



Don't Space Out – Protecting That Empty Space for Your Next Natural Resource Client

By Trae Gray and Ryan Ellis

A landman approaches a landowner to request a subsurface easement as part of a damage release for drilling an out-of-section well so an oil company can place a longer lateral during the fracture of the well — a scenario that plays out time and time again in Oklahoma. In this situation, the oil company must have the right to exceed the areas covered by its oil and gas lease.

The environmental consequences are similar to drilling a well within the unit or the section where lease rights are present, and the production will likely be increased as a result of the horizontal lateral. Thus, there is seldom a reason not to allow an oil company to proceed in this situation. Yet, neither party is likely to have considered how the release language will affect other seemingly unrelated issues. As a result, unintended consequences abound.

Contrast:

Release No. One: Landowner hereby grants to Operator a surface and subsurface easement within Section 1, Township 2 South, Range 2 West, Carter County, Oklahoma.

Release No. Two: WHEREAS, Landowner is fully aware that the Double O Bar #1 Well (Well) on this padsite in Section 1, Township 2 South, Range 2 West, Carter County, Oklahoma will be drilled into Section 12, Township 2 South, Range 2 West and that the Well is what is commonly referred to as an out of section well. Herein, Landowner hereby grants a surface and subsurface easement in portions of Section

1, Township 2 South, Range 2 West, Carter County, Oklahoma to Operator for the limited purpose of drilling this out of section Well, provided the Well is drilled from the padsite covered by this Agreement. This subsurface and surface easement grants only a right to use the drillsite, drill the wellbore and the ongoing use of the wellbore of the Well. The easement does not grant any other surface or subsurface right unless specifically set forth herein. This subsurface and surface easement shall terminate upon expiration of the terms and conditions of the applicable oil and gas lease(s) in Section 12, Township 2 South, Range 2 West and the fulfillment of all the terms and conditions of this Agreement.

In Release No. Two, the oil company has everything they need to legally drill the out-of-section well, fracture the well and produce the well for so long as the lease produces. Essentially, the oil company has everything they sought, wanted and needed clearly defined within the release. The oil company's intent has been met. However, Release No. One is wrought with issues and will likely lead to a filing pursu-

ant to 12 O.S. §§1141.1-1141.5 (Oklahoma Nonjudicial Marketable Title Procedures Act).

Here are a few issues to consider with respect to the differences in the two releases. In Release No. One, a surface and subsurface agreement has been granted in the whole section, resulting in a release that is very broad and creates termination and abandonment issues. It is likely that the intent of the parties was not accurately memorialized in this situation. Has the surface owner effectively given up the pore space and other surface and subsurface rights? What is the scope of the easement? What are the vertical and lateral boundaries of the easement? In this article, we will explore the emerging law of pore space and practical and legal considerations a landowner should be aware of, particularly when making decisions that could affect the future rights of their pore space ownership.

THE EMERGENCE OF PORE SPACE AS A PROPERTY RIGHT

Pore space, although rarely thought about, should be viewed as just another private property right. We all recall our first year of law school and our basic property law class where property rights are commonly referred to as a “bundle of sticks.” Pore space, as one of the many different sticks in the bundle, is generally thought of as a subsurface property right. Although it can be defined in a number of different ways, pore space, by its simplest definition, is the empty space between grains of rock, fractures and voids. However, when defining pore space as a property right, states have become increasingly more specific. For example, Oklahoma defines pore space as “any interstitial space not occupied by soil or rock, within the solid material of the earth, and any cavity, hole, hollow or void space within the solid material of the earth.”¹¹ Other states, such as Wyoming, are primarily concerned with the use of pore space for carbon sequestration, and therefore, specifically define pore space as “subsurface space which can be used as storage space for carbon dioxide or other substances.”¹²

Until very recently, pore space was hardly considered a property right at all. However, the surge of interest in carbon capture and sequestration (CCS), as well as the need to store salt water produced by the oil and gas industry — as a waste product arising from oil and gas production and from hydraulic fracturing — has made pore space ownership an increasingly popular, yet extremely underdeveloped, area of the law.

