CHEMICAL AND FLOW MONITORING DATA COVER SHEET

Site Location: _____ Date: _____ Time: _____

Sample Site Name: _____ Latitude: _____ Longitude: _____

Current Weather Conditions: _____ Weather last 24 hours: _____

Main Surrounding Land Use Type: _____

Turbidity (muddy, opaque, clear, clear but tea-colored): _____

Monitor's Name(s): _____

Have you calibrated your meter? YES NO

Measure Stream Discharge
What will you need?

Measuring tape
Yard stick
A dry twig or ping pong ball
Stop watch or cell phone

1. Measure width of stream with measuring tape
2. Take 3 depth measurements evenly distributed across width of stream
3. Calculate the average of 3 depth measurements (width x depth=feet^2)
4. Measure a 30- foot distance upstream from measured width
5. Select a small, dry twig to be sent downstream
6. Send twig downstream at 30-foot point and time its passage to width cross section
7. Calculate velocity by dividing the length of flow (10 m) by the twig float time
    - For example: 30 ft^2/ 60 seconds= 0.15 ft^3/second

What is stream discharge or flow? It's a measurement of how much is flowing through the stream in one second.

Why is it important? Stream discharge is affects water quality, bank erosion, flooding, and macroinvertebrate communities (bugs that live in water). It is an important baseline measurement because it gives your watershed group an idea of what is normal for the stream. It is one of the qualities that your group should regularly measure to paint a solid picture of stream conditions.

Field Test Kits:
Follow instructions inside each kit.

pH/Conductivity Meter:

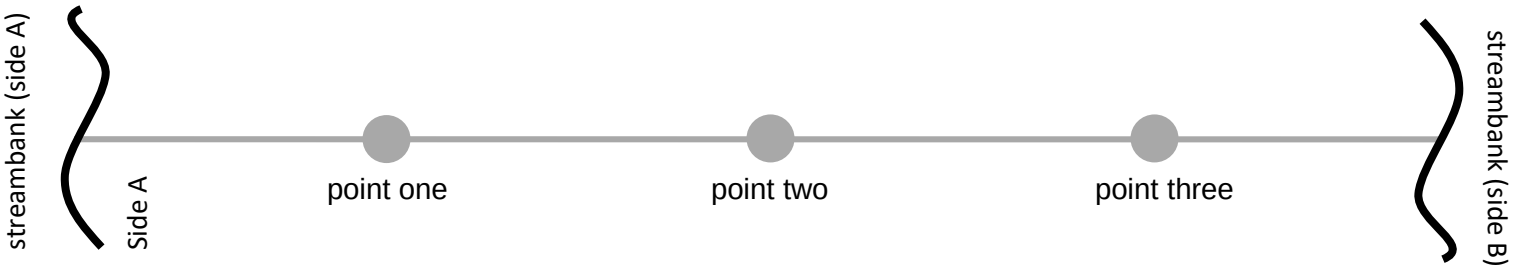
Calibrate meter in calibration solution.

STREAM FLOW WORKSHEET

PART ONE: Determine the stream's cross-sectional area (ft^2)

a. Measure **stream width**: _____ feet

b. Measure the depth of the stream at 3 points: (1) _____ (2) _____ (3) _____



c. Calculate avg. **stream depth**: (1) _____ + (2) _____ + (3) _____ / **3** = _____

d. Multiply **stream width** by average **stream depth** to find cross-sectional area

_____ feet x _____ feet = _____ft^2
(width) **(depth)** **(cross-sectional area)**

PART TWO: Determine the speed of the stream (ft/sec)

a. Float time of twig/ping pong ball _____ seconds

b. Multiply float time by length of run (30 feet)

_____ seconds x 10 feet= _____ feet/second
(Float time)

PART THREE Calculate stream flow

a. Multiply the stream's cross-sectional area (ft^2) by its velocity (ft/sec)

