



ENUMCLAW PLATEAU

WQ IMPAIRMENTS, CWA & TMDLS



CWA

- FEDERAL CWA
 - “FISHABLE, SWIMMABLE”
 - WA DELEGATED AUTHORITY
- STATE WQ STANDARDS
 - PROTECT ‘DESIGNATED USES’
 - RECREATION, AQUATIC LIFE
 - SET CRITERIA
- WQ ASSESSMENT
 - ECOLOGY DATA AND EXTERNAL PARTIES
 - POLICY 1-11



303 (D) LIST

- POLLUTED WATERS (CATEGORY 5)
- OTHER CATEGORIES
 - 1 = MEETS STANDARDS
 - 2 = WATERS OF CONCERN
 - 3 = NOT SUFFICIENT DATA
 - 4A = IMPAIRED, BUT HAS A TMDL
 - 4B = IMPAIRED, BUT HAS ANOTHER PLAN
 - 4C = IMPAIRED BY A NON-POLLUTANT (E.G. HYDRO MODS)



TMDLS

- PUYALLUP FC
- LOWER WHITE RIVER PH (IN DEVELOPMENT)
 - INCREASED NUTRIENTS (P)
 - INCREASED PHOTOSYNTHESIS
 - DECREASED CO₂, DECREASED CO₃
 - INCREASED ALKALINITY
- WLAS – POINT SOURCES
 - NPDES
- LAS – NONPOINT
 - STATE WQ LAW, RCW 90.48

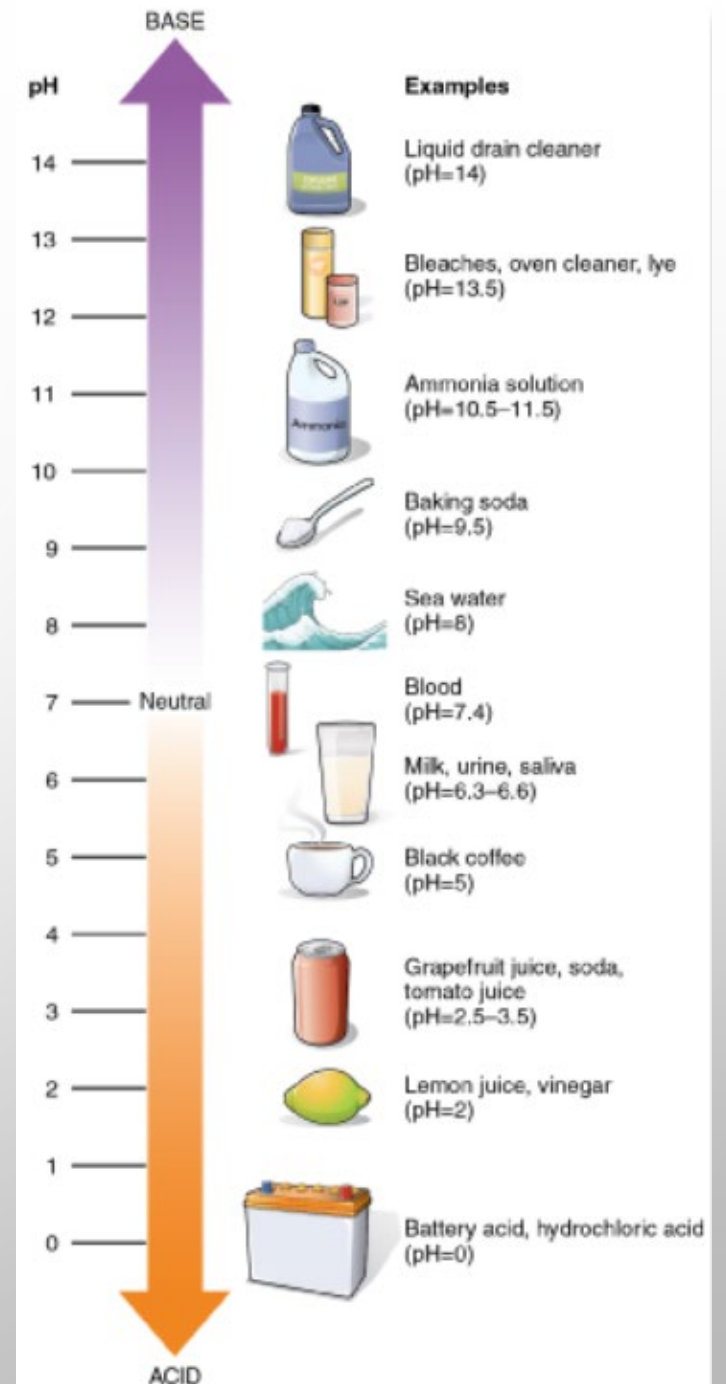


WATER QUALITY IMPAIRMENTS

	Bacteria		Temp		pH		DO	
	Cat 4a	Cat 2	Cat 5	Cat 2	Cat 5	Cat 2	Cat 5	Cat 2
Boise	3		2	2	1	2		3
Pussyfoot	2			1	1			
Second	2		1			1		1

