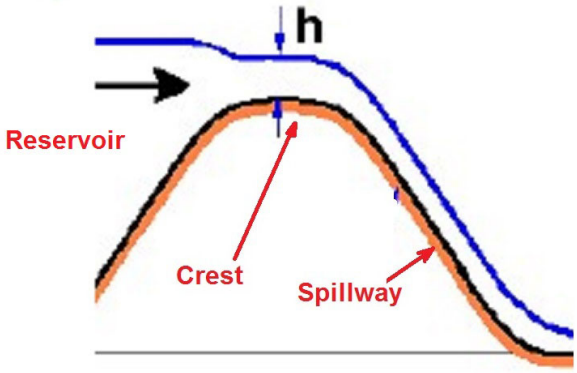
## Solution to Problem 450B:

After a rainstorm, a flood control dam fills to capacity so that a spillway is brought into operation:




Since the flow downstream of the crest of the spillway is supercritical it follows that the flow at the top of the crest must be critical and therefore the velocity of flow at the crest is $u_c = (gh)^{1/2}$ where $h$ is the depth of the water at the crest. Therefore the flow rate $Q$ is $Q = bh(gh)^{1/2}$ where $b = 15m$ is the breadth of the crest. It follows that $Q = 7.72m^3/s$.