STREAM DISCHARGE WORKSHEET

Your Name(s) ____

Stream Name ______________________ Date ____________ Time ________

Location ____

Current and Recent Weather ______________________________________

1. Record the length of the stream section in meters ____________________

   Distance Traveled (m)

2. Record the elapsed orange travel time in the table below.

Trial	Time Elapsed(seconds)
1	
2	
3	
4	
5	
Average Time	

____
Average Time (sec)

3. To calculate the stream velocity, divide the distance the orange traveled (stream section length) by the average time.

____________________ ÷ ____________________ = ____________________
Distance Traveled Average Time **Average Stream Velocity (m/sec)**

4. Record the depths and stream segment widths in the following table. For example, if you divided your stream into 50 cm segments, then the “Stream Segment Width” in the table will be 50 cm. Be sure to record your data in meters.

5. Multiply the depth by each segment width to get the segment area, and then total the segments’ areas to get the Total Stream Cross-Section Area.

Section #	Depth (m)	Stream Segment Width (m)	Stream Segment Area (m^2)
		Total Stream Cross-Section Area (m^2)	

6. To calculate the "Total Stream Discharge," complete the following equation.

____________ x ____________ = ____________

Total Stream Cross-Section Area (m^2) × Average Stream Velocity (m/sec) = **Total Stream Discharge (m^3/sec)**

7. To calculate the "Corrected Total Stream Discharge," multiply the Total Stream Discharge by the appropriate correction factor: 0.8 for sandy or muddy stream bottoms, and 0.9 for rocky stream bottoms.

____________ x ____________ = ____________

Total Stream Discharge (m^3/sec) × Correction Factor (0.8 or 0.9) = **Corrected Total Stream Discharge (m^3/sec)**

STREAM DISCHARGE QUESTIONS

Your Name(s) ____

Name of Stream ____________________ Date __________ Time ________

1. Using your Corrected Total Stream Discharge, calculate the discharge for different time units.

Per Minute: ____________________
Corrected Total Stream Discharge (m^3/min)

Per Hour: ____________________
Corrected Total Stream Discharge (m^3/hour)

Per Day: ____________________
Corrected Total Stream Discharge (m^3/day)

Per Month: ____________________
Corrected Total Stream Discharge (m^3/month)

2. If you are studying the watershed that drains into the stream you just measured, find out how much rain has fallen on the watershed in the past month. You may need to contact local watershed managers, field research stations, or town officials, or you may need to measure it yourself. (Rainfall is commonly reported in inches. Multiply by .0254 to convert to meters.)

____
Rainfall (m)

3. Locate or calculate the total area of your watershed.

____
Watershed Area (m^2)

4. Using the watershed area and rainfall amount, calculate the *volume* of rain that fell on your watershed in the past month.

____
Rainfall Volume (m^3)

5. Compare your monthly rainfall volume with your stream's monthly discharge rate. How do the two compare? Explain.

6. How would you expect the comparison in Question 5 to change if a greater percentage of your watershed was paved? Would the monthly stream discharge likely increase or decrease? Why? Explain.

7. Measuring your stream discharge using this protocol, and then using it to calculate the monthly discharge rate *may* lead to over- or underestimations of flow. Why is this? How could you make a more accurate measurement of your stream's monthly discharge? Explain.

8. How variable was the time it took for the orange to travel the length of the stream section? In terms of this variability, do you think the floating orange is a good method for measuring stream velocity? Discuss.

9. How would you expect your stream discharge rate (m^3/sec) to change after a slow, steady rainstorm? Would you expect the discharge rate to increase very quickly and then drop back to a lower level quickly? Or would you expect the rise and fall of the rate to take longer? Are there other possibilities? Discuss how you think your stream would respond and why.

10. Although estimates vary, an average American uses about 300–400 liters (0.3–0.4 m^3) per day. Using the daily stream discharge value you calculated, how many people could obtain their daily water needs from your study stream?