

Bulk Modulus / Compressibility

$$B = \frac{-V \cdot \Delta P}{\Delta V}$$

$$\alpha = \frac{-\Delta V}{V \cdot \Delta P} \quad \alpha = \frac{1}{B}$$

$$\alpha_{H_2O} = .0000034 \frac{lb}{Ft^2}$$

Aquifer Parameters

Water

ρ, μ, B
↑ ↑ ↑
Density Viscosity Compressibility

Sediments

n, k, α ← Medium Compressibility
↑ ↑
Porosity Permeability



Hydraulic Head



1. Hydraulic head \uparrow
 - Fluid pressure in aquifer \uparrow
2. Aquifer skeleton expands $\eta \uparrow$
3. Volume of water \downarrow due to B
 - Adding water
Creates room for additional water



Hydraulic Head

Water Table Drops wt

1. Hydraulic head \downarrow
 - Fluid pressure in aquifer \downarrow
2. Aquifer skeleton contracts $n \downarrow$
3. Volume of water \uparrow due to B
 - removing water creates less room for the remaining water

Storativity

- Volume of water that an aquifer will absorb or expell per change in hydraulic head

$$S = \frac{\text{Vol of water}}{L \cdot \text{Area}}$$

↑ hydraulic head ↑ of aquifer

