

# Facilities Design for Re-injection of Produced Contaminated Water in Salt Domes

## Research Themes

Salt caverns have been used for storage of natural gas since their creation in 1971. Essentially unique circumstances have developed as a result of a casing leak in a gas storage well used for gas injection into and production from one of the salt caverns. Evidence exists that natural gas that escaped because of the casing leak flowed into regional fresh water aquifers located above the storage cavern. Subsequent measurements in wells penetrating the aquifers show that the groundwater flows in each of the aquifers in a regional NW to SE direction.

The objective of this project is to design facilities to gather water produced from contaminated aquifers for re-injection into a salt dome in order to displace out remaining free gas and prepare the dome for abandonment. We expect that much of the gas dissolved in the aquifer water will leave the liquid phase as free gas and that it will be necessary to separate gas and liquid phases before transporting the liquid for re-injection. Produced gas could be used to supply energy for the operation, combined with gas produced from the dome, or flared.

## Recent Accomplishments

Developed a work plan to:

- Produce the contaminated water from the aquifer and inject into the salt dome
- Separate the gas from the water
- Prevent further advancement of contaminated water front past the producing wells

## Issues

- Estimating the volume of the salt dome and the percent of the dome filled with gas
- Estimating the volume of contaminated water in the aquifer



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