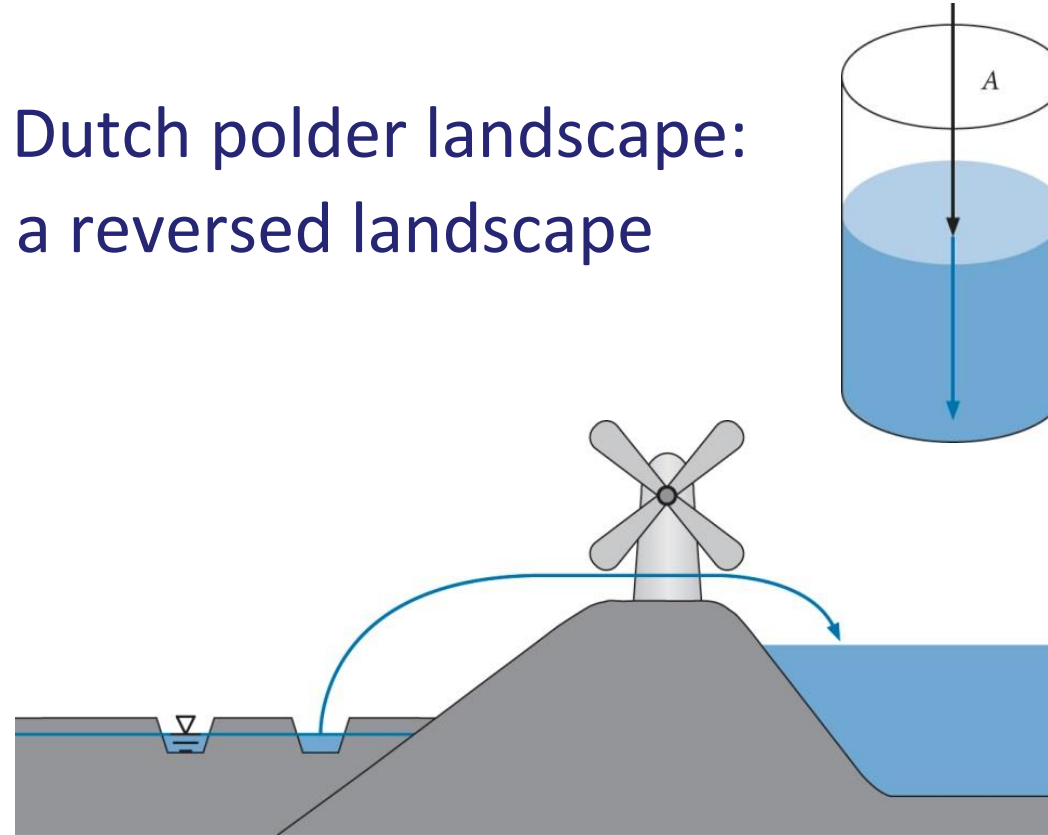


Bernoulli equation for groundwater flow: examples

<https://www.youtube.com/user/MartinRHendriks/videos>

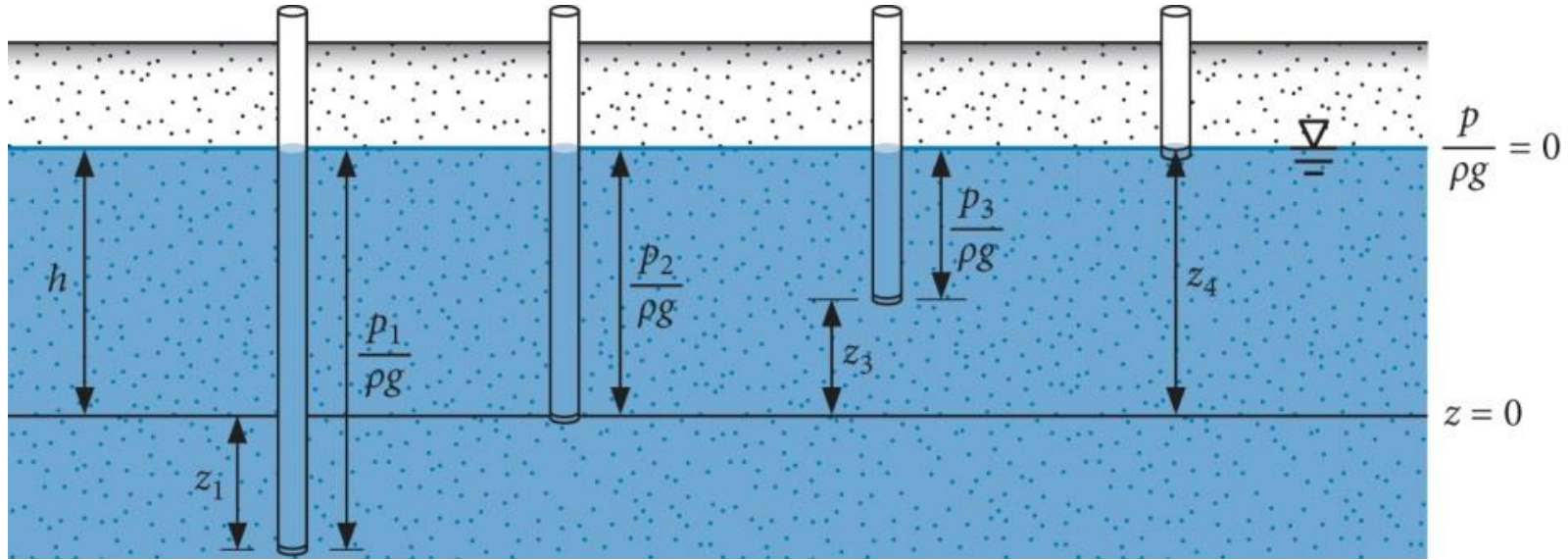


Dutch polder landscape:
a reversed landscape



