



# Watershed Education Network

*Growing the next generation of watershed stewards*

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## Fall '09 Physical Station Script for Field School-Based Water Monitoring Program

The school-based water monitoring program was designed to collect baseline data from stream reaches in Western Montana. The field trips aim to foster stewardship among students through science, and create awareness of our local watersheds. The school-based water monitoring field trip is typically divided into three stations: chemical, biological and physical. Key concepts, objectives and instructions are provided for the three previously mentioned stations below.

### Physical Station

**Focus:** The focus of the physical station is to gather a visual survey, a cross section profile, velocity, turbidity and a site map. This station gives students an opportunity to hone their observational skills, and draw conclusions about stream health through land and water use. It isn't safe to do cross section profiles on all stream reaches, and will be determined before the field trip.

**Opening:** Introduce yourself and get to know the students by asking them to tell their name and their favorite water animal, or favorite water activity. Empower students by telling them that they are doing a great service by helping WEN collect data that will eventually go into a database to be viewed by other students in Montana. Remind them that safety comes first. Begin the Physical station by reinforcing the importance of safety when wading in a stream. If it is safe to do a cross section profile make sure that it is set up before the students arrive at your station. **You are responsible for filling out a completed data sheet for your station and giving it to the field coordinator or field assistant at the end of the day.**

#### Big Questions

- How does this measurement relate to a healthy river?
- What impacts, both naturally occurring and human caused, influence the measurements of this parameter?
- What changes in the river during the year may alter this measurement?
- Why is it important to measure these parameters on a regular basis?
- Who and what depends on healthy rivers for survival?

## Objectives and Key Concepts for the Physical Station

**Visual Survey:** The purpose of the visual survey is to characterize the streamside environment through which the stream flows. Challenge students to explore how the streamside environment changes the characteristics of the stream. Ex. How might the stream be different if there wasn't a park there? Ex. How might the stream be different if there was a farm on it?

**Cross Section Profile:** The shape of a stream is a direct reflection of current and recent flow conditions. The cross section profile allows students to question why and how streams change. Explain to the students that bankfull or the high water mark is the point at which water will overflow onto the adjacent floodplain. If you are unable to do a cross section profile explain to the students why we monitor this parameter. Ask students to tell you where bankfull is.

**Velocity:** Velocity is the speed of water moving past a given point. This is often the favorite parameter measured at the physical station. If the water is too dangerous to use tennis balls improvise and use sticks or pinecones. Make sure everybody has a chance to throw at least one, and if there is enough time you can take an average of twenty throws.

**Site Map Drawing:** The site map drawing is a good creative tool used to understand the physical nature of a site. Ask students to work with a partner or alone and make a detailed sketch or map of the stream reach and surrounding land use. Students should have a key or legend that explains their map. Make sure that they include the name and direction of the stream.

### Instructions and Pointers

- Make sure everybody has a chance to do something at your station.
- Encourage students to get involved and ask questions.
- Directions for performing chemical tests are located in the chemistry binder.
- Remind students that the data they collect is important.
- If there is a discipline problem don't take action. Locate the teacher.
- Ask students to raise their hands when answering questions.

**Closing:** Make sure that your station is cleaned up and ready before the next group arrives. If it is safe to do a cross section leave the stakes and string in for the next group. Ask students to go around the group and share one fact that they learned or thought was interesting at your station. Invite students to ask questions (its okay if you don't know the answer).

**Safety Concerns:** Keep an eye on students that are going to the river and always send them with a partner. Wading can get tricky when you're across the width of a stream. The first aid kit is located in the chemistry tub and **the throw rope is located in the physical tub**