Protecting Rivers:

The Clean Water Act of 1972 provides that the surface waters of the country be restored and maintained to biological, chemical and physical integrity. The integrity is judged by biological, chemical, and physical parameters.

Chemical Parameters include measuring:

- Dissolved minerals picked up from the substrate;
- Any contaminants such as volatile organics, radioactive materials, heavy metals, or toxic chemicals;
- Dissolved oxygen which is necessary for aquatic organisms’ respiration and other processes;
- BOD or biochemical oxygen demand or aerobic decomposition. For example, a high degree of decomposition gives a stream a high BOD because it needs a lot of oxygen to break down the organic components found there;
- pH - the measure of the hydrogen ion in water, which makes it either acidic or alkaline;
- Hardness - a measure of magnesium or calcium found in the water. For example, we often notice this when showering: soap and water either lathers easily (soft water) or lathers with difficulty (hard water);
- Phosphates and nitrates - plant nutrients which are introduced into the water from run-off. Fertilizers from farms and detergents cause excessive plant and algae growth.

Physical Parameters include measuring:

- Temperature - important to many fish species and provides an optimum climate for metabolic processes, activity and reproduction. The temperature of water affects its chemical concentrations. For example, cold water holds more dissolved oxygen than does warm water;
- Turbidity - a measure of the clarity of water. Turbidity is important because clear water allows photosynthesis to take place at a greater depth;
- The color of water - indicates the presence of dissolved substances and suspended material which affect such processes as photosynthesis;
- Pathogens - disease causing organisms, which may be present, such as, Escherichae coli found in the intestines of warm-blooded animals.

Water Quality is changed by such things as:

- Sediment, e.g., development along river banks causing heavy sediment deposits into the river or stream;
- Dumping of wastes, either hazardous or non-hazardous materials, e.g., pesticides or paint from boat yards;
- Agricultural wastes, e.g., manure from dairy feed lots washing into streams.