Water flows from a higher to a lower ENERGY!

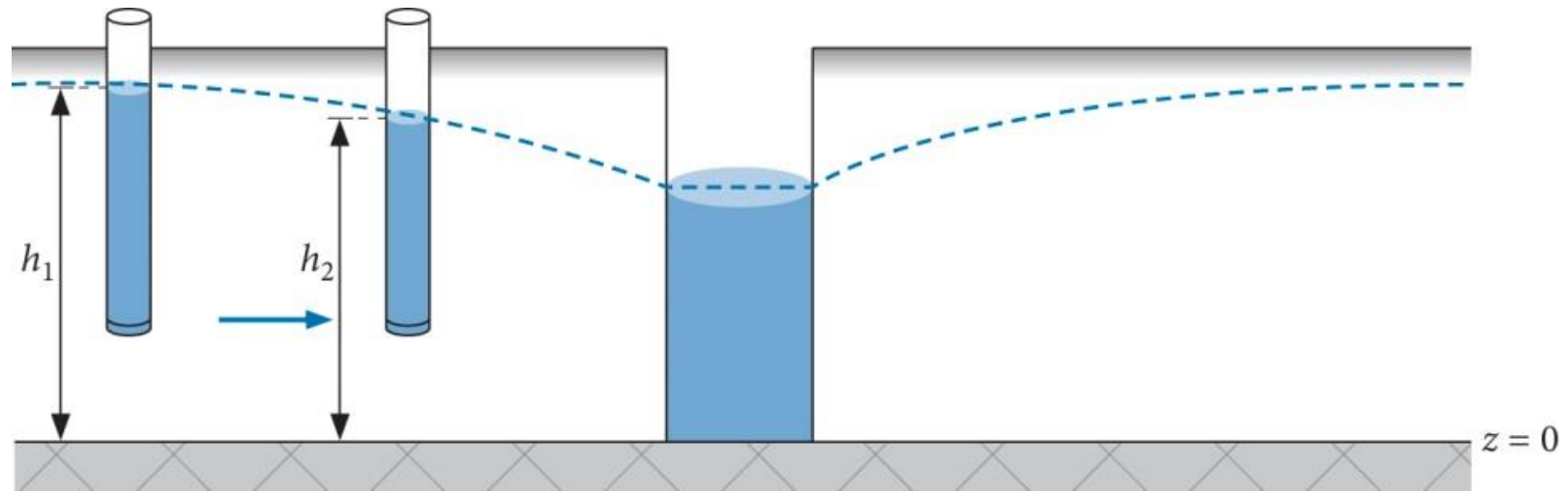
<https://www.youtube.com/user/MartinRHendriks/videos>



$$h = z_1 + \frac{p_1}{\rho g} = 0 + \frac{p_2}{\rho g} = z_3 + \frac{p_3}{\rho g} = z_4 + 0$$

