53. (a) The friction force is

$$\begin{aligned} f &= A\Delta p = \rho_w g h A \\ &= \left(1.0\times 10^3\,\mathrm{kg/m^3}\right)\left(9.8\,\mathrm{m/s^2}\right)(6.0\mathrm{m})\left(\frac{\pi}{4}\right)(0.040\,\mathrm{m})^2 = 74\ \mathrm{N}\ . \end{aligned}$$

(b) The speed of water flowing out of the hole is $v = \sqrt{2gh}$. Thus, the volume of water flowing out of the pipe in $t = 3.0\,\mathrm{h}$ is

$$\begin{aligned} V &= Avt = \frac{\pi d v t}{4} \\ &= \frac{\pi^2}{4}(0.040\,\mathrm{m})^2\sqrt{2\left(9.8\,\mathrm{m/s^2}\right)(6.0\,\mathrm{m})}(3.0\,\mathrm{h})(3600\,\mathrm{s/h}) \\ &= 1.5\times 10^2\ \mathrm{m}^3\ . \end{aligned}$$