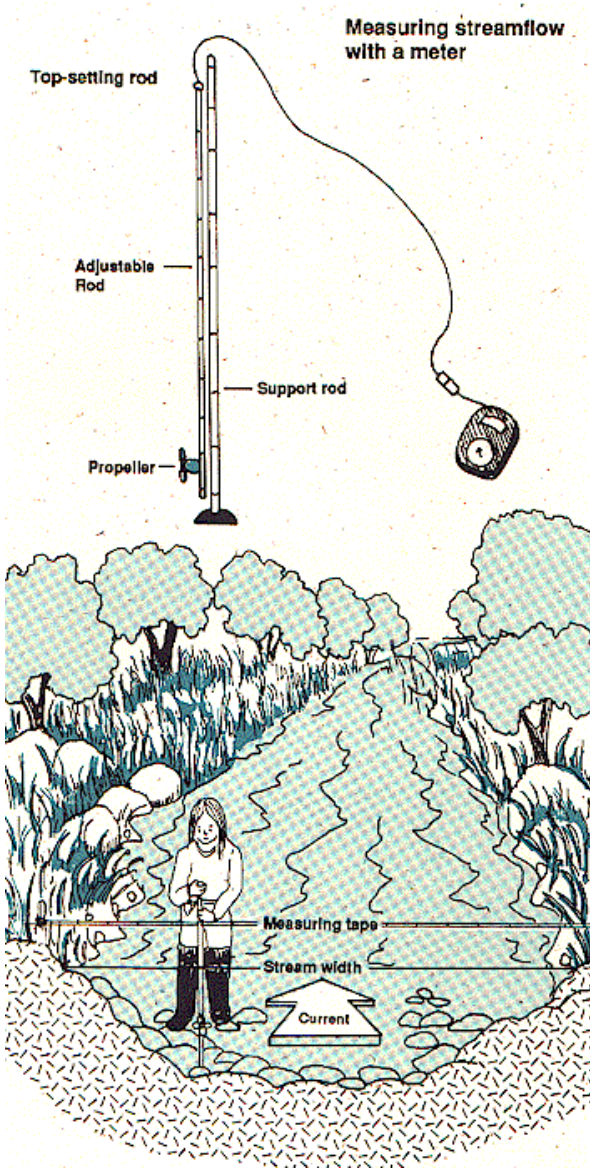
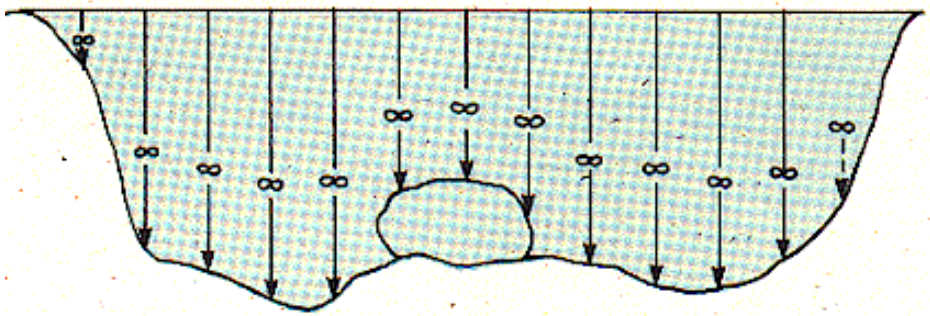
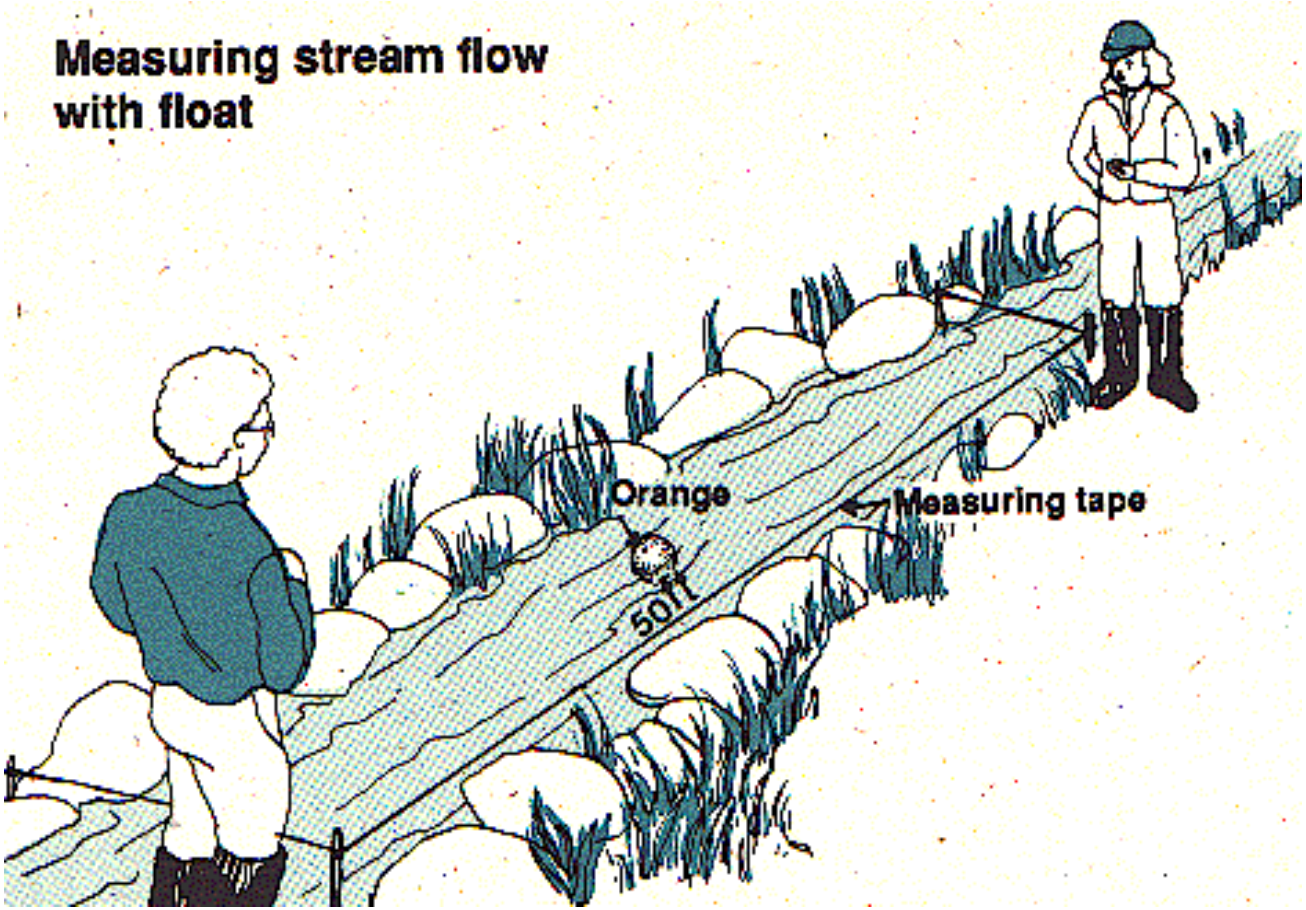
Straumes mērīšana