Horizontal groundwater flow

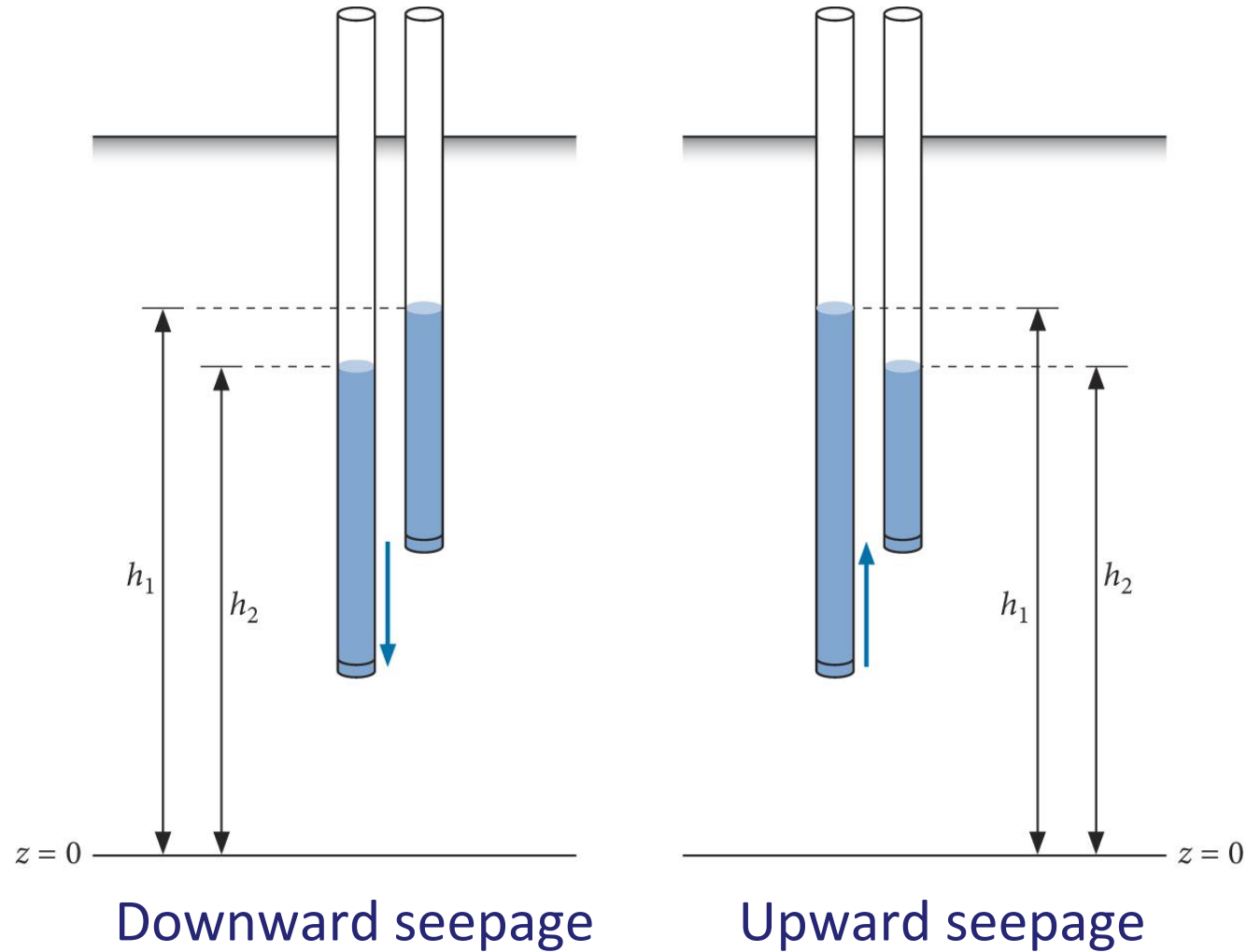
<https://www.youtube.com/user/MartinRHendriks/videos>



