

Glossary of Water Quality Terms

Alkalinity The capacity of water to neutralize acids. This capacity is caused by the water's content of carbonate, bicarbonate, hydroxide and occasionally borate, silicate, and phosphate. Alkalinity is expressed in milligrams per liter of equivalent calcium carbonate. Alkalinity is not the same as pH because water does not have to be strongly basic (high pH) to have a high alkalinity. Alkalinity is a measure of how much acid can be added to a liquid without causing a great change in pH.

Ambient The conditions in the surrounding environment.

Ambient concentration Representative level of a contaminant in an area. May reflect natural geologic variations or the influence of generalized industrial or urban activity in a region, presumably unaffected by point sources of contaminant release.

Background concentration Representative, naturally occurring level of a contaminant in the environment. Reflects natural geologic variations.

Benchmark concentration Specific concentrations at which some level of effects is expected (e.g. maximum acceptable toxicant concentration). These concentrations are derived from hazard assessment.

Benthic Refers to the substrate at the bottom of aquatic habitats (e.g., lakes, oceans, and rivers). Also describes the life strategy of organisms living in or on that substrate (e.g., clams and oligochaete worms).

Benthic Invertebrates Animals without backbones that live in association with streams and lake bottom habitats. Examples are larval insects such as caddis flies and mayflies, and crustaceans such as crayfish. Benthic invertebrate communities are well suited for use as biomonitoring tools, because the various benthic organisms have differing sensitivities to environmental stressors. By measuring the diversity of the benthic community, we can gain some insight into the level of human impacts on the aquatic system.

Bioavailable The fraction of the total chemical in the surrounding environment that can be taken up by organisms. The less the bioavailability of a chemical, the less its effect on an organism.

Detection limit The smallest concentration or amount of a substance that an analytical method can accurately report.

Interim guideline A guideline value derived from a data set that has met a lesser requirement than that of a full guideline. Once data gaps are addressed by the scientific community, a full guideline may be derived.

Guidelines Generic numerical concentrations or narrative statements that are scientifically based and recommended as upper limits to protect and maintain the specified uses of air, water, sediment, soil, or wildlife. These values are not legally binding.

Hardness A characteristic of water caused mainly by the salts of calcium and magnesium, such as bicarbonate, carbonate, sulfate, chloride and nitrate. In the WQI calculation, hardness is measured as milligrams per litre calcium carbonate. Hardness is important because some metal guidelines are dependant on it; the harder the water, the higher the guidelines are. The hardness of water has long been recognized as a major factor influencing the toxicity of metals to aquatic species.

Maximum Acceptable Concentration (MAC) The highest concentration at which a contaminant can be present and not cause adverse effects greater than those predetermined to be acceptable.

Pristine Describes a natural system that has not been affected by anthropogenic pollution.

Parameter A variable, measurable property whose value is a determinant of the characteristics of a system. For example, in the WQI, lead, nitrate, and water temperatures are possible parameters.

pH A measure of the acidity of an aqueous solution. It is defined as the negative logarithm of the hydrogen ion activity of the solution. pH may range from 0 to 14, where 0 is the most acid; natural waters usually have a pH between 6.5 and 8.5. At lower pH metals tend to be more toxic because they are more soluble. In the case of heavy metals, the degree to which they are soluble determines their toxicity.

Rapid Assessment Approach (RAA) A method introduced by BC Ministry of Environment to identifying parameter or generate guidelines for WQI using long-term water quality monitoring data. It is not effects-based, and should only be applied until effects-based, site-specific guidelines can be derived. For more information, see the section on RAA.

Site-Specific Guideline (SSG) Numerical concentration or narrative statement that is scientifically derived and has been established to maintain and protect a designated present or future water use at a specified site by only taking into account site-specific biotic and abiotic conditions (i.e., science-based considerations). SSGs are used in Water Quality Index reporting.

Site-Specific Objective Numerical concentration or narrative statement that has been established to maintain and protect a designated present or future resource use at a specified site by taking into consideration site-specific conditions (i.e., science-based considerations), socioeconomic considerations, or technological considerations, or any combination thereof.

Standard A legally enforceable numerical limit or narrative statement, such as in a regulation, statute, contract, or other legally binding document, that has been adopted from a criterion or an objective.

Turbidity The cloudy appearance of water caused by the presence of suspended and colloidal matter. Technically, turbidity is an optical property of the water based on the amount of light reflected by suspended particles. It is measured in Nephelometric Turbidity Units (NTU). The relationship between turbidity and some metals concentrations is calculated for pristine sites before calculating the WQI. If a particular concentration is highly correlated to turbidity, the concentrations relating to highly turbid events may be removed. This is based on the premise that the metal would not be in a bioavailable form in this case, therefore it would not impact aquatic life.

Water Quality Guidelines (WQG) A numerical concentration or narrative statement recommended to support and maintain a designated water use; eg. Aquatic life

Water Quality Index (WQI) A tool of assessing water quality through summarizing large amounts of data into a simpler format. For more information, see the introductory section on WQI.

Water Quality Objectives (WQO) A numerical concentration or narrative statement that has been established to support and protect the designated uses of water at a specified site. Socioeconomic information may be used to augment scientific data to generate WQOs.