How to Measure and Calculate Total Discharge In a Stream Segment

Distance from Left Bank	Total Depth (ft)	Depth of Av. Velocity (ft)	Velocity (fps)	Discharge (cfs)
0	0	0	0	0
0.5	0.4	0.24	0.20	0.04
1.0	1.9	1.14	0.35	0.33
1.5	2.1	1.26	0.42	0.47
2.0	2.3	1.38	0.63	0.73
2.5	2.3	1.38	0.65	0.75
3.0	1.4	0.84	1.12	0.78
3.5	1.3	0.78	1.15	0.75
4.0	1.5	0.90	1.20	0.90
4.5	2.0	1.20	.93	0.93
5.0	2.1	1.26	.95	1.00
5.5	2.1	1.26	.95	1.00
6.0	2.0	1.20	.88	0.88
6.5	1.5	0.90	.92	0.69
7.0	0	0	0	0
			Total	9.27



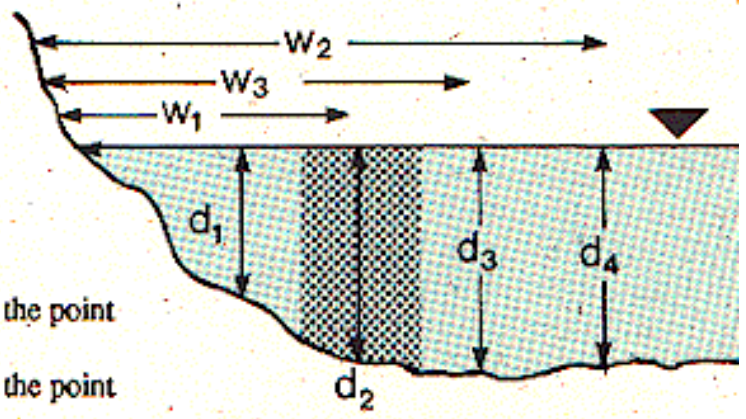

Measuring stream flow
with float
Orange
Measuring tape
50ft

How to Calculate Flow

Calculating discharge from each of the width intervals:

