CASE STUDY

Water Management

Permian Operator Reduces Freshwater Sourcing By 50% Using Water Management Solution

The System Treats and Recycles Flowback and Produced Water for Hydraulic Fracturing

Permian Basin, Near Midland, Texas, USA

REDUCE FRESHWATER SOURCING; REDUCE WASTEWATER DISPOSAL

Not long ago water played a relatively minor role in the economics of developing a well, but that's no longer the case. Today, sourcing freshwater and disposing of wastewater are major challenges. Operators in Permian Basin are currently producing multiple barrels of water for every one barrel of oil — volumes much higher than anticipated.

In 2018, an operator in West Texas sought to reduce its freshwater needs and recycle flowback and produced water for operational use. Hydraulic fracturing requires high volumes of water, usually beginning with freshwater that must be sourced, transported, and stored. During operations, some of this water returns to the surface as flowback containing sand that cannot be reused. When a well comes online, the formation produces even more water, and like flowback, this produced water cannot be used as is for fracturing. The wastewater is typically transported to other sites for disposal, complicating logistics

RECYCLE FLOWBACK & PRODUCED WATER USING TETRA SWAT SYSTEM

For the operator, TETRA proposed the installation of the SwiftWater Automated Treatment (SWAT™) system, which recycles flowback and produced water for use in hydraulic fracturing. The system provides web-based, real-time monitoring and control of a 4-step treatment and filtration process, yielding a steady supply of fluid optimized for the unique characteristics of the given formation. It has the capacity to recycle tens of thousands of barrels of water per day.

The 4-step process begins with treatment to eliminate bacteria and oxidize heavy metals. Next, coagulants are added to neutralize electrical charge and initiate particle clumping. Polymer flocculants are then added to promote further clumping, allowing gravity to draw the clumps down to the bottom of the container. Lastly, automated filtration captures remaining suspended solids as small as 5 microns, resulting in clean water optimal for fracturing.

Located south of Midland, the operator's installation consists of containment structures, an above-ground storage tank, polymer pipe to connect the various components, and TETRA Steel™ lay-flat hose to transfer the recycled water to the fracture-fluid pit. TETRA personnel had the complete installation in place and operating within three weeks of project startup.

Challenge

- Reduce freshwater sourcing
- Reduce wastewater disposal

Solution

- Install the TETRA SwiftWater Automated Treatment system
- Recycle flowback and produced water so it's optimal for fracturing

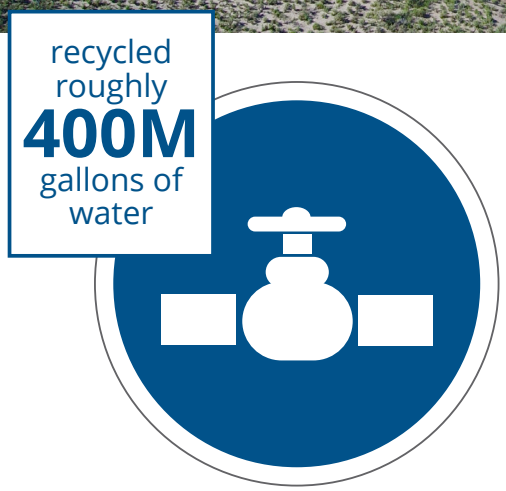
Results

- Reduced freshwater volume and trucking 50%
- Now recycling all flowback and produced water
- Eliminated wastewater disposal
- Increased operational profits and efficiency

TETRA

REDUCED FRESHWATER VOLUME; ELIMINATED WASTEWATER DISPOSAL; INCREASED PROFITS & EFFICIENCY

The SWAT system has cut the operator's freshwater sourcing by 50%, significantly reducing overall operational costs and eliminating the need for wastewater disposal. In the first year of operations, the system recycled roughly 400 million gallons of water for fracturing usage. The operator is so pleased with the SWAT system that it uses the site for all of its corporate tours in the Permian Basin.



In July 2018, an operator in Permian Basin had TETRA install a SwiftWater Automated Treatment (SWAT) system, which has reduced freshwater sourcing by 50% and eliminated wastewater disposal. The SWAT system receives flowback via truck and produced water via pipeline.