the Railroad Commission has third-party documentation of its exact location and the direction and length of its horizontal drilling. The legal rub producing this recent litigation, however, is not the location of the well or even the path of the horizontal drilling. It is the hydraulic fracture stimulation of these horizontal well bores that, according to one side are neither predictable nor controllable and according to the other, are a method for leeching gas reserves from adjacent properties without having to pay for them. This idea is referred to as "subsurface trespass" and whether or not such a thing exists or is a cause of legal action is exactly the crux of the Supreme Court case under consideration.

The two sides of the subsurface trespass coin

The subsurface trespass allegation asserts that, by deliberately fracturing the shale in a given direction, gas can be stolen from underneath surrounding properties. Since, according to Fowler, there is really no way to determine where within the formation oil or gas actually originated, much of the litigation going on right now has to do with whether the frac jobs are themselves violating lease line spacing. "Whether a fracture is natural or created, a molecule of hydrocarbon can travel great distances to be produced," she said.



Courtesy: City of Fort Worth

CITY DRILLING / *This map indicates the number of gas well sites that have been drilled within Fort Worth's city limits.*

While this opens the door to the possibility of subsurface trespassing, the other side of this argument cites the age-old "rule of capture," which states that whatever comes out of the well bore is the property of the operator of that well. But to bounce the ball back to the other side of the proverbial net, those who cry "trespass" are certain that the rule of capture is based on 1950s oil field technology and not at all applicable in current times.

Got whiplash yet? Keep reading. Another chorus of foul play compares fracing to slant-well drilling, a process originally designed to access oil reserves that cannot be reached directly from the surface (such as under a lake). However, abuse of slant-well drilling once allowed certain miscreants to steal oil reserves from their neighbor's property. The other side of this coin asserts that fracing is nothing like slant-well drilling, because slant-well drilling has a deliberate path and direction created for a specific purpose, whereas fracing is unpredictable and simply follows the path of least resistance in the natural formation of the shale.

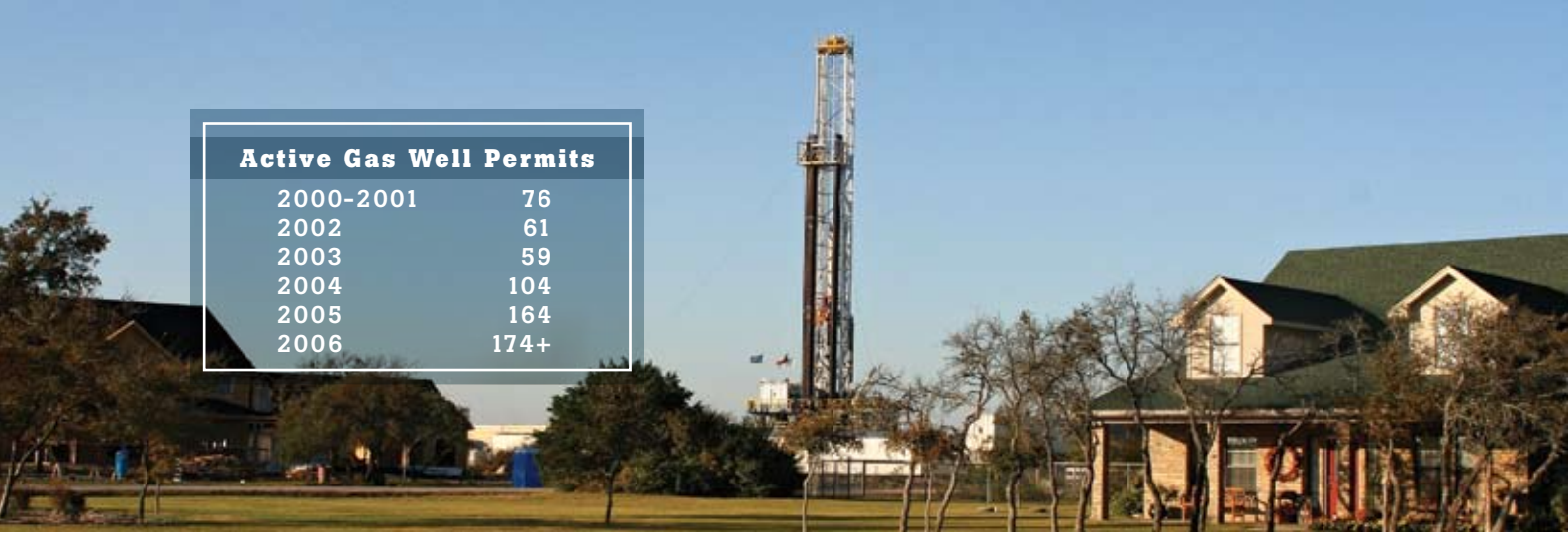
The real fracing question

The main question here is, can hydraulic fracture stimulations be directed, controlled, predicted or even tracked after the fact? "Absolutely not," says one side. "Positively," says the other.

According to logic, history and engineering, the answer most likely lies somewhere in the middle — but which *side* of the middle?

