CONVERSION FOR SYSTEM EQUATION

SYSTEM CURVE EQUATION

$$h_p = \Delta Z + KQ^2 \quad \text{WHERE} \quad Q \text{ IS IN CFS} \quad (1)$$

(1) IS ACTUALLY USED WITH Q IN gpm.

THUS

theory: $\Delta Z + K Q^2$ (Q in $(ft^3/s)^2$) = practice: $\Delta Z + C \cdot K Q^2$ (Q in $(gpm)^2$)

SOLVING FOR THE CONVERSION CONSTANT, C,

YIELDS

$$C = \frac{[Q\,(ft^3/s)]^2}{[Q\,(gpm)]^2}$$

converts practice to theory

$$= \left(\frac{1\ ft^3/s}{448.8\ gpm}\right)^2$$

$$= 4.96 \cdot 10^{-6}$$

SO $$h_p = \Delta Z + 4.96 \cdot 10^{-6} K (Q_{gpm})^2$$

$$\frac{ft^3}{s} \times \frac{60\,s}{min} \times \frac{7.48\,gal}{ft^3}$$

$$\Rightarrow 1\ \frac{ft^3}{s} = 448.8\ gpm$$