Steady, incompressible flows

Engineering Fluid Mechanics

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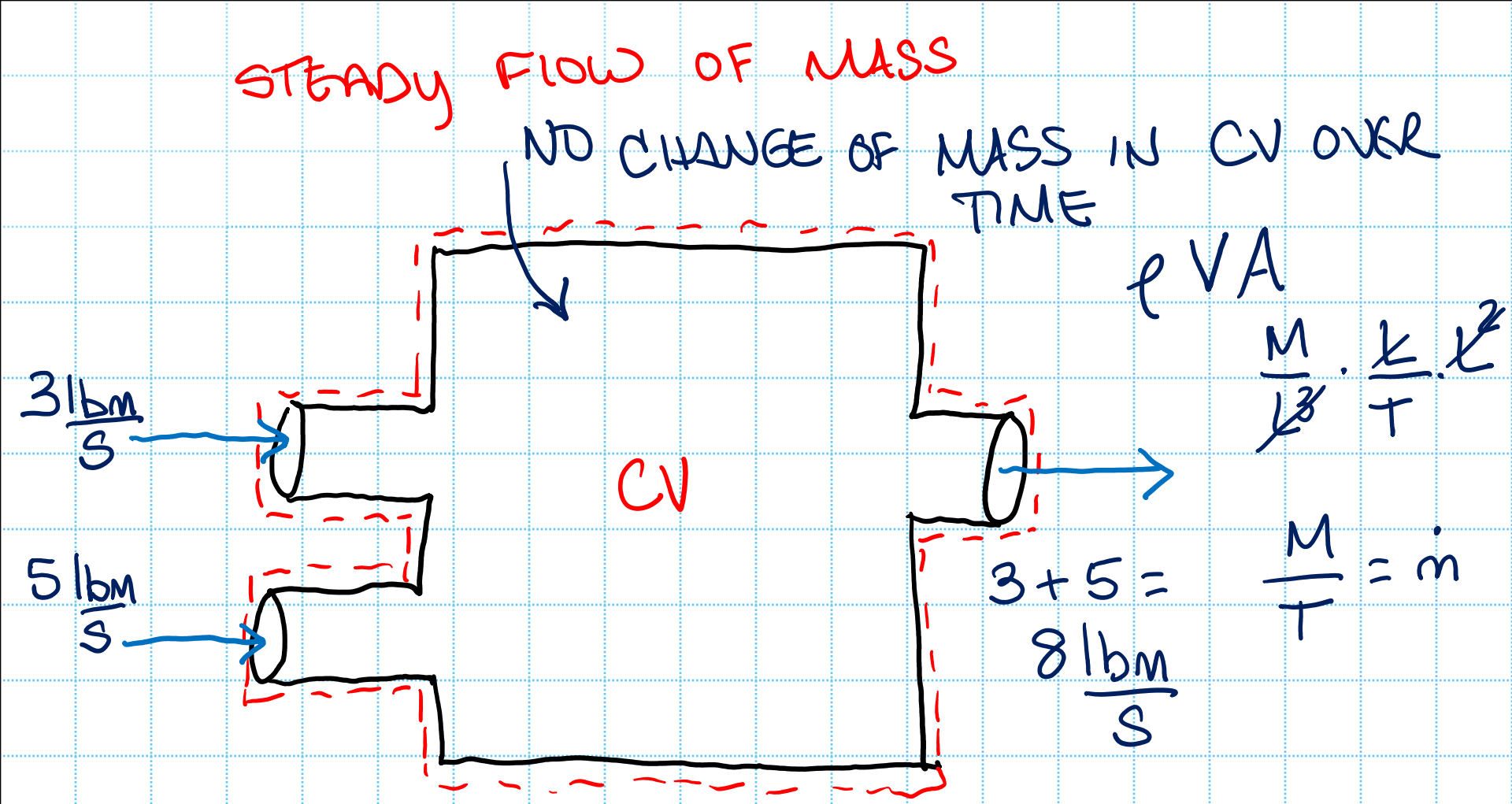
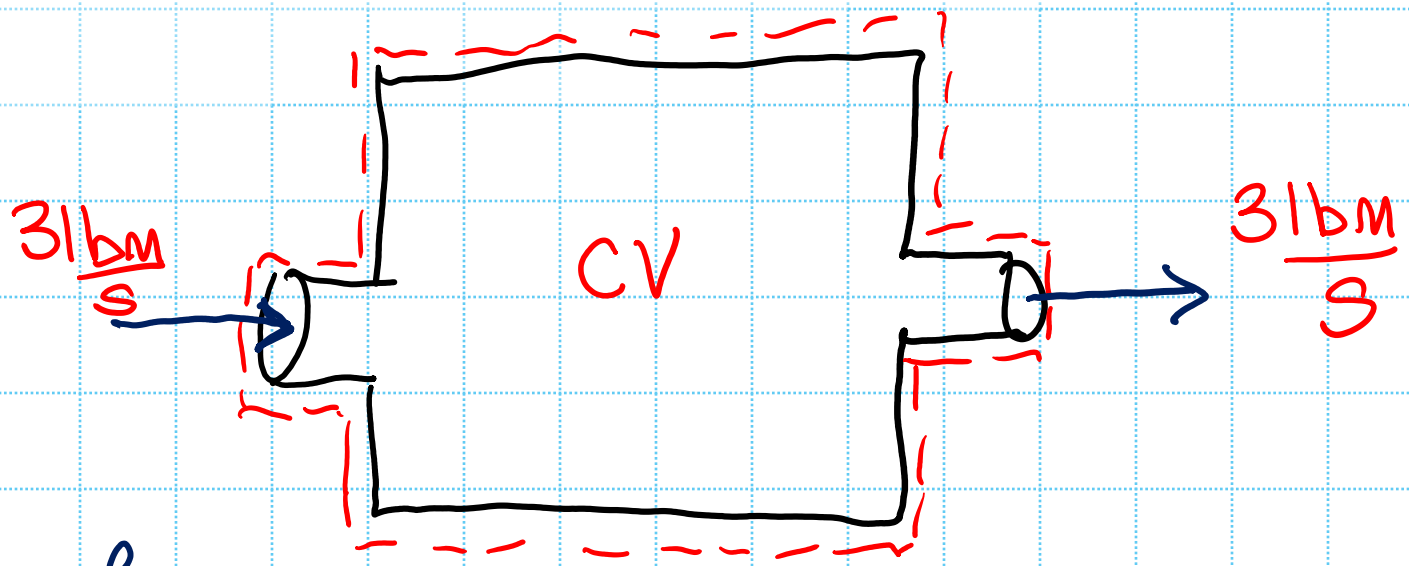


