Nutrient Removal Glossary

Nutrients- generally nitrogen and phosphorus, two key fertilizer components that facilitate plant growth such as aquatic plants.

TN- (tN)- Total Nitrogen, the sum of three lab tests TKN +NO_2 + NO_3 HACH has a single test muthod but it is currently (2018) unapproved.

TKN- Total Kjeldhal Nitrogen, a lab test that includes a digestion step to convert the organic nitrogen to ammonia followed by a test for ammonia giving the TKN value. In a wastewater influent or effluent sample, subtracting the ammonia value from the TKN value will give the calculated value for organic nitrogen, this is generally the nitrogen within insoluble BOD or TSS.

NO_2- nitrite

NO_3- nitrate

AOB's- ammonia oxidizing bacteria, nitrosomanos and others and other species.

NOB's- nitrite oxidizing bacteria, nitrobacter and other species.

Alkalinity- the capacity of the water to absorb acid.

Aerobic- plant environment with free oxygen present, nitrite and nitrate may be present.

Anoxic- plant environment where there is no free oxygen but there is nitrite or nitrate.

TP- Total Phosphorus- a lab test that includes a digestion step to convert combined phosphate (organic phosphate is phosphorus within insoluble BOD or TSS) to ortho phosphate followed by testing for ortho phosphate. In a wastewater influent or effluent sample, subtracting the basic ortho phosphate test value from the TP value will give a calculated value for combined phosphate. TP is reported as PO_4-P, "PO_4 as P" or the mg/L of P in the PO_4 ion.

Ortho Phosphate- dissolved phosphorus also called Reactive Phosphorus.

Phosphorus Accumulating Bacteria (PAO's)- phosphorus accumulating organisms.

Anaerobic- plant environment where there is no free oxygen, nitrite or nitrate.

Oxidation Reduction Potential (ORP, Redux)- an electrical voltage measurement made with a pH meter using the millivolt scale and an ORP probe which represents the reducing/oxidizing condition of the sample or basin. The test is used to monitor biological processes where there is no dissolved oxygen.

Oxidation- adding oxygen and removing energy

Reduction- removing oxygen

VFA's- Volatile Fatty Acids, byproducts of influent (organic) fermentation, three common ones are acetic acid, butyric acid, and propionic acid. VFA's are necessary for enhanced biological phosphorus removal

PHA/PHB- Polyhydroxyalkanoates (general term)/ Polyhydroxybutrate (more specific term). The complex high energy compounds within the PAO bacteria. VFA's are converted to PHB's in the anaerobic zone, then the PHB is oxidized within the aerobic zone.