Like most property rights, pore space ownership has evolved out of common law property rights, which are traceable to the old common law maxim known as the “*ad coelum doctrine*.” The *ad coelum doctrine* states “*cujus est solum, ejus est usque ad coelum et ad inferos*,” meaning “to whomever the soil belongs, he owns also to the sky and to the depths.”³ Taken literally, the owner of the surface holds title to the entire tract from the heavens to the depths of the earth.⁴ This form of ownership, although no longer as broad as it was originally, is the simplest and broadest property interest allowed by law, which is known as a fee simple interest.⁵ Determining ownership of pore space is very straightforward when a fee simple interest is involved because the fee owner holds title to both the surface estate and the mineral estate.⁶ However, once the fee simple interest is severed into differing estates and burdened with a variety of other property interests, determining pore space ownership can become a confusing and complicated issue.⁷

There are two common ownership structures once the mineral estate has been severed from the surface estate: 1) the nonownership theory, known as the “English Rule,” and 2) the ownership-in-place theory, known as the “American Rule.”⁸ The English Rule is commonly used in the United Kingdom, Canada and Australia, where mineral rights are mostly owned by the respective governments.⁹ Application of the English Rule within the United States would vest pore space ownership with the mineral estate — which is the current minority rule within the United States.¹⁰

The American Rule, on the other hand, “involves the severance of a mineral right from the interest in the whole geological formation.”¹¹ When applying the American Rule, the mineral estate owns the minerals beneath the land, but the geological formation is owned by the surface estate.¹² The American Rule is currently the majority rule in the United States.¹³

In addition, although the American Rule vests pore space ownership with surface estate, the mineral estate still has the right to explore and remove minerals from the land, which allows a mineral estate the right of reasonable use of pore space for mineral exploration. As a result, in states applying the American Rule, it cannot simply be said that pore space belongs solely to the surface estate. It must also be determined if the reservoir has been depleted of minerals

because until depletion occurs, the mineral estate still has a right to use the pore space.¹⁴

In 2011 the Oklahoma Legislature enacted Section 6 of Title 60 that clearly states pore space is a property right owned by the surface owner subject to reasonable use by the mineral owner.¹⁵ Still, landowners must be mindful of the following legal and practical considerations associated with their pore space rights. Finally, landowners and those representing them must be cognizant of how title to pore space can be modified through various contracts, easements, litigation, releases and other agreements landowners routinely enter into.

LEGAL AND PRACTICAL CONSIDERATIONS OF PORE SPACE RIGHTS

Currently in Oklahoma, the most practical use for pore space is for its use in oil and gas development. As demonstrated in the scenario above, in order to engage in directional drilling, operators need to obtain subsurface easements to access adjoining parcels in which they do not own lease rights. The disposal of salt water in underground injection wells is another major area where pore space rights are implicated.

Valuation of Pore Space

As surface owners become more educated about pore space ownership and as technology advances, it is highly likely that operators will need to acquire rights to the pore space in order to continue directional drilling or inject wastewater in areas outside of the drilling units. Yet placing a monetary value on pore space can be just as complicated as determining ownership. For instance, valuation of pore space will likely be difficult to determine as it will depend on the particular use and what the user is willing to pay as opposed to the actual value of occupation. There are several reasons that support this theory.

First, it is likely to be difficult to analyze the devaluation to either the surface or mineral estate from the occupation of the pore space. Determining the devaluation becomes even

more speculative when neither the surface nor mineral estate is utilizing the pore space for any practical purpose. Second, pore space is difficult to view as a tangible medium, and as a general rule, intangible items become harder to value. Finally, it is likely that operators will pay more than the market value for out-of-section easement rights because an operator cannot force a landowner to give up these rights.

Studies show that nontangible rights typically bring more than market value, yet the definition of market value is arguable in and of itself.¹⁶ On one hand it can be argued what a nontangible sells for in the marketplace is the best indicator of market value. On the other hand, it can be argued that an appraisal of the property is a better indicator of market value. Typically, it is a combination of these two that determine what these rights bring in the marketplace.

