

Flow Calculation 1



(for streams greater than 1 metre wide)

Name _____ Group _____ Date _____ Time _____

Stream Name _____ Reach Name/# _____ Site Name _____

Site Location: Latitude _____ ° _____ ' _____ "N River km: _____
UTMs _____ Longitude _____ ° _____ ' _____ "W Transect#: _____

Site Description: (e.g. transect #, landmarks, etc.)

Driving/Hiking
Directions: _____

Weather Conditions: Clear Cloudy Rain Other _____

Air Temperature: _____ ° _____ (C or F)

Amount of precipitation in last storm _____ Time elapsed since last storm _____

Other recent weather information _____

Velocity Float Trials:

(using a tennis ball or orange)

Trial #	Time	Distance
1		[]
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		

[] / [] = []
Total time/# of trials avg. time

Cross Sectional Area:

For channels less than 5 metres wide, record depths at 0.25m intervals Depth = D
 For channels greater than 5 metres wide, record depths at 0.5m intervals
 For channels less than 10 metres wide, record depths at 1.0m intervals
 All measurements should be recorded in metres.

Cross Section 1 Width: _____ m				Cross Section 2 Width: _____ m				Cross Section 3 Width: _____ m				Average Cross Section Width _____
#	D	#	D	#	D	#	D	#	D	#	D	
1		11		1		11		1		11		
2		12		2		12		2		12		
3		13		3		13		3		13		
4		14		4		14		4		14		
5		15		5		15		5		15		
6		16		6		16		6		16		
7		17		7		17		7		17		
8		18		8		18		8		18		
9		19		9		19		9		19		
10		20		10		20		10		20		
(_____)				+ _____				+ _____) / 3 = _____
Average				average				average				

Average Cross Sectional Area = Average Cross Section Width X Average Cross Section Depth = m²

Average Surface Velocity = / **=** m/sec. **X (0.8)** **=** **Average Corrected Velocity =** velocity correction factor

Flow = m/sec. **X** m² **=** cms
Avg. Corrected Velocity Avg. Cross Sectional Area (cubic metres/second)

Notes:

1. Measure your cross sections in the transition area between a pool and riffle. Avoid measuring in riffles.
2. Make cross section 1 and 3 the beginning and end of your velocity float trial. Start your float well in advance of the upstream starting point.
3. These calculations only provide an estimate of flow velocity. If accuracy is required, consult a professional hydrologist or geomorphologist.
4. Accuracy of the estimate can be improved by measuring the flow velocity of the channel at 2/3's of the depth of the water column. Try removing pieces of the orange peel to a point where the orange is submerged 1/3 into the water column from the surface. Conduct ten trials and recalculate average velocity without the velocity correction factor. This technique is a little more challenging yet will provide a more accurate estimate.