Water Y'all Talking About?
Produced Water Concerns for Mineral and Surface Owners

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Closely watched litigation regarding the definition and ownership of water has percolated up to the Texas Supreme Court. Interestingly, Cactus Water Services, LLC v. COG Operating, LLC has received amicus curiae briefs from associations across the state representing farmers, ranchers, land, and mineral owners requesting the Court to uphold one of the fundamental foundations of Texas land rights – that groundwater belongs to the surface owner. Water is essential to oil and gas extraction, but as the produced water returns to the surface, the right to claim it has become a little murky.

Produced water is the fluid byproduct brought back to the surface when an oil well is drilled, fractured, and produced. It generally has a high salinity and contains a mix of organic materials, suspended and dissolved solids, and drilling chemicals. Oil wells can produce 3 to 6 barrels of water for every 1 barrel of oil, but that ratio varies by location with some wells as high as 500:1. Produced water has historically been deemed wastewater, with operators either (1) re-injecting and storing underground or (2) recycling and re-using for additional drilling processes.

A quick dive into the facts of Cactus. COG Operating, LLC (COG) held four leases, executed in 2005, 2010 and 2014, encompassing approximately 37,000 acres in Reeves County, Texas. COG also acquired surface use and right-of-way agreements. In 2019 and 2020, the surface owner executed leases with Cactus Water Services, LLC (Cactus) for the right to sell produced water from oil and gas wells on the property. COG sued arguing it owned the produced water by and through the terms in the leases, surface agreements and common law practice. Summary Judgment in the Reeves County District Court ruled in favor of COG. Cactus appealed to the Court of Appeals for the Eighth District of Texas (El Paso) who upheld the judgment stating that the produced water was "waste" with ownership falling to the mineral lessee. The Court of Appeals relied on the definition of "oil and gas waste" as defined in the Texas Natural Resources Code, the Texas Water Code, and by the Texas Railroad Commission, all of which include produced water. In addition, the RRC places liability for disposal of produced water on the operator.

Along with the Court's Dissent, the amicus briefs filed with the Texas Supreme Court disagree with COG's claim that water becomes waste within the operator's product stream during the drilling process. Essentially, these briefs argue that using the water for drilling may change its purpose and usefulness, but not its ownership.

Among other developments, an increase in seismic activity tied to saltwater disposal wells has created an entirely new problem. According to the Texas Railroad Commission, seven (7) earthquakes with magnitudes of 3.6 to 5.2 hit Culberson and Reeves Counties between November 8 and December 17, 2023. As a result, the RRC suspended 23 saltwater disposal permits.

But what if there's more to produced water than just waste? A recent study by Texas A&M University researcher Dr. Hamidreza Samouei found that nearly every element in the periodic table could be recovered from produced water. He calls it "a veritable treasure trove… " One mineral extracted from produced water is making quite the splash. Lithium is used in batteries and in almost every form of technology, including cell phones, televisions, computers, toys, and electric cars. Recovering lithium from produced water can vastly increase the overall economic value of drilling.

As of May 2024, lithium traded around $14,500 per metric ton. Produced water can contain anywhere from a few to over 200 metric tons of lithium, with the Smackover Formation in southern Arkansas far exceeding quality and quantity over other formations. Already known for its high bromine content, the Smackover Formation is currently being developed for its lithium heavy brine using a technique known as Direct Lithium Extraction (DLE). DLE is a process where the lithium is adsorbed (gathered or layered) onto a lithium-selective membrane allowing the lithium to separate from the brine water. This process reduces the carbon impact of traditional lithium mining while also reducing time and energy associated with evaporation techniques used in Chile, Bolivia, and Argentina.

As a new potential revenue stream stemming from oil and gas production, ownership of produced water and the additional minerals contained within create new legal questions. Who owns the lithium and other minerals extracted from produced water? How should royalties and expenses be allocated? What about tax credits and incentives? Oil and gas leases and surface agreements will need to adjust to account for technological advances surrounding produced water.

Water is already a fundamental part of Texas property rights. Whether used for consumption, farming, ranching, or as an essential element of oil and gas drilling, the ownership of water provides continued revenue streams and long-term contractual opportunities. As the tides turn, produced water is evolving beyond being just waste and into the extraction of lithium and other significant minerals. By clearing up the ownership issue presented in Cactus, surface owners, mineral owners, and operators will be left with a clearer path for continued development.

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i. Cactus Water Services, LLC v. COG Operating, LLC (No. 08-22-00037-CV, July 28, 2023)
ii. Robinson v. Robbins Petroleum Corp., 501 S.W.2d 865, 867 (Tex. 1973)
iii. Luedke, N. (2024, January 23). Mining the treasures locked away in produced water. Texas A&M University Engineering. https://engineering.tamu.edu/news/2024/01/mining-the-treasures-locked-away-in-produced-water.html#:~:text=More%20importantly%2C%20like%20other%20brines,fertilizer%20production%20and%20other%20industries.
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vi. Kumar, A.; Fukuda, H; Hatton, T.; Lienhard, J. Lithium Recovery from Oil and Gas produced Water: A Need for a Growing Energy Industry, ACS Energy Lett. 2019, 4, 1471-1474
vii. Direct lithium extraction. Cleantech Lithium. (2024, February 1). https://ctlithium.com/about/direct-lithium-extraction/

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