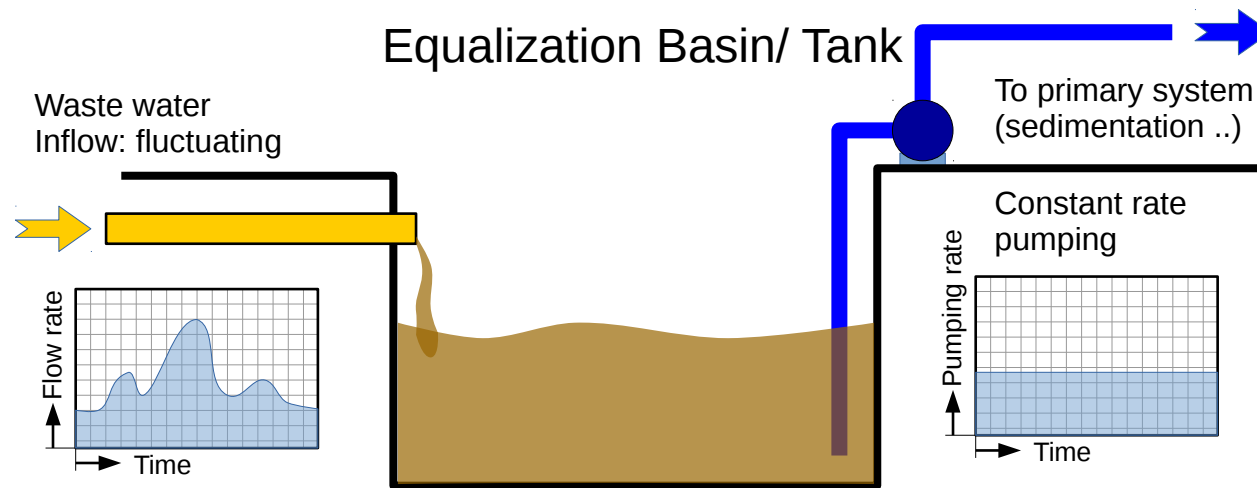


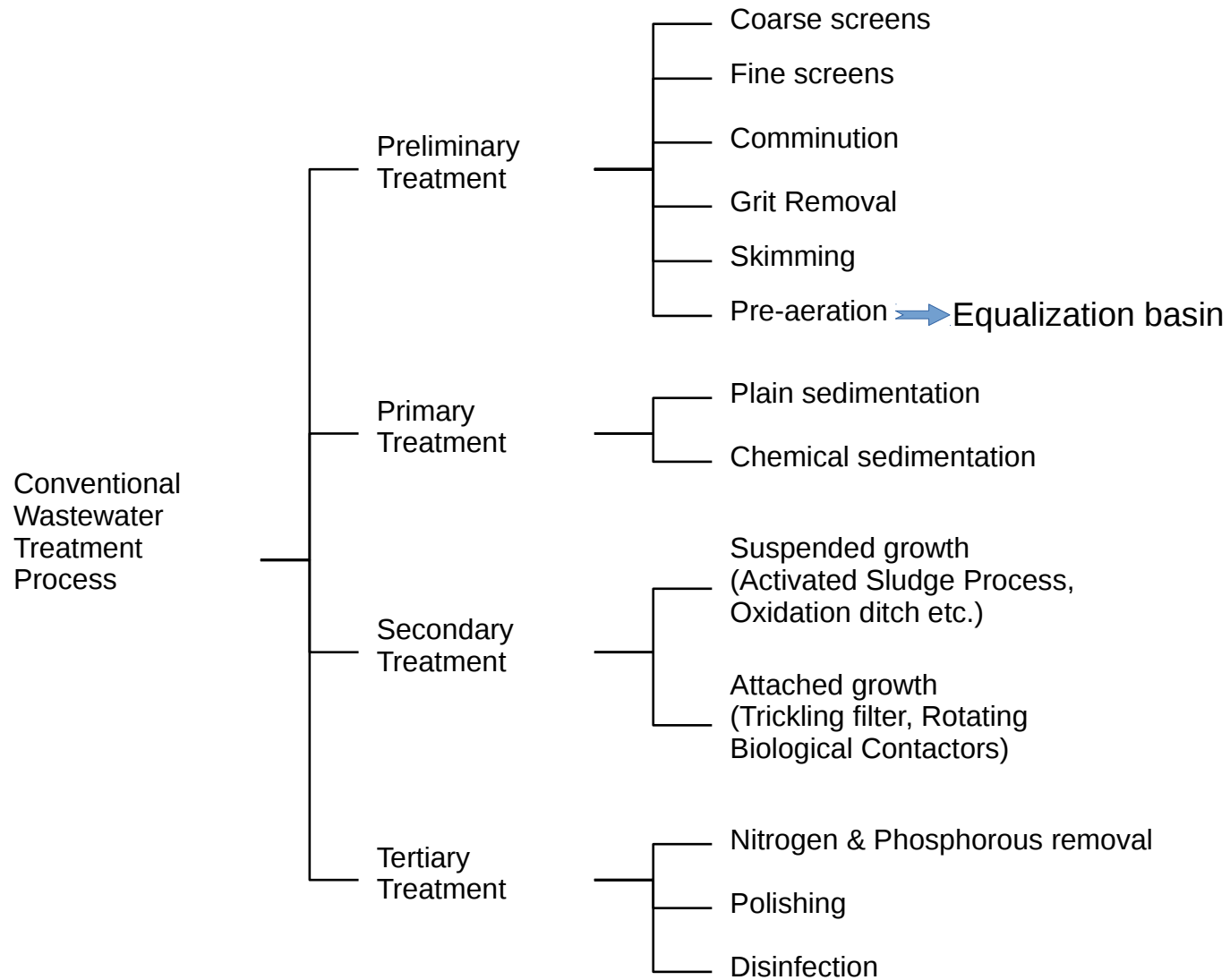
Conventional Wastewater Treatment : Equalization basin / tank

