

## Quench My Thirst: Water Rights in the Context of Water Treatment Technologies



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## Introduction



- 35,000 wells hydraulically fractured in the U.S. Annually
- Over one million wells have been hydraulically fractured since its introduction in the 1940s
- 90% of all wells drilled in the U.S. today are stimulated by hydraulic fracturing

Source: American Petroleum Institute  
and Environmental Protection Agency

## Water, Water . . .



- Hydraulic Fracturing involves use of water -- lots of water
- Estimated 70 billion to 140 billion gallons of water consumed through hydraulic fracturing annually in U.S.
- Equivalent to amount of water annually consumed by the cities of Chicago or Houston.

## Frac Water



- Water used in hydraulic fracturing is pre-treated with formation-specific chemical additives
- Additives include anti-corrosive agents, biocides, friction reducers, lubricants, surfactant and clay stabilizers and other chemicals and substances
- Additives comprise a small percentage of overall volume, but render the return water (“flowback water”) non-potable and unusable



## What Happens to Wastewater

- Most common method of disposing of wastewater is by disposal well injection into porous formations thousands of feet underground.
- Water may be permanently removed from the hydrologic cycle by disposal injection well
- Development of advanced water treatment can lessen impact of oilfield operations on water resources.



## Ownership of Water



- A fee simple owner owns the groundwater in place underlying his land as a vested real property right subject to constitutional protection.
- Following the severance of the surface and mineral estates, groundwater in place is a part of the surface estate.

Source: *Edwards Aquifer Authority v. Day*

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