CO₂ Sequestration

Another possible use for pore space involves CCS. For instance, nearly 85 percent of the energy produced within the United States comes from the combustion of fossil fuels, and it is predicted that fossil fuels will remain the primary source of energy for the near future.¹⁷ In addition, coal represents a staggering 49 percent of the United States' existing electric-generating capacity.¹⁸ Not surprisingly, the United States is the second largest emitter of greenhouse gases, 60 percent of which is carbon dioxide.¹⁹ As society looks for viable solutions to carbon dioxide emissions (CO₂), CCS is at the forefront.²⁰ This process can potentially remove 80 to 95 percent of the CO₂ emitted from power plants.²¹

Studies have indicated that global sequestration capacity in depleted oil and gas fields is substantial, with the capacity to store 125 years of current worldwide CO₂ emissions from fossil fuel-fired power plants.²² Although CO₂ is routinely injected into subsurface pore space in an effort to aid in the recovery of oil and gas, and though large-scale sequestration sites have been identified within the United States, there are currently no large-scale, commercial sequestration projects underway in the United States.²³ While

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Oklahoma has not yet enacted carbon sequestration legislation, numerous other states have and more are following suit.²⁴ As a result, pore space owners should be mindful of the opportunity and their right to use depleted oil and gas reservoirs for CO₂ sequestration.

Underground Natural Gas Storage

In addition to CO₂ sequestration, pore space also has the potential to be used for underground natural gas storage. Natural gas, unlike oil, is more easily stored by re-injection into underground rock pore spaces, which are typically geological formations or common sources of supply whose pore spaces formerly held producible hydrocarbons that are now substantially depleted.²⁵ Although the law of underground storage rights is largely undeveloped throughout the United States, there are several cases in Oklahoma that address ownership rights of depleted geological formations and, to some extent, ownership of pore space.

In *Ellis v. Arkansas Louisiana Gas Company*, the most prominent of the Oklahoma cases, the surface owners challenged the defendant gas producer's use of an underground stratum for the storage of natural gas. The surface owners argued that once the minerals had been depleted from the porous reservoir rock, the surface estate became the owner of the reservoir rock and the mineral owner could not store natural gas without authorization of the surface owner.²⁶ The mineral owner, however, argued that ownership of the reservoir rock did not grant the surface owner the right to inject and store natural gas and claimed the right to inject and store natural gas by virtue of oil and gas leases, gas storage leases and gas injection easements.²⁷ The *Ellis* court held that a natural gas storage company must obtain permission from the surface owner in order to store natural gas produced elsewhere and reasoned that a mineral deed only allowed the grantee the right to produce oil, gas and minerals, but the subsurface strata were retained by the surface estate.²⁸

The *Ellis* court, in finding that the surface estate retains the rights to underground natural gas storage, relied on *Sunray Oil Co. v. Cortex Oil Company*.²⁹ In *Sunray*, an oil and gas lessee sought injunctive relief against Sunray to enjoin its use of an abandoned well for disposal of salt water.³⁰ Sunray had obtained an assignment of an oil and gas lease on 10 acres on which the abandoned well was situated.³¹ Sunray also obtained a license from the surface owner to

dispose of its wastewater, produced from nearby operations, into the abandoned well.³² The Oklahoma Supreme Court found that an oil and gas lease bestows only such minerals that are found and reduced to possession and vests no title to any oil or gas that is not extracted and reduced to possession.³³ Thus, the surface owner had the right to grant permission to inject wastewater into the subsurface as long as it did not interfere with the mineral estate's oil and gas operations.³⁴

While neither *Ellis* nor *Sunray* address pore space rights specifically, it can be concluded that the surface estate retains the right to the subsurface strata for the purpose of natural gas storage or wastewater injection — both of which utilize the pore space. As such, surface owners should be mindful that an oil and gas lease does not automatically give an operator the absolute right to use the pore space for injection of wastewater produced out of section or natural gas storage. A surface owner will always have the right to demand compensation for storage of natural gas in depleted geological formations and for injection of wastewater produced from out-of-section wells.

Subsurface Trespass

In addition to potential uses for pore space, pore space owners should be aware of the high potential of a subsurface trespass.

