# Hydrology Equation Sheet

## Concentration

Percent = Parts Per Hundred = pph

Density $H_2O$ = $\frac{1\ g}{1\ ml} = \frac{1000\ g}{1000\ ml}$

$\frac{g\ solute}{L\ H_2O} = \frac{g\ solute}{Kg\ H_2O} = 1\ ppt$ part per thousand

$\frac{1\ Kg}{1\ L}$

$\frac{Mg\ solute}{L\ H_2O} = \frac{Mg\ solute}{Kg\ H_2O} = 1\ ppm$ part per million

$1\ g = 1000\ mg$

$1\ g = 1 \times 10^6\ \mu g$

$\frac{\mu g\ solute}{L\ H_2O} = \frac{\mu g\ solute}{Kg\ H_2O} = 1\ ppb$ part per billion

$$Molarity = \frac{moles\ solute}{L\ H_2O}$$

$$1\ mole = 1\ Formula\ wt.\ Equivalent\ (g)$$

# Physical Properties

Volume $= (L)^3 =$ Area $\times$ Depth

Area $= (L)^2$

Velocity $= \frac{L}{t}$

Discharge $= \frac{L^3}{t} = \frac{Vol}{t}$

Force $= m\,g =$ weight

$g = 9.8\ m/sec^2$

Pressure $= \frac{\text{Force}}{\text{area}}$

$m$ = mass

$g$ = acceleration due to gravity

$A$ = area

$\rho$ = Density $= D = \frac{\text{MASS}}{\text{VOLUME}}$

(Newtons $= \frac{kg\text{-}m}{sec^2}$)

$1\ bar = 1000\ mb = 10^5\ Pa$

$1\ Pa = \frac{N}{m^2}$

Energy = Work $= F \cdot d$ ($N\text{-}m$ = joules)

Potential Energy $= mgh =$

$\frac{kg\ m^2}{sec^2} = N\text{-}m = J$

Power $= \frac{\text{Energy}}{\text{Time}} = \frac{J}{sec} =$ watt

$\gamma =$ Specific Weight $= \frac{Wt}{Vol} = \frac{mg}{Vol} = Dg$

## Continuity Equation

$$Q = VA$$

Q = Discharge
V = velocity
A = area

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## Conservation of Mass

$$I - Q = \Delta S$$

I = input
Q = Discharge
S = Storage

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