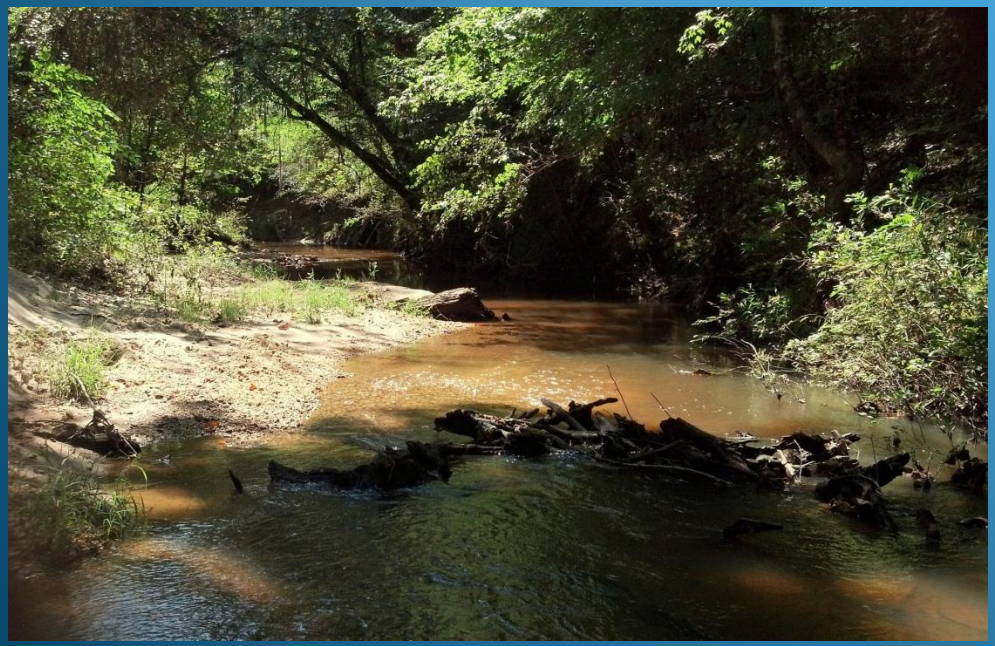
Water Quality Monitoring

Outdoor Water Sources



Types of Assessment

1. Visual/ Physical
2. Chemical
3. Biological

Visual & Physical Assessment

- Why?
  - Important to know the physical properties of a stream as well as the stream conditions before sampling

Visual & Physical Assessment

- Physical characterization includes documentation of land use, description of stream origin & type, summary of the vegetative features, & measurements of in stream parameters, such as width, depth, flow, & substrate
- Stream Flow: volume of the water that moves over a designated point over a fixed period of time; often expressed as cubic feet per second; affected by weather & changes in season; has a large impact on water quality & the living organisms and habitats in the stream

Chemical Monitoring

- A variety of tests can be performed including:
  - Temperature
  - Dissolved Oxygen
  - pH
  - Settleable Solids

Chemical Monitoring

- Temperature
  - Determines which species may or may not be present in the stream
  - Affects feeding, reproduction, & metabolism of aquatic species
  - Measures the temperature of the air & the water
- pH
  - Indication of the water's acidity
  - A range of pH 6.5 to 8.2 is optimal for most species
  - A low or high pH can affect egg hatching, kill sources of food for fish & insects, or make water uninhabitable for aquatic life

Chemical Monitoring

- Dissolved Oxygen
  - Limited by temperature & salinity of the water
  - Higher temps = lower dissolved oxygen levels
  - Lower temps = higher dissolved oxygen levels
  - Levels of 5 to 6 ppm are required for growth & activity
  - Levels of 3 ppm are stressful to aquatic organisms
  - Low levels of DO mean a demand on the O2 in the system, waste & other pollutants, dense populations of active fish & high levels of algae
- Settleable Soilds
  - Method used to measure sediment & other particles found in surface water
  - Excessive solids block sunlight and clog gills of fish & macro - invertebrates

Biological Monitoring

- Known as Macroinvertebrate Count
- What is a macroinvertebrate?
  - Animals with no spinal column
  - Large enough to have complex bodies & visible to the naked eye
  - Includes aquatic insects, crayfish,& snails

Biological Monitoring

- Why monitor macroinvertebrates?
  - Abundance & diversity of macroinvertebrates found is an indication of overall stream quality
  - Affected by physical, chemical, & biological conditions of the stream
  - Can show effects of pollution
  - Important part of the food web
  - Abundant in most streams
  - Relatively easy to collect & identify
  - Present during all types of stream conditions from droughts to floods

Biological Monitoring

Biological Monitoring