PH

- MEASURE OF ACIDITY OR ALKALINITY
 - HYDROGEN ION CONCENTRATION
 - 7 = NEUTRAL, LOW = ACID, HIGH = ALKALINE OR BASIC
 - 1- 14 RANGE, LOGARITHMIC SCALE (10 FOLD CHANGE)
- PH IMPACTS SOLUBILITY AND AVAILABILITY
 - SOLUBILITY OF HEAVY METALS INCREASED WHEN ACIDIC
 - AMMONIA MORE TOXIC WHEN ALKALINE
- ≈ PH 7 BEST
 - TOO EXTREME CAN HARM AQUATIC LIFE
 - BELOW 4, ABOVE 10 KILLS MOST FISH
 - MILDLY ACIDIC – HARM FISH EGGS, IRRITATE GILLS, MEMBRANES
 - SIGN OF POLLUTION



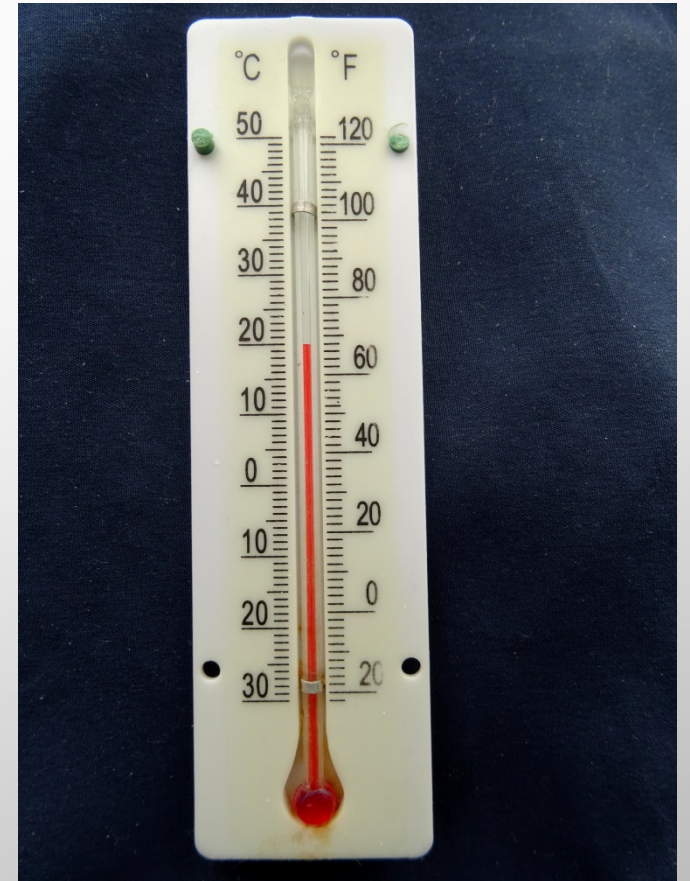
DISSOLVED OXYGEN

- O₂ IN WATER – NEEDED TO BREATHE
- COMES FROM ATMOSPHERE
 - FAST MOVING, TURBULENT WATER = HIGH DO, GOOD
 - SLOW, STAGNANT WATER = LOW DO, BAD
- NUTRIENTS
 - INCREASED P/N = PRODUCTION, DEPLETES O₂
- HYDRO MODS
 - TEMP – IMPACTS SOLUBILITY
 - PHYSICAL



TEMPERATURE

- IMPACTS BIOLOGICAL ACTIVITY, GROWTH
- DETERMINES WHAT CAN LIVE IN WATER
 - MOST ORGANISMS HAVE PREFERRED TEMP RANGES
- IMPACTS CHEMICAL PROCESSES
 - WARMER = FASTER CHEMICAL REACTIONS
 - WARMER = INCREASED MINERAL SOLUBILITY
 - COLDER = INCREASES O₂
- HYDRO MODS
 - DAMS, GROUNDWATER DISCONNECTION
- REDUCED RIPARIAN VEGETATION
 - SHADE COVER



BACTERIA

- MANY BACTERIA HARMLESS
- BUT BACTERIA IN DIGESTIVE SYSTEM OF WARM-BLOODED ANIMALS HARMFUL
 - CAUSE SICKNESS, DISEASES
 - INDICATOR OF OTHER PATHOGENS, E.G. VIRUSES AND PROTOZOANS
- STATE STANDARDS CHANGED
 - FRESHWATER = E. COLI
 - MARINE = ENTEROCOCCI
 - FC STILL USED IN SOME CASES