A process exists called microseismic imaging that uses modified earthquake seismology techniques to map hydraulic fracture stimulation. To do this, a 650-foot geophone — much like those designed to "listen to" and measure earthquake tremors — gathers and transmits continuous acoustic signals to on-site computers, which then transform them to create a mapped image of the fractures. Even with this technology, the Barnett Shale's drastic range in thickness — from 300 feet to as much 1,000 feet — can make hydraulic fractures difficult to predict. Although microseismic imaging technology can now give a pretty good approximation of the fracture network created by the fracing process, it still does not mean that the entire fracture network is always "effective," meaning that even with a good idea of where the fractures are, gas may or may not be produced back to the wellbore from all of the fractures that appear to be created. But can this same technology actually determine after the fact where the fracture lines actually go — and whether they cross lease lines? "You betcha," says one side of this heated debate. "Well, not really," says the other.

"There are still a lot of unknowns," explained Dan Lockwood, vice president of engineering at New Tech Engineering, a Fort Worth engineering consulting firm. "And microseismic imaging is a very expensive process. You have to drill an additional well or have an existing unused well, called an observation well, specifically with the purpose of measuring it. We can put a microphone next to the frac job that listens to the fractures, and from that we can triangulate and guess which way and how far the fractures will most likely go." This process is still not common, Lockwood added, and is mostly used in new areas where nobody knows how the rock will frac. "New Tech Engineering has drilled around 350 wells but has only measured four of them," he said. "The purpose of



Active Gas Well Permits	
2000-2001	76
2002	61
2003	59
2004	104
2005	164
2006	174+

this process is to evaluate where the frac will likely go in an area — and from that you can design your completion."

Although the penetration and volume of a frac job can be designed by collaborating engineers using a computer design program, one side of this issue is quick to emphasize that these are only estimates and probabilities based on theoretical formulas; there is neither a way to accurately measure the length of a fracture nor determine or control its direction. "Hogwash," the other side snorts. "Would they risk all that money on a theoretical formula?"

This brings us to yet another area of vehement disagreement swirling around the trespass issue — the concept of drilling offset, or "protection" wells. An offset well, Lockwood explains, is a well drilled within a certain distance of any producing well that could be in a position to capture minerals from underneath adjacent soil. "If you think someone is draining your property of its minerals, you need to put a straw in yourself — before they get it all," he adds. This remedy, one side of this debate contends, is all property owners really need to protect themselves from any accidental drainage of their property by adjacent drilling; it has been in place since the 1950s. "A property owner's remedy is to go to his producer and ask them to drill an offset well," says one side. "That is fine and good if you have a producer," the other side counters, "but what if you don't have a producer? The cost of drilling a well is between $2.5 and $3 million. Who has that kind of money sitting around?"

Is there any way to know if someone is stealing your minerals right out from under you? The TCC tells us that although it can be determined where products (oil/natural gas) enter the well bore, away from the well bore itself it is generally not possible to determine where the gas really comes from. While one side of this issue cites the "rule of capture" regarding whatever gas is brought through their well bore, regardless of where it comes from, the other side equates this to harvesting a neighbor's crop. Sounding a warning siren to anyone who has a rig less than 330 feet from their property line, this side says that subsurface trespass is most likely already happening, and the statute of limitations for doing something about it began running when the well was first drilled.

The "rule of capture" was designed specifically to address this, the other side reiterates; there is no reason to change it. But again, whether or not such a violation is indeed going on — and what, if anything can or should be done about it — now rests entirely on the shoulders of the Texas Supreme Court.

Let the courts decide – and the consequences ride

After traveling 'round and 'round these complex and confusing issues until they dissolve into an endless loop of "did not," "did too," two important facts remain — points we all can agree on.

First, there is a lot at stake here. Whether you subscribe to the dire predictions of the "parade of horribles" that promises to effectively cripple the drilling and recovery of Barnett Shale resources as outlined in the histrionic legalese of one brief, or the "outright theft" contentions of the other that compares subsurface trespass to "someone sticking a vacuum cleaner hose through your window and slurping out all your jewelry while you sleep," we all have to wonder what the real story is. Is the "evil empire" of operating companies "running roughshod over widows and orphans," or are a few legal rabble-rousers threatening to maim our Barnett Shale bonanza? The money that stands to be lost or gained — depending on which way the scales of justice tip — is huge, with far-reaching ripples of consequence.

Second, as the Texas Supreme Court deliberates and decides whether to uphold or overturn the decision by the 13th Court of Appeals — or just to impose guidelines for damages in such cases — it will either open wide or hold closed the floodgates of subsurface trespass litigation. Regardless of this decision, it is important to realize that we now face a landmark moment in our state's highest court that will shape the future of everyone affected by the Barnett Shale.

The legal eagles perched on both sides of this issue agree on one thing for sure: There is no predicting what the Supreme Court will do. Who's right? Who's wrong? We may never know for sure. What will happen next? We'll just have to wait and see.