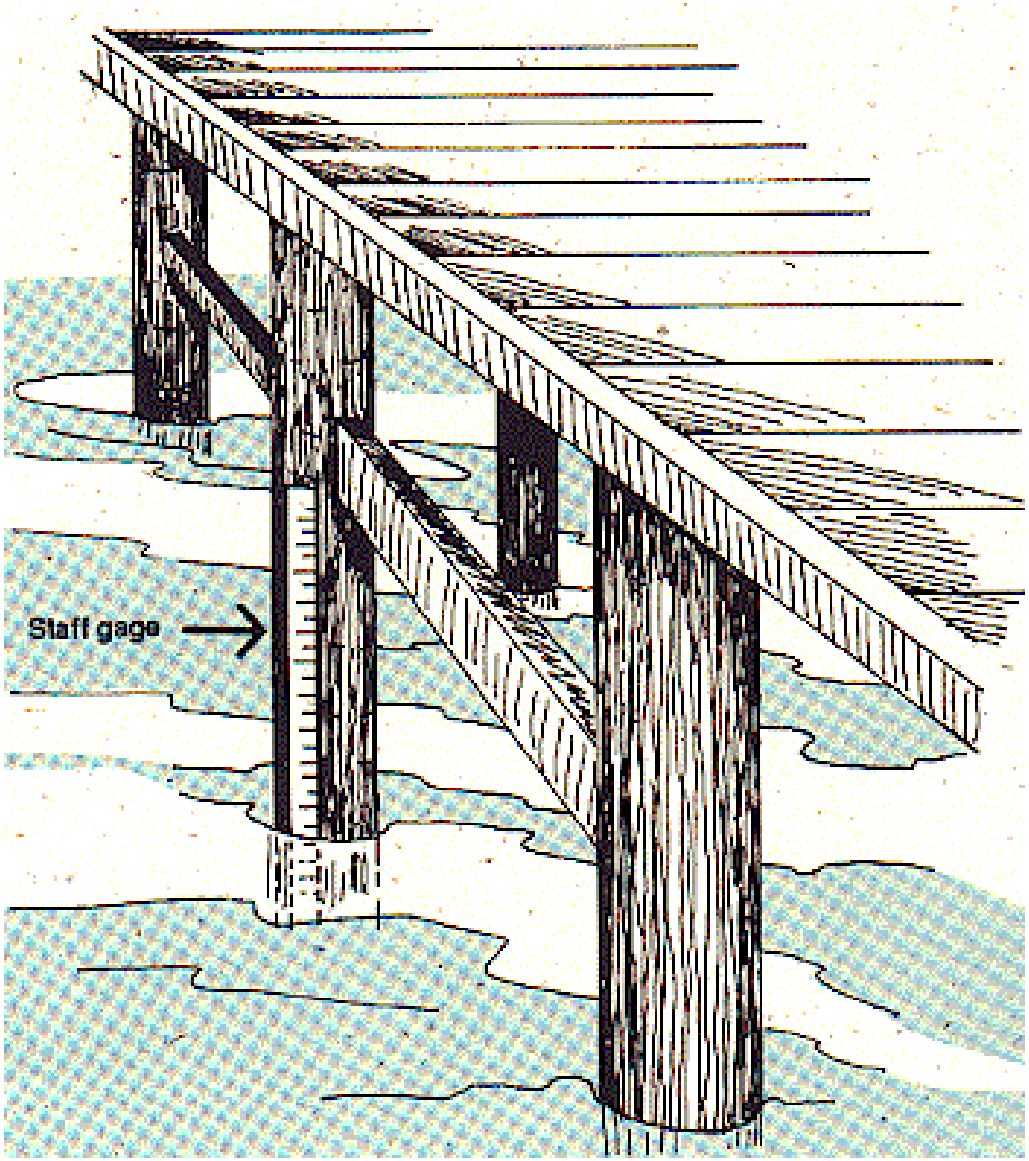
$$q_2 = v_2 d_2 (w_3 - w_1)/2$$

where: q_2 = discharge at width interval 2 (cfs)
v_2 = velocity measure at width interval 2 (ft/sec)
d_2 = depth at interval 2 (feet)
w_3 = distance from the bank or initial measuring point to the point following interval 2 (feet)
w_1 = distance from the bank or initial measuring point to the point preceding interval 2 (feet)