Historically, trespass has been characterized by "a series of actions for harm to person or property."³⁵ Over time, the varying forms of trespass have continued to evolve and offer flexible relief based on varying circumstances. More specifically, trespass has evolved to address disputes involving subsurface land use.³⁶

In the early days of the petroleum industry, little attention was given to the idea of a subsurface trespass.³⁷ Instead, mineral owners, compelled by the rule of capture, often constructed as many wells as possible in order to protect against drainage.³⁸ However, technological advancements, such as subsurface horizontal drilling and reservoir stimulation techniques, are now so commonplace that courts are faced with deciding whether these techniques, which often encroach upon subsurface property rights, give rise to an action in trespass.³⁹

Subsurface trespass law has developed from traditional surface trespass.⁴⁰ In the early 1900s, upon the discovery of oil in Texas and California, there was a surge of drilling rights disputes to which courts applied ordinary trespass prin-

ciples and often found that “one who unlawfully entered the land of another to drill for and produce oil was a trespasser, and was therefore not entitled to the oil severed from the land.”⁴¹ However, if the trespasser had acted in good faith, courts often permitted recovery of drilling and production expenses, but when the trespasser acted in the absence of good faith, courts were much less likely to allow the trespasser to recoup expenses and the lawful owner was left with a free producing well.⁴²

It was from these principles that the law of subsurface trespass evolved and by its most general definition is “the unlawful physical entry onto the mineral estate of another.”⁴³ Application of subsurface trespass law was straightforward in the early days of the oil and gas industry.⁴⁴ For instance, intent was not required to be shown as long as the subsurface trespass was direct and volitional.⁴⁵ However, as previously mentioned, recent technological advancements have made it difficult to determine when certain subsurface operations can be considered a subsurface trespass.⁴⁶ As a result, case law on subsurface trespass is neither unified nor coherent.⁴⁷

Traditional Oil and Gas Subsurface Trespass: Deviated, Directional and Horizontal. The most obvious example of an actionable trespass in this context is a directional well that bottoms out under neighboring property.⁴⁸ Unlike the scenario presented at the beginning of this article, under this particular scenario, no release is sought, yet a well is drilled and eventually enters the neighboring property.⁴⁹ This situation gives rise to an actionable trespass due to the well-established principle of property law that prevents the use of the surface to support mineral extraction activities on other lands.⁵⁰ However, operators can avoid a trespass situation by seeking an appropriate release from the pore space owner.⁵¹

Hydraulic Fracturing. Presently, Oklahoma has not taken a stance on subsurface trespass that results from hydraulic fracturing. The leading opinion on hydraulic fracturing is *Coastal Oil & Gas Corp. v. Garza Energy Trust*, which is a Texas Supreme Court case.⁵² Here, the operator clearly entered into the adjoining property with its fracturing operations. Regardless, the Texas Supreme Court reasoned that there must be an injury and the only injury in this case was precluded by the rule of capture. Even though the jury found that a subsurface trespass occurred, the court based its holding on the fact that hydraulic fracturing prevented underground

waste of hydrocarbons by allowing its recovery from tight reservoirs that would not otherwise be productive and was necessary to meet an important social need. Ultimately, in terms of subsurface trespass, the *Garza* court’s most important statement was this, “[t]he law of trespass need no more be the same two miles below the surface than two miles above.”⁵³ Although this reasoning wisely protects the well-established and necessary practice of hydraulic fracturing, it also gives an inference that courts, at least in Texas, may be reluctant to find a subsurface trespass of pore space as a result of hydraulic fracturing.

Secondary and Enhanced Recovery Operations. Secondary or enhanced recovery operations are used to maintain or increase production of a well once the reservoir’s natural production decreases.⁵⁴ Although states often recognize secondary or enhanced recovery as a valid public interest, trespass issues can arise in instances when an operator injects a substance, such as salt water, carbon dioxide, chemicals or natural gas, into the subsurface of its own property in order to increase production and the injected substance invades the subsurface of the neighboring property.⁵⁵ These cases, again, are not as straightforward as cases involving a directional well that deviates across ownership boundaries.

Across the nation, the case law in this area is mixed; however, Oklahoma does recognize a cause of action for private nuisance when injected water injures another’s interest in a well or leasehold, even though the water was injected for enhanced oil recovery pursuant to a regulatory permit.⁵⁶ However, the requirement of showing actual injury or recoverable damages remains.⁵⁷ Yet, the Oklahoma Supreme Court, discussing the disposal of saltwater from petroleum wells, has stated that “[i]f such disposal of saltwater is forbidden unless oil producers first obtain the consent of all persons under whose lands it may migrate or percolate, [then] underground disposal would be practically prohibited.”⁵⁸

Generally, when secondary recovery is involved, it appears that most courts are unwilling to find the migration of wastewater onto neighboring properties to be a trespass. This is likely because secondary recovery is in the best interest of the public and industry. With that said, there appears to be no clear case law challenging this logic specifically in the realm of pore space.