Groundwater flow is in the direction of the lower hydraulic head h_2

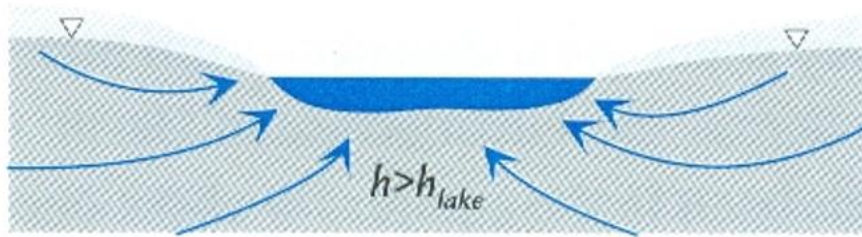
Vertical groundwater flow

<https://www.youtube.com/user/MartinRHendriks/videos>

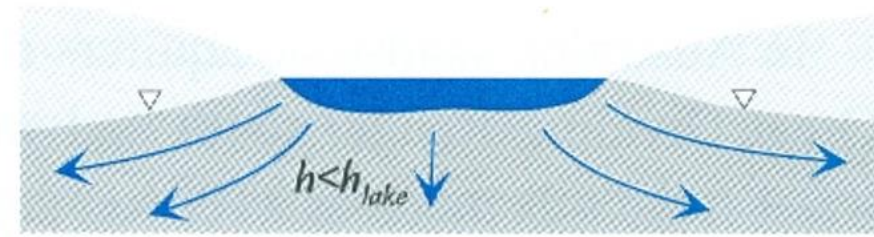


Flow patterns beneath lakes

<https://www.youtube.com/user/MartinRHendriks/videos>



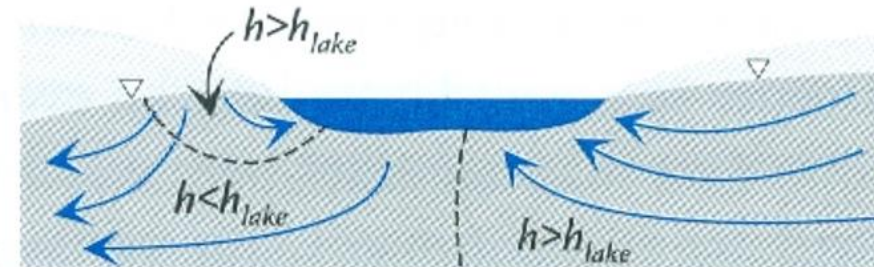
(a)



(b)



(c)

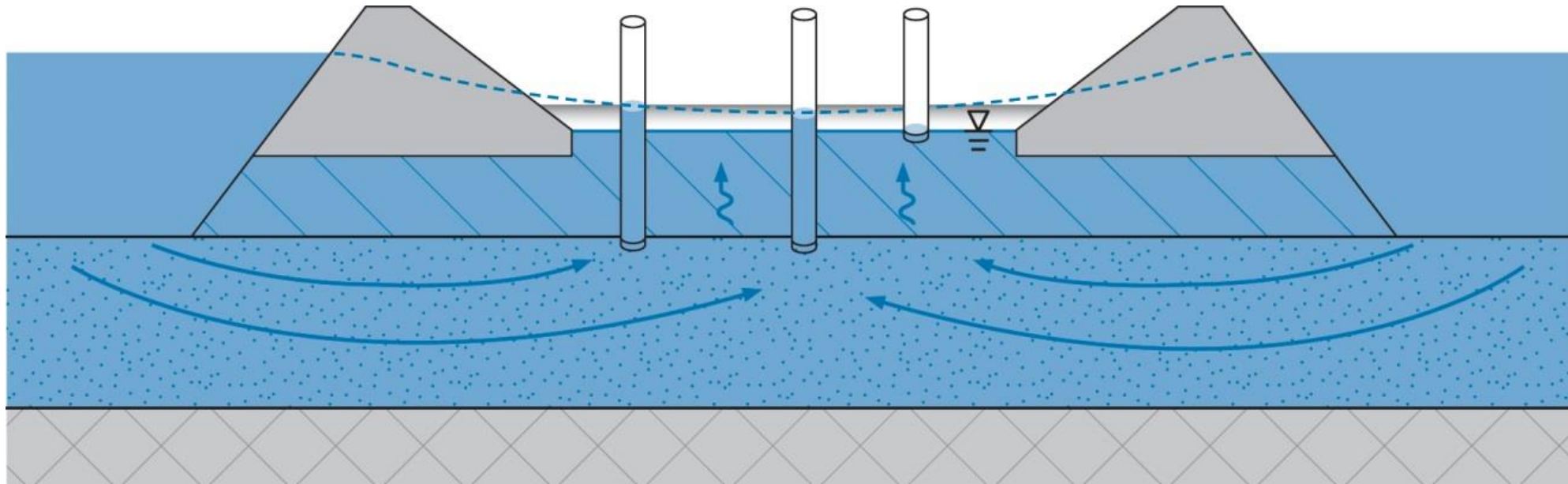


(d)

Source: Fitts (2002)

Seepage in a polder area

<https://www.youtube.com/user/MartinRHendriks/videos>



Land van Maas en Waal

Upward seepage behind dyke

<https://www.youtube.com/user/MartinRHendriks/videos>



Photo taken by P.C. Beukenkamp

References

<https://www.youtube.com/user/MartinRHendriks/videos>



Fitts, C.R. (2002). Groundwater Science. Academic Press, Elsevier Science.

Hendriks, M.R. (2010). Introduction to Physical Hydrology. Oxford University Press.

