RECOGNIZING THE VALUE AND USES OF PORE SPACE AS A PROPERTY RIGHT

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THE EMERGENCE OF PORE SPACE AS A PROPERTY RIGHT

Pore space, although rarely thought about, should be viewed as just another private property right. Pore space 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.

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." Taken literally, the owner of the surface holds title to the entire tract from the heavens to the depths of the earth. 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. 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. 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.

There are two common ownership structures once the mineral estate has been severed from the surface estate: (1) the non-ownership theory, known as the "English Rule"; and (2) the ownership in place theory, known as the "American Rule."

Application of the English Rule vests pore space ownership with the mineral estate—which is clearly the current minority rule within the United States.

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

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.

We researched pore space law in Arkansas, Colorado, Kansas, Kentucky, Montana, New Mexico, North Dakota, Oklahoma, Pennsylvania, Texas, Wyoming, Michigan, Louisiana, New York, and West Virginia to determine if there is a trend towards vesting ownership of pore space with the surface or mineral estate. Six of the states were undecided, four states have a clear statute vesting ownership with the surface estate, four other states have case law supporting surface estate ownership, and one state had a case arguing pore space could be owned by the mineral estate.

As such, landowners should be mindful of the following legal and practical considerations associated with their pore space rights. 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

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 engage in 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.

CO2 Sequestration

As previously mentioned, pore space can be used for carbon capture and sequestration (CCS). CCS can potentially remove eighty to ninety-five percent of the CO2 emitted from power plants. Studies have also 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. 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. Still, 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. In some states, surface owners retain the right to depleted geological formations and; therefore, should request compensation for storage of natural gas in depleted geological formations, and for injection of wastewater produced from out of section wells.

Subsurface Trespass

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

Traditional Oil and Gas Subsurface Trespass

The most obvious example of an actionable trespass in this context is a directional well that bottoms out under neighboring property. 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. However, operators can avoid a trespass situation by seeking an appropriate release from the pore space owner.

Hydraulic Fracturing

A subsurface trespass can also occur during hydraulic fracturing. However, courts tend to rule that an injury must occur in connection with the subsurface trespass as hydraulic fracturing prevents underground waste of hydrocarbons by allowing its recovery from tight reservoirs that would not otherwise be productive and thus, meets an important social need. Although this reasoning wisely protects the well-established and necessary practice of hydraulic fracturing, it also gives an inference that courts 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. 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.

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

Wastewater injection wells can be 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

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.

CONCLUSION

Evaluating pore space as an underground property right should be considered in every land deal. The development of pore space as a valuable property right is an increasing area of consideration for REALTORS®, title examiners, landmen, policymakers, attorneys, and judges. As such, it will be increasingly important to consider the implications every deal may have on this emerging area of the law.

For a more in-depth analysis of pore space, you can download a copy of the 2015 thesis and other writings on the topic by visiting www.LandownerFirm.com.

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1. A significant portion of the research and authority used in this article are taken from: Trae Gray, University of Oklahoma College of Law, A 2015 Analysis and Update on U.S. Pore Space Law - The Necessity of Proceeding Cautiously with Respect to the "Stick" Known as Pore Space (2015).
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