Mass balance of steady flow

STEADY MASS FLOW; FLUID IS AIR



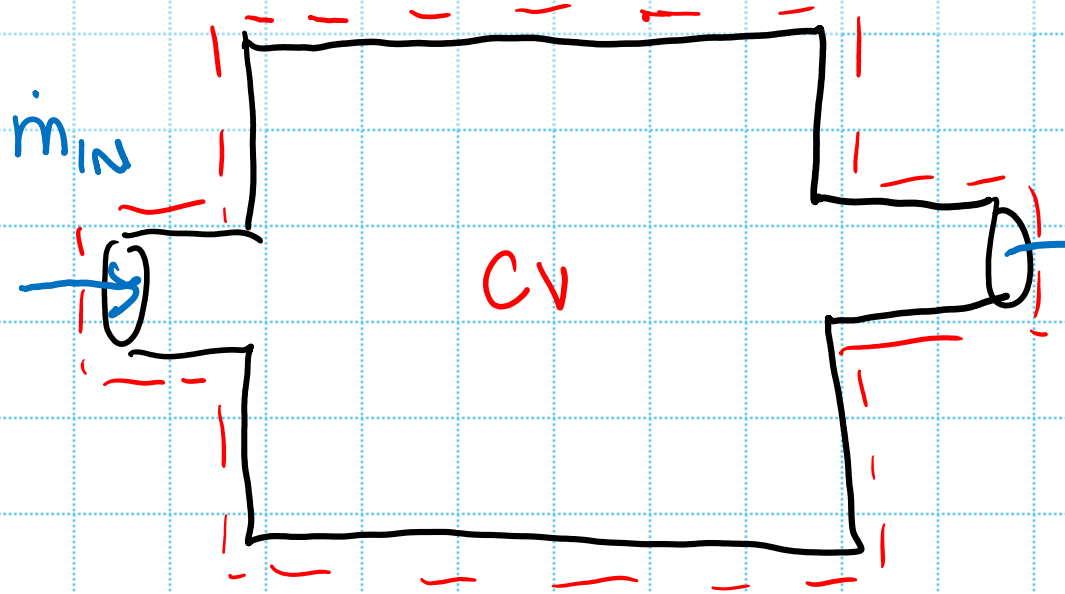
ρ

$\frac{M}{V}$

$\frac{M}{\text{SMALL VOLUME}} \rightarrow \rho$ IS BIGGER

Mass balance of steady flow

STEADY MASS FLOW; FLUID IS WATER



$$\dot{m}_{IN} = \dot{m}_{out}$$

$$Q_{IN} = Q_{out}$$

$$\cancel{\rho_{IN}} V_{IN} A_{IN} = \cancel{\rho_{out}} V_{out} A_{out}$$

$$\frac{L}{t} \cdot L^2 = \frac{L^3}{T} = \frac{vol}{t} = Q$$

