The Indicators

Turbidity

Turbidity is the measure of the relative clarity of water. Turbid water is caused by suspended and colloidal matter such as clay, silt, organic and inorganic matter, and microscopic organisms. Turbidity should not be confused with color since darkly colored water can still be clear and not turbid. Turbid water may be the result of soil erosion, urban runoff, algal blooms and bottom sediment disturbances, which can be caused by boat traffic and abundant bottom feeding fish.

It is likely that runoff from a recent rain event has made this water very turbid.

pH

pH is a measurement of the acidic or basic quality of water. The pH scale ranges from a value of 0 (very acidic) to 14 (very basic), with 7 being neutral. Most aquatic animals prefer a range of 6.5 to 8.0. They are adapted to a specific pH level and may die, stop reproducing or move away if the pH of the water varies beyond this range. Low pH can also allow toxic compounds to become more available to aquatic plants and animals. This can produce conditions that hurt aquatic life. pH can be affected by acid rain, wastewater discharges, drainage from mines and the type of rock naturally found in the area.

Highly acidic water may appear orange in color, as shown above.

Temperature

Aquatic animals (e.g. stream insects, trout and salmon) are sensitive to changes in water temperature and require a certain temperature range to survive and thrive. If water temperature is outside that range for a long time, organisms can be stressed and die.

Temperature also affects the amount of oxygen water can hold. Cold water holds more oxygen than warm water, and all animals need oxygen to survive. Temperature affects the rate of photosynthesis by aquatic plants and the sensitivity of organisms to toxic wastes, parasites and disease. Warm water discharged from factories, the removal of trees and vegetation that shade streams and water that runs off city streets can cause temperature changes that threaten the balance of aquatic systems.

Removal of trees and other vegetation can cause increases in water temperature.

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Dissolved Oxygen

Dissolved Oxygen (DO) is important to the health of aquatic ecosystems. All aquatic animals need oxygen to survive. Natural waters with consistently high dissolved oxygen levels are most likely healthy and stable environments, and are capable of supporting a diversity of aquatic organisms.

The saturation percentage of dissolved oxygen is also an important measurement of water quality. Cold water can hold more dissolved oxygen than warm water. For example, water at 28°C will be 100% saturated with 8 ppm dissolved oxygen. However, water at 8°C can hold up to 12 ppm of oxygen before it is 100% saturated. High levels of bacteria or large amounts of rotting plants can cause the % saturation to decrease. This can cause large fluctuations in dissolved oxygen levels throughout the day, which can affect the ability of plants and animals to thrive.

Dissolved Oxygen, ppm

Temperature, °C	0 ppm	4 ppm	8 ppm
2	0	29	58
4	0	31	61
6	0	32	64
8	0	34	68
10	0	35	71
12	0	37	74
14	0	39	78
16	0	41	81
18	0	42	84
20	0	44	88
22	0	46	92
24	0	48	95
26	0	49	99
28	0	51	102
30	0	53	106