- What is equalization tank?
- Mathematical Example of volume design.



Making "=" flow

Position in treatment system



Mathematical Problem

Wastewater flow fluctuation measured for every 2 hrs. Calculate equalization tank volume.

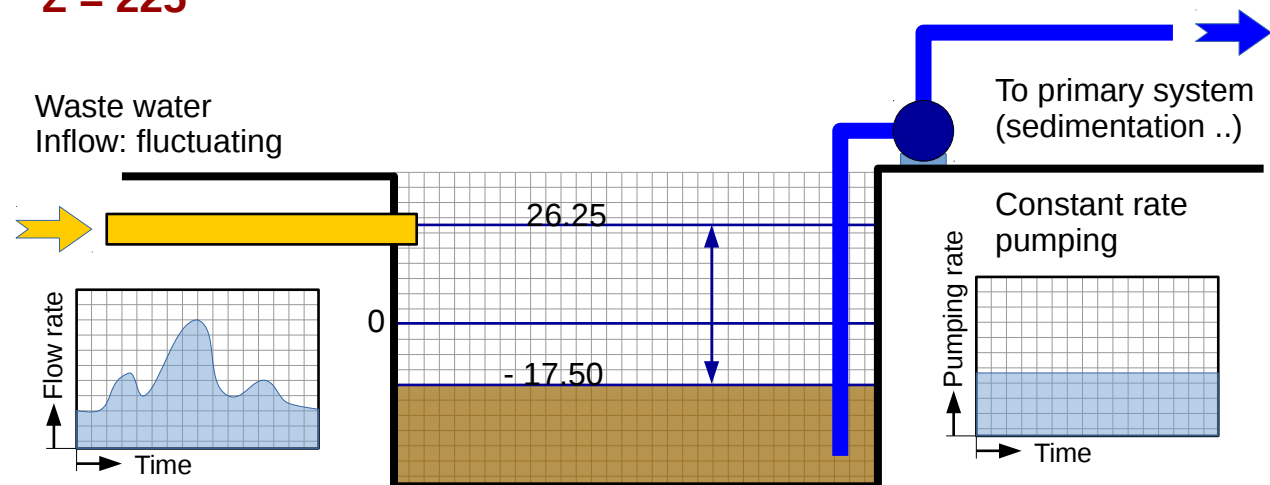
[Ref: Example 5.3, Page 98, Wastewater Treatment: concepts and design approach/GL Karia & RA]

Time period hr(s)	Actual Δq m ³	Pumping Δq m ³	Difference Δq m ³	Cum. Difference m ³
0 - 2	25	18.75	6.25	6.25
2 - 4	25	18.75	6.25	12.50
4 - 6	25	18.75	6.25	18.75
6 - 8	25	18.75	6.25	25.00
8 - 10	20	18.75	1.25	26.25
10 - 12	10	18.75	- 8.75	17.50
12 - 14	10	18.75	- 8.75	8.75
14 - 16	10	18.75	- 8.75	0.00
16 - 18	10	18.75	- 8.75	- 8.75
18 - 20	10	18.75	- 8.75	- 17.50
20 - 22	28	18.75	9.25	- 8.25
22 - 24	27	18.75	8.25	0.00

$$\Sigma = 225$$

$$\text{Flow Rate} = 225 \text{ m}^3 \div 24 \text{ hr} = 9.375 \text{ m}^3/\text{hr}$$

$$\text{Pump } \Delta q = 9.375 \text{ m}^3/\text{hr} \times 2 \text{ hr} = 18.75 \text{ m}^3$$



$$\begin{aligned} \text{Design Volume} &= \text{Largest positive} + |\text{Largest negative}| \\ &= 26.25 + |-17.50| = \mathbf{43.75 \text{ m}^3} \text{ (Ans.)} \end{aligned}$$