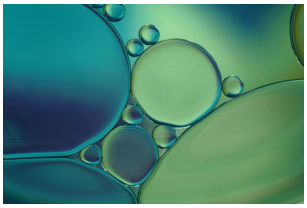

Reuse in Practice: Produced Water Disposal, Recycling, Treatment, and Commercial Hurdles (Part 3)

Jun 02, 2026

Categories:

Publications

Authors:

I. Bobby Majumder
Ian Strang
Edward J. Grattan II

The first two articles in this series examined why produced water has become central to Southwest water discussions and how the legal framework governing ownership and regulation continues to evolve.

The remaining question is practical: can produced water reuse scale in a meaningful way?

Although interest in reuse continues to grow, large-scale implementation faces substantial technical, economic, infrastructure, and public-confidence challenges. Even as operators expand recycling efforts, disposal remains the dominant management pathway across much of the Southwest.

Produced Water Management Pathways

Disposal by Injection

One of the dominant management pathways for produced water is underground injection, often through saltwater disposal wells. Deep-well injection has long been viewed as an efficient option because it avoids the expense of advanced treatment while providing a practical method for managing enormous fluid volumes.

Department of Energy data published in 2024 noted that produced water is often managed through deep underground injection because of its salts, organics, metals, and other constituents.

Heavy reliance on disposal wells, however, raises additional concerns. Injection can increase subsurface pressure and, in some cases, induce seismicity. In the Permian Basin and elsewhere in Texas, mounting concern surrounding seismic activity has increased regulatory scrutiny and made exclusive reliance on underground disposal less attractive as a long-term basin-wide solution.

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

FBT Gibbons

Recycling for Hydraulic Fracturing

The most common form of reuse today is internal recycling within oil and gas operations, particularly for hydraulic fracturing.

This pathway is attractive because treatment requirements may be less demanding than for surface discharge or agricultural reuse, and recycled water can often be used close to where it is produced.

Many Permian Basin operators now rely heavily on recycled produced water for completion activities, reducing freshwater demand for new wells.

Even so, recycling for hydraulic fracturing is not a complete solution. Only a portion of total produced water volumes can currently be absorbed by completion demand, leaving substantial volumes that still require disposal or alternative management pathways.

From an operational perspective, recycling represents the clearest example of water-conscious practices already underway. By reusing produced water in completion activities, operators can reduce freshwater demand, lower transportation burdens in some settings, and make greater use of water already generated within the basin.

Advanced Treatment and Beneficial Reuse

A more ambitious pathway involves advanced treatment for use outside the oilfield, including industrial applications, irrigation, dust control, and other non-potable uses.

The Department of Energy has identified possible beneficial uses such as fire control, power generation, washing, and non-edible crop irrigation following characterization and treatment. The Bureau of Land Management's 2026 produced-water guidance similarly encourages field offices to work with operators to identify reuse opportunities consistent with federal and state requirements.

Legislators have also attempted to incentivize investment in water-reuse technology. On May 13, 2026, Senators Ben Ray Luján and Katie Britt introduced the Advancing Water Reuse Act, the Senate companion to H.R. 2940 in the House of Representatives.

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

FBT Gibbons

The legislation would provide a 30% Investment Tax Credit for projects installing onsite industrial water-recycling systems or replacing freshwater with recycled water. Operators could potentially use the incentive to offset capital costs associated with produced-water treatment technologies used in drilling, completions, and other industrial processes.

Researchers are also exploring whether produced water may yield valuable critical minerals, particularly lithium. The U.S. Geological Survey Produced Water Database has identified 40 of the 50 critical minerals on the agency's critical-mineral list in produced-water samples and estimates that large-scale recovery potential exists in some basins.

The Department of Energy's National Energy Technology Laboratory has similarly emphasized produced water as a potential unconventional resource for critical minerals and materials, including lithium.

Practical Challenges

The barriers to large-scale produced-water reuse remain substantial and help explain why disposal continues to dominate.

Technical Complexity

Produced water is chemically heterogeneous and changes from basin to basin, well to well, and even over the life of a single well. No single treatment method currently addresses all reuse objectives reliably.

As a result, treatment systems often must be tailored to specific operating conditions and intended uses.

Treatment Cost and Energy Demand

Treatment is often more expensive than disposal, particularly where the intended end use requires low salinity or heightened public-health protections.

Thermal processes, membrane systems, advanced oxidation, adsorption, electrochemical methods, and biological treatment

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

technologies all have potential applications, but each presents cost, energy, or operational tradeoffs.

Converting produced-water streams into large-scale water supplies may therefore require substantial energy inputs, reinforcing the broader economic challenge.

Infrastructure and Logistics

Large-scale reuse depends on infrastructure, including pipelines, storage systems, treatment facilities, monitoring equipment, and delivery networks.

Southwest operations often span significant geographic distances, and moving water can be as challenging as treating it. The Department of Energy has suggested that basin-wide treatment infrastructure and shared business models may ultimately be necessary to improve the economics of reuse and resource recovery.

Environmental and Health Uncertainty

Even as treatment technologies improve, important questions remain regarding treatment standards, constituent characterization, and monitoring protocols.

Produced water can contain hundreds of chemical constituents, and some may lack approved analytical methods or complete constituent data. Debate continues regarding treatment reliability, environmental impacts, and protections for soil, crops, surface water, wildlife, and human health where produced water is considered for broader reuse.

Public Acceptance

Because produced water originates within a heavily regulated industrial setting and may contain constituents requiring extensive treatment and monitoring, stakeholder confidence remains critical.

Beneficial reuse proposals will likely depend not only on engineering performance, but also on transparent monitoring, enforceable

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

standards, and demonstrated health protections.

Outlook and Considerations

Produced water is no longer merely an operational management issue. In the Southwest, it has become a strategic issue touching water security, energy production, seismic risk, and resource recovery.

The attraction is obvious. In arid basins such as the Permian, operators bring enormous water volumes to the surface every day in places where freshwater resources are increasingly constrained. Texas more than any other state illustrates both the scale of the opportunity and the magnitude of the challenge.

Still, produced water is not a uniform or one-size-fits-all water source. It remains a highly variable industrial byproduct that often requires complex treatment, significant infrastructure, rigorous monitoring, and regulatory clarity before it can be reused safely outside oilfield operations.

The Southwest may ultimately rely on produced water as one component of a broader response to water scarcity, but it is not yet a universal solution.

Using produced water as a meaningful long-term water-management tool will continue to require significant investment, technological advancement, regulatory development, and legal clarity. Texas will likely remain the primary proving ground because of its production volumes, infrastructure, legal developments, and intensifying water stress.

In that sense, produced water represents both a substantial opportunity and a complicated implementation challenge. It offers a potential supplemental resource in one of the driest and most economically important regions of the country, but only if the transition from byproduct stream to reusable asset is managed with legal precision, scientific caution, and technological realism.

If you have questions about or comments on this article, please contact the authors or any attorney with FBT Gibbons' Oil, Gas and Minerals team.

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

Produced Water Series

- **Part 1 — Can Produced Water from Energy Production Offset Water Scarcity in the Southwest?**
- **Part 2 — The Legal Framework for Produced Water: Ownership, Rights, and Regulations**
- **Part 3 — Reuse in Practice: Produced Water Disposal, Recycling, Treatment, and Commercial Hurdles**

© 2026 FBT Gibbons LLP. May be considered attorney advertising in some jurisdictions.

2026 FBT Gibbons LLP. All rights reserved. ADVERTISING MATERIAL.

FBT Gibbons