_____ ft^2 x _____ ft/sec= _____ ft^3/sec

PART FOUR Fill in information from kit/water quality meteter

Parameter	Units	Value	
Conductivity	µS/cm		
pH	pH		
Temperature	ºF		
DO	mg/L		
Alkalinity	mg/L		
Cl-	mg/L		
SO4	mg/L		

MACROINVERTEBRATE SAMPLING INSTRUCTIONS

Materials:

- Data sheets
- D-Frame Kick Net
- Measuring tape
- Yardstick
- Ethanol for sample preservation
- Clean, labeled containers
    - Stream name/location, date, name of collector

Record site information prior to sampling:

- Stream name & Site Location
- Time and Date
- Weather
- Site description
    - Draw map of site and note areas of bank instability/erosion and channelization, riffles & pools, arrow to indicate direction of flow, and North arrow

Choose a 100 m reach representative of the stream

For example: do not sample a forested stretch if the stream is in a primarily urban environment

Measure Stream Discharge

8. Measure wetted width with measuring tape
9. Take 3 depth measurements evenly distributed across width of stream
10. Calculate the average of 3 depth measurements (width x depth=m^2)
11. Multiply calculated average by the wetted width
12. Select a small, dry twig to be sent downstream
13. Measure a 10 m distance upstream from selected width cross section
14. Send twig downstream at 10 m point and time its passage to width cross section
15. Calculate velocity by dividing the length of flow (10 m) by the twig float time
    - For example: 10 m^2/ 20 seconds= 0.50 m^3/second

Sampling begins at the downstream end of reach and proceeds upstream

6 D-Frame sample efforts from riffles and runs over 100 m reach

Sampling occurs at various riffles and runs throughout the selected reach to represent a range of velocities

Procedure: *6 kicks total*

1. Holding the long handle of your net, set the net on the bottom of the stream, with the opening of the net facing upstream
2. Kick the bottom of the stream with enough force to dislodge substrate materials; turn over and rub larger rocks to remove any macroinvertebrates for collection
3. Place any organisms into labeled containers that contain 70% ethanol
   All samples can be combined into a single container
4. Rinse the D-Frames between each kick

SEDIMENT SAMPLING PROTOCOL

Materials:

- Data sheets
- Ruler
- Yardstick

Record site information prior to sampling:

- Stream name and Site Location
- Time and date
- Weather
- Site description
    - Draw map of site and note areas of bank instability/erosion and channelization, riffles & pools, arrow to indicate direction of flow, and North arrow

Choose a 200 m reach representative of the stream

Sample reach habitat should be representative of stream

- For example: Do not sample a forested stretch if the stream is in a primarily urban environment

Measure Stream Discharge

a. Measure wetted width with measuring tape
b. Take 3 depth measurements evenly distributed across width of stream
c. Calculate the average of 3 depth measurements (width x depth=area in feet)
d. Multiply calculated average by the wetted width
e. Select a small, dry twig to be sent downstream
f. Measure a 10 m distance upstream from selected width cross section
g. Send twig downstream at 10 m point and time its passage to width cross section
h. Calculate velocity by dividing the length of flow (10 m) by the twig float time
    - For example: 10 m^2/ 20 seconds= 0.50 m^3/second

Pebble counts are conducted on the selected reach beginning at the head of a riffle

4 units (2 riffles, 2 pools if present) or for a minimum of 200 m
At least 200 particles need to be sampled from the stream reach
Counts are conducted along a zigzag pattern from bank toe to bank toe in the active channel

Procedure:

1. Place a finger at the toe of a boot and, without looking, slide your finger to the stream bottom until it comes into contact with a particle
2. Measure each particle should be measured along its intermediate axis
3. Record measurement on data sheet
4. Proceed to next sampling location based upon a chosen distance, which should be no less than 2.1 m from preceding sample spot
5. Sample another particle in the same manner as the first particle until you have completed 200 particle recordings
6. Submit completed data sheets to the AWA for analysis