Nutrients

Ammonia (NH_3) "un-ionized form" highly toxic to aquatic organisms
Ammonia-Nitrogen (NH_4^+) "ionized form" non-toxic, also referred to as Ammonium
Total Ammonia Nitrogen = sum of both NH_3 and NH_4^+

The higher the pH (above 8.5) and warmer the water temperature, the more toxic the ammonia, so it is necessary you take pH and water temperature readings.

Very important you know and record *exactly* what type of ammonia test you are performing especially if coming from a lab or using electronic meters/probes.

Most, if not all, commercial test kits report as Total Ammonia-N. Use table (pH-temp intersection) and simple calculation to convert to toxic "un-ionized" form (see attached). You can convert total ammonia values to un-ionized ammonia by using table and formula: unionized ammonia = total ammonia (your measured sample) x percent un-ionized (from table).

Central Coast objectives of un-ionized ammonia is not to exceed 0.025 mg/l as N (USEPA limit = 0.04)

Phosphate: monitoring phosphate is challenging because it involves measuring very low concentrations. Most of the phosphorous in soils is adsorbed to soil particles or incorporated into organic matter. Phosphate itself does not have notable adverse health effects. Generally, phosphorous (as orthophosphate) is the limiting nutrient in freshwater aquatic systems. That is, if all phosphorous is used, plant growth will cease, no matter how much nitrogen is available. If sufficient phosphorous is available, elevated concentrations of nitrates will lead to algal blooms. Although levels of 0.08 to 0.10mg/l orthophosphate may trigger periodic blooms, long-term eutrophication will usually be prevented if total phosphorous and orthophosphate levels are below 0.5mg/l and 0.05mg/l, respectively.

Mainly measured as ***orthophosphate*** **(PO_4^{-3})** which is phosphorous dissolved in water ***(also referred to as total dissolved phosphorus)***

The USEPA water quality criteria state that phosphates should not exceed 0.05 mg/l if streams discharge into lakes/reservoirs, and, 0.1mg/l in streams or flowing waters not discharging into lakes/reservoirs to control algal growth.

CCAMP Screening Level for Orthophosphate as P is 0.12 mg/l, and, 0.37 mg/l as Orthophosphate as PO_4

Nitrates are a form of nitrogen, which is found in several different forms in terrestrial and aquatic ecosystems. These forms of nitrogen include ***ammonia*** (NH_3), ***nitrates*** (NO_3), ***nitrate-nitrogen*** (NO_3-N) and ***nitrites*** (NO_2). Nitrates are very soluble (therefore, mobile) in water, unlike phosphorous.

The nitrate level in freshwater is usually found in the range of 0.1 to 4 mg/l NO_3-N. Unpolluted waters generally have nitrate-nitrogen levels below 1 mg/l.

CCAMP Screening Level for Nitrate as N (NO_3-N) is 2.25 mg/l, and 10 mg/l for Nitrate as NO_3