$$\frac{d^2h}{dx^2} = \frac{-qb}{b \cdot k}$$

$$\int \frac{dh}{dx} = \frac{-qbx}{b \cdot k} + C_1$$

$$h = \left(\frac{-qb}{2b \cdot k}\right)x^2 + \left(\frac{h_R - h_L}{L} + \frac{qbL}{2b \cdot k}\right)x + h_L$$

$$q = \frac{qb}{b}\left(x - \frac{L}{2}\right) + \frac{K}{L}(h_R - h_L)$$

$$h = \frac{-qbx^2}{2b \cdot k} + C_1 x + C_2$$

$h(0) = h_L$

$h(L) = h_R$

$$h(0) = C_2 = h_L$$

$$h(L) = h_R = \frac{-qbx^2}{2b \cdot K} + C_1 L + h_L$$

$$\left(\frac{h_R - h_L}{L} + \frac{qbL}{2b \cdot k}\right) = C_1$$

$$q = -K\nabla h = -K\frac{dh}{dx} = \frac{qbx}{b} - \frac{K}{L}(h_R - h_L) - \frac{qbL}{2b}$$

$$= \frac{qb}{b}\left(x - \frac{L}{2}\right) - \frac{K}{L}(h_R - h_L)$$