

# Factors Affecting Your WQ Data Results

*Some things you can control – others you can't!*

## Dissolved Oxygen

- Stream temperature - cold water “holds” more oxygen than warm water.
- Time of day/ Aquatic plant photosynthesis – plants give off oxygen during the day but take it in at night when they respire (make energy for the plant to use). Also, the more plant material (algae and larger plants) in the water, the more effect photosynthesis has on DO.
- Time of year – aquatic plants are actively growing during the late spring and summer; therefore more photosynthesis going on.
- Decomposition of plant and animals – the bacteria which eat dead plants and animals need oxygen to do this. Again more plant material, more decomposition occurring.
- Increases of DO due to mixing or turbulence – when it's windy or stormy, there can be more absorption by the water of oxygen at the air-water interface.
- Groundwater can increase DO levels by lowering temperature and/or providing higher oxygenated water to a surface stream.
- Location of sample - still water has less DO than running water.
- Incorrect sampling technique (e.g. catching air into the sample).

## Temperature

- Time of day - highest temperatures typically around 4-6 pm; lowest in the early morning.
- Location of measurement – measure in the middle of the stream if possible. Pools (stagnant water) can have a different temperature than a riffle (wavy water).
- Shallow versus deep water – try to take your sample in a part of the stream that is representative of the stream at that location.
- Streamside vegetation – lack of overhanging vegetation can lead to higher stream temperatures – no shading.
- Tributary or groundwater influences – try not to sample near where a tributary comes into your stream. You have no control over groundwater!

## pH

- Correlation between low DO & pH?
- Time of day – because photosynthesis takes place all day, why pH levels can be higher towards the end of the day.
- Amount of aquatic plants in the stream – due to photosynthesis activity going on.
- After the water sample is taken, you need to measure the pH right away – exposure to air can change the pH value.

### **Nitrates**

- Land use around your sampling location.
- Upstream influences you're not aware of – if possible walk a little ways upstream and document what you see.

### **Turbidity/ Suspended Solids**

- Streamflow
- Land use activities
- Substrate of the streambed – geology of the area. Clay type substrates are more easily suspended than gravel and cobble.

### **Bacteria**

- Location of sample collection - measure in the middle of the stream if possible.
- Try not to get sediment in the sample – this could affect the result. Bacteria can live in the streambed sediment; if you pick up some of the sediment in your water sample, the result won't reflect the "accurate" bacteria levels of the water.
- Once the water sample is taken, filter it immediately. Otherwise keep the sample on ice and in the dark. Otherwise the bacteria will continue to multiply and not give you an "accurate" level of bacteria in the stream.