

## Chapter X

### DATA ANALYSIS AND REPORT WRITING

For a monitoring program to be successful, sampling data must be analyzed, interpreted, and reported. Monitors need to see the findings generated from their efforts. Supporting agencies and other data users also need to see useful information coming from the program.

The accuracy of the data set is critical. The credibility of a monitoring program is questioned if data is too hastily collected, stored, analyzed, or presented. To ensure accuracy of the data collected, prescribed collection methods must be followed. Data must be stored according to set procedures. Incoming data must be reviewed and time should be committed to preparing presentations and conducting accurate analyses.

#### Data Analysis

**Preparing Data for Analysis.** Now that you've collected a set of data, what does it all mean? What does it tell you about the quality of water at your stream site? To understand what the data are saying, it is important to organize and present them in such a way that trends and other important information are revealed.

There are several ways in which data can be presented, including photographs, maps, graphs, and tables. Each type of presentation emphasizes different information. Therefore, before choosing a presentation format, consider what you want to learn. And, since presentations may be used in a summary report, consider what you want the reader to learn. For example, do you want to show what land use practices could be influencing water quality at your site? Are you looking for seasonal variations or variations between sites? Are you looking to see if and how certain variables are related?

Once you have an idea of what you're after, consider what each type of presentation has to offer.

**Maps:** Maps provide an excellent visual basis for interpreting data. They can be used as an aid to understanding cause and effect relationships by showing sampling locations, tidal influences, direction of stream flow, drainage areas, land use patterns, and pollution sources.

**Graphs:** Graphics are extremely helpful in translating data. They reveal trends and show relationships between variables. However, not all data need be graphed. Before graphing a piece of data, consider the type of information sought. Will graphics help to clarify the data?

There are three basic types of graphs: bar graphs, pie graphs, and line graphs (Fig. 10.1). A description of each follows.