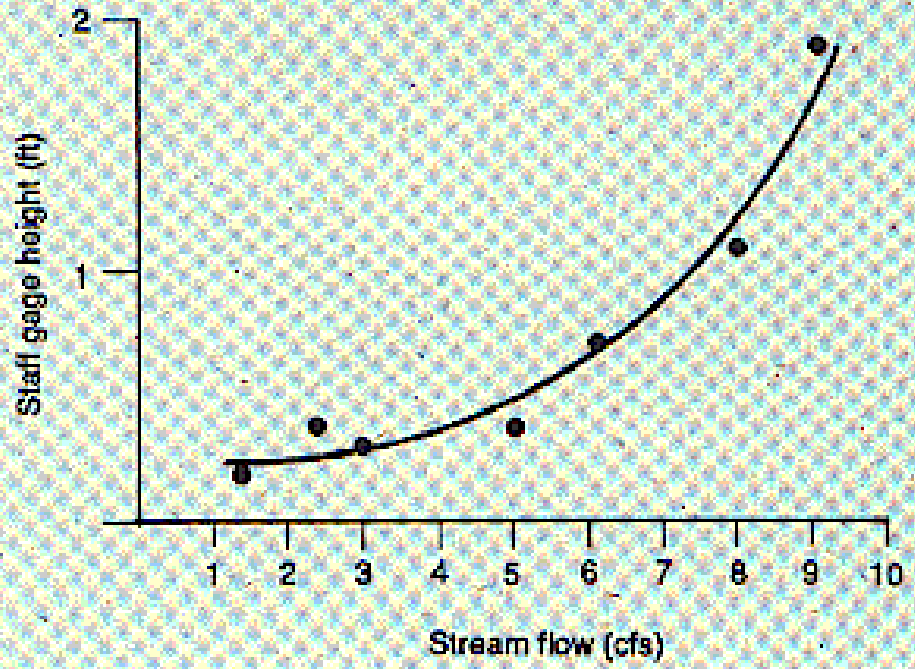


Calculate the total discharge (flow) as the sum of each of the partial discharges.

$$Q = q_1 + q_2 + q_3 + q_4 \ldots . q_n$$


Staff gage

Forming a Stage-Discharge Curve



Staff Gage (ft)	Stream Flow (cfs)
.20	1.3
.40	2.3
.30	3.0
.40	5.0
.70	6.1
1.10	8.0
1.40	8.3
1.90	9.0