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Acknowledgement

This material is based upon work partially supported by the National Science Foundation under Grant# 2335802. Any opinions, findings, and conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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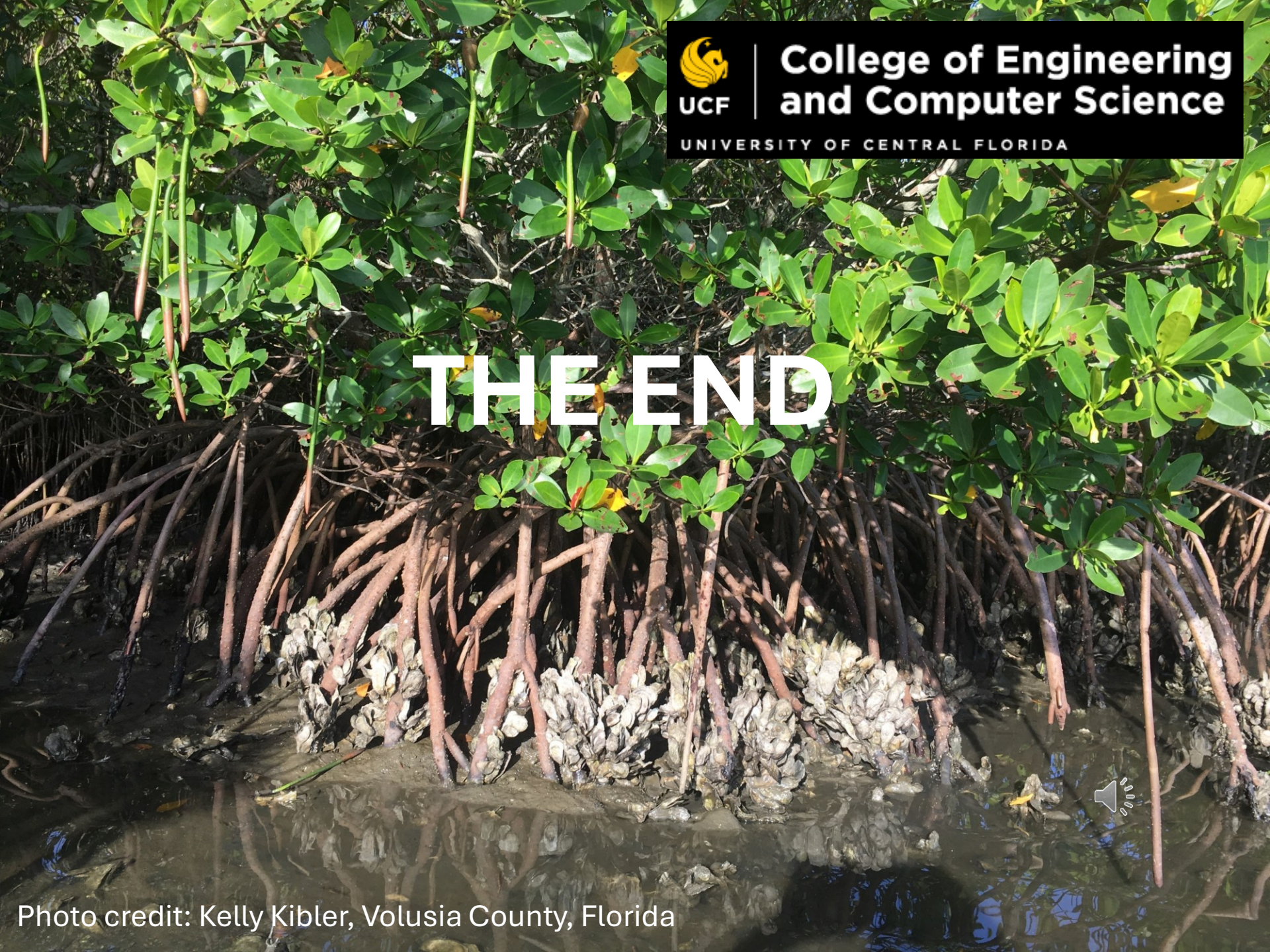
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THE END
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