

CASE HISTORY

Gradiant's Carrier Gas Extraction (CGE)TM technology can provide an all-encompassing solution for produced water sourcing and disposal that is economical and energy efficient

SUCCESS SNAPSHOT

BENEFITS OF CGETM

- Treats produced water to a water quality that can be discharged
- Provides fresh water in areas that have limited to no supply
- Has a high fresh water recovery ratio that is based on influent salinity
- Has zero liquid waste and a 0.3% w/w solids waste
- Can handle a wide variation of influent waters

BACKGROUND & CHALLENGES

- Can be used as a total water solution
- Has a consistent effluent stream despite varied influent quality
- Modular units that can be used in parallel to maximize volumes and rates

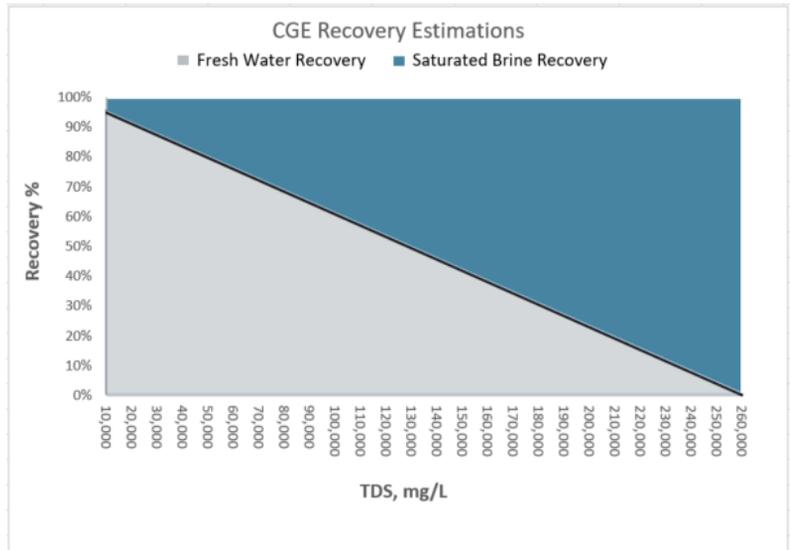
GES SOLUTION & RESULTS

- CGETM provided a new commercially viable product (10# brine), from produced water
- CGETM provides an alternative for a fresh water source
- CGETM provides an alternative for produced water disposal
- CGETM provides consistent effluent products of clean brine, fresh water and concentrated 10 lb brine stream

AN OPERATOR IN THE PERMIAN WAS LOOKING FOR AN ALL ENCOMPASING solution that could assist with water sourcing and disposal. With many different products on the market the client was looking for a technology that could treat produced water and provide fresh water quality. Gradiant Energy Services (GES) was able to introduce Carrier Gas Extraction (CGETM), a desalination service designed for oil field applications which is a cost-effective and membrane-free. The technology utilizes ambient pressure for high recovery treatment of industrial or produced water to generate desalinated fresh water, clean brine and saturated brine.

THE CHALLENGE

The client had a very active hydraulic fracturing program that relied on the use of fresh water in gelled cross-linked frac designs. Fresh water was attainable but came at a high cost. Additionally the clients drilling program frequently used clean and saturated brine in drilling operations. There was a massive amount of produced water available that was being disposed of that could not be re-used in either of the programs. Traditional desalination technologies could not handle the changing water quality of produced water. A technology that was robust in handling changing water quality and was low in energy consumption was the solution needed for a cost-effective treatment.



THE SOLUTION

With an influent volume of 12,000 barrels of produced water per day, GES was able to use their CGETM technology, in coordination with Selective Chemical Extraction (SCETM), to produce waters that could be used in operations, and re-sold commercially. The CGETM technology uses carrier gases in a closed loop system to extract water out of a contaminated solution. Water is separated from the impurities by humidifying the carrier gas, and purified water is recovered in a subsequent dehumidification process through a unique bubble column heat and mass exchanger. CGETM was able to use the field gas as the energy source for the system. The influent 12,000 BBLs per day was processed into 9,000 bbls of clean brine, 2,000 bbls of fresh water, and 1,000 bbls of 10lb brine. The clean brine and fresh water were used in both fracturing and drilling programs and the 10 lb brine was used in their drilling program and sold commercially. This waste-to-water process was able to take the non-viable produced water and turn it into a widely used valuable and consistent commodity.