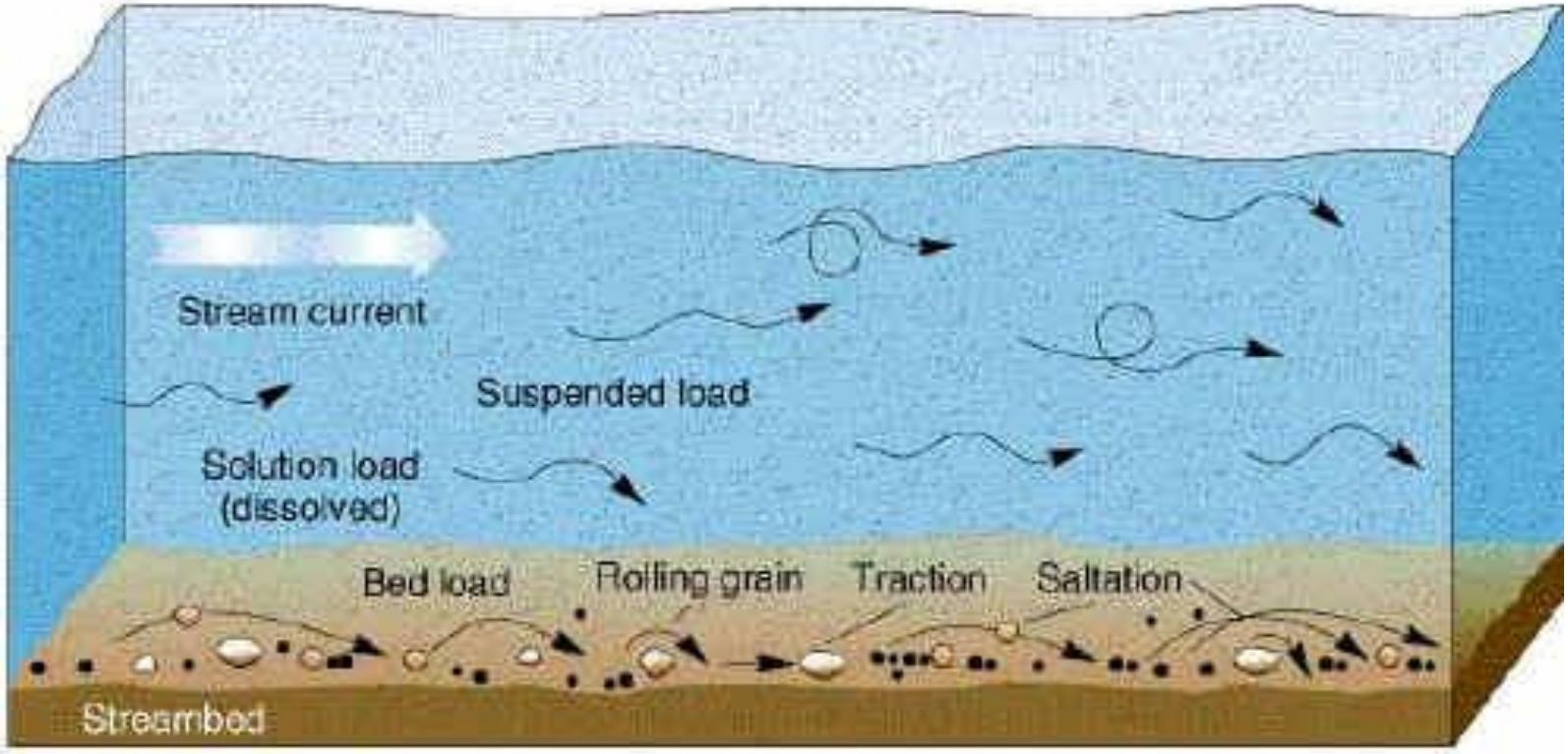
Pollutant Load Calculations

$$L = f \times c \times d$$

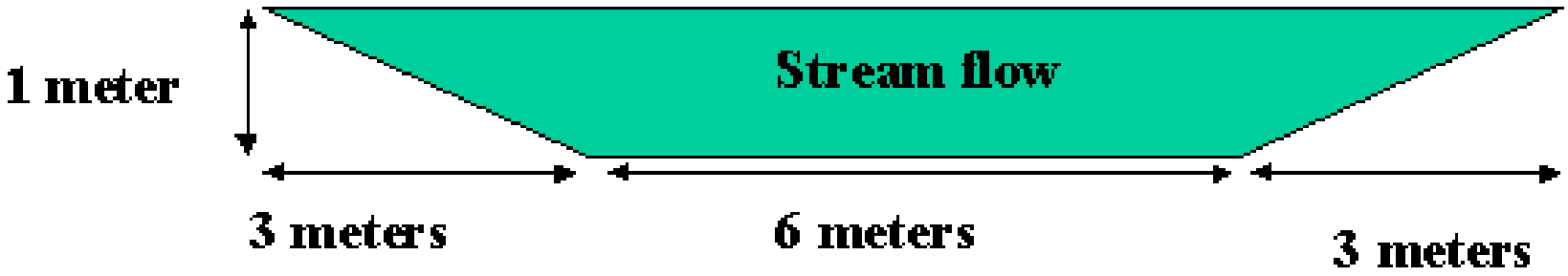
where L = load
f = units conversion factor (see table)
c = concentration of pollutant
d = discharge

Units for Reporting Loading

Pollutant Concentration Unit	Flow Unit	Conversion Factor	Load Unit
mg/L	cfs	5.39	lb/day
µg/L	cfs	5390	lb/day
#/100 mL	cfs	284.7	#/sec


Stream current
Suspended load
Solution load
(dissolved)
Bed load
Rolling grain
Traction
Saltation
Streambed

Example discharge calculation (based on Denton Creek):



Cross-sectional area of flow = 9 m^2

Mean flow velocity = 0.5 m/s (from velocity meter)

Q = 9 x 0.5 = 4.5 m^3/s