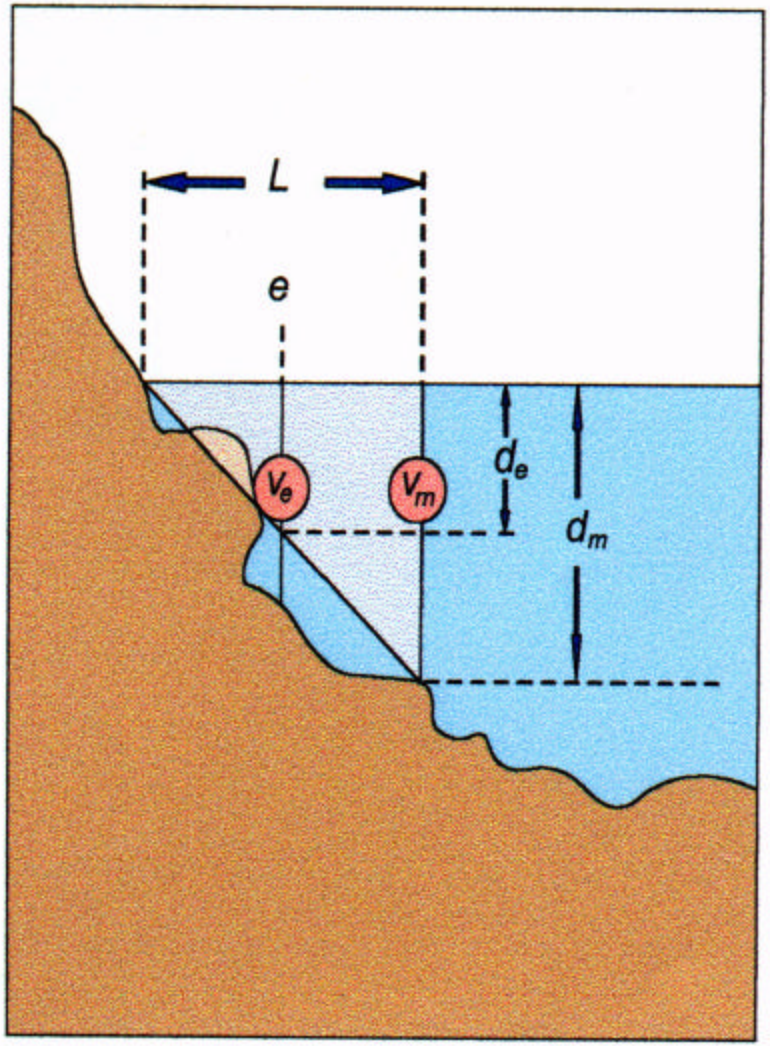
Estimating Shore Discharges



Near-shore Estimation Scheme Parameters

- v_e Estimated mean velocity at location *e*
- v_m Measured mean velocity at first or last ADCP subsection
- d_e Depth at the estimated subsection
- d_m Depth at first or last ADCP measured subsection
- L Distance to the riverbank from the first or last ADCP subsection
- e A location midway between the riverbank and first or last ADCP measured subsection

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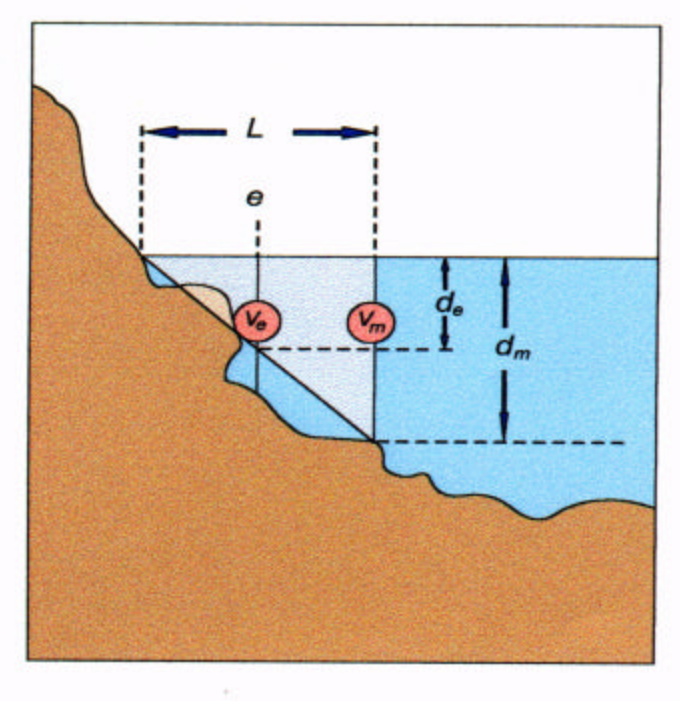

1. Equation from *Fulford and Sauer*

$$\frac{V_e}{\sqrt{d_e}} = \frac{V_m}{\sqrt{d_m}}$$

2. Assume a triangular edge, then

$$\frac{d_m}{L} = \frac{d_e}{x} = \frac{d_e}{L/2} \Rightarrow d_e = 0.5\,d_m$$

3. Solve for estimated shore velocity

$$\frac{V_e}{\sqrt{0.5\,d_m}} = \frac{V_m}{\sqrt{d_m}} \Rightarrow V_e = \sqrt{0.5}\,V_m \Rightarrow V_e = 0.707\,V_m$$

4. Solve for estimated shore discharge

$$Q_e = V_e A_e \Rightarrow Q_e = (0.707\,V_m)(0.5\,L\,d_m)$$

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Equations for Default Edge Types in Winriver

Triangular edge

$$Q_{side} = 0.3535 * V_m * L * d_m$$

Rectangular edge

$$Q_{side} = 0.91^{1} * V_m * L * d_m$$

[1] *Assumes a smooth wall (concrete)*

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