Wastewater Injection Wells. In Oklahoma, wastewater injection wells have been at the forefront of the news lately as the primary cause for the recent earthquakes. In addition to their association with the local earthquakes, wastewater injection wells are also associated with subsurface trespasses. In this situation, a subsurface trespass occurs when fluids from a wastewater injection well migrate beyond the legal surface boundaries of an operator's rights.

It is likely that the operation of many wastewater injection wells result in the subsurface trespass of pore space to some extent as common sense says that when a commercial wastewater disposal operator only owns one acre yet injects hundreds of thousands of barrels of wastewater into a wellbore on that one acre, the wastewater is migrating to an area outside of that one acre. However, that being said, it would be difficult to prove. Nevertheless, pore space owners should always be mindful of wastewater injection wells near their property and the potential for that wastewater to migrate onto their property. As the law on pore space develops, surface owners may seek compensation from these commercial wastewater disposal operators or may even try to prohibit the injection.

Although previously cited, *West Edmond Salt Disposal Ass'n v. Rosecrans*, is also relevant to the discussion on wastewater injection wells. The 1950 decision by the Oklahoma Supreme Court held there was no taking or damaging of plaintiffs' property where a defendant injected salt water into an abandoned well and the salt water migrated and commingled with existing salt water in a formation underlying plaintiffs' adjoining lands.⁵⁹ This case is distinguishable from the example previously given regarding wastewater injection wells. In *Rosecrans*, the Oklahoma Supreme Court found that there was no taking of plaintiffs' property in one specific situation — where there was no injury or damage and the migrating saltwater did not deprive plaintiffs of possession, use or enjoyment of the property.⁶⁰ In other words, because plaintiffs' pore space consisted of a salt water formation that already contained massive amounts of salt water, the court found that the defendant did not trespass or take plaintiffs' property.

However, the bigger issue presented by *Rosecrans* is that the Oklahoma Supreme Court also likened salt water to oil and stated it was fugitive in nature, belonging to the owner of the land under which it had migrated. Thus, the salt water did not remain the property of the defen-

dant. The plaintiffs argued that the rule of law governing minerals should not be applied to deleterious substances; however, the court returned to the fact that the salt water injected by defendant simply entered a formation already saturated with salt water.⁶¹

Further, *Rosecrans* was a case of first impression and was extensively briefed and argued by both parties, with the attorney general of the state filing an *amicus curiae* brief on behalf of the state. During the briefing, both the defendant and the attorney general admitted and affirmed the liability of defendant or other producers disposing of salt water by injection for any actual damage or injury to adjoining property owners.⁶² However, the plaintiffs were simply unsuccessful, likely because their pore space was already occupied by a saltwater formation, in proving damages. Had the plaintiffs' pore space been unoccupied, it's possible the Oklahoma Supreme Court may have reached a different result.

CONCLUSION

The emergence of pore space as a private property right is still a developing area of the law — yet it must be considered in natural resource negotiations from this point forward. While the recent earthquakes have increased society's overall awareness of what is happening underground, pore space is not typically mentioned in relation to the earthquakes despite the fact that much of the disposed wastewater is entering pore space in areas where injectors have not acquired the appropriate rights. However, we do have some insight on how the law of pore space will develop in areas of natural gas storage, wastewater injection, secondary and enhanced recovery operations, hydraulic fracturing, subsurface trespasses and CO₂ sequestration.

Further, pore space is primed for consideration both from the standpoint of what it is actually worth economically and also how it will be dealt with legally. The development of pore space law will likely become a hot topic that will be considered by business persons, policymakers, attorneys and judges. As such, it will be increasingly important for attorneys to protect client interests in pore space and to ensure that any agreements negotiated are more in line with Release No. Two as opposed to Release No. One above.

Authors' Note: A significant portion of the research and authority used in this article is taken from: Trae

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