



D.C. WRRC Report No.

GLOSSARY OF USEFUL
WATER RESEARCH TERMS

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PREFACE

The glossary of water research terms was prepared from a compilation of glossaries from various sources. The terms have, in some instances, been adapted to the D.C. water resources situation. The language used by various agencies was followed for the most part.

This is a D.C. WRRC working paper, but should be useful to researchers, managers, government officials, students and the general public involved in the field of water resources.

abiotic - not involving living organisms.

accretion - the gradual build-up of sediments by the settling out of waterborne particles, sometimes resulting in land build-up.

acid mine drainage - the water discharge from coal mines, usually highly acidic, which can pollute the receiving stream.

acre-foot (AC-FT, acre-ft) - the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

activated sludge - sludge floc produced in raw or settled wastewater by the growth of zoological bacteria and other organisms in the presence of dissolved oxygen and accumulated in sufficient concentration by returning settled floc previously formed.

activated sludge process - a biological wastewater treatment technique in which a mixture of wastewater and activated sludge is agitated and aerated. The activated sludge is subsequently separated from the liquid portion (mixed liquor) by sedimentation and digested or returned to the process as needed.

adenosine triphosphate (ATP) - the primary energy donor in cellular life process. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

adsorption - the tendency exhibited by all solids to exert a molecular attraction for other solids or compounds in wastewater, which are held to their surface-until removed and physically or chemically degraded. Activated carbon removes organic matter from wastewater using this property.

advanced waste treatment - waste water treatment beyond the secondary (biological) stage. It includes the removal of nutrients such as phosphorous and perhaps nitrogen and a high percentage of biochemical oxygen demand and suspended solids. Advanced waste treatment, also known as tertiary treatment, produces a high-quality effluent.

aeration - the process of dissolving gases from the air into water by turbulent mixing and molecular diffusion.

aerobic digestion - digestion of suspended organic matter by means of aeration.

algae - any of a group of chiefly aquatic nonvascular plants; most have chlorophyll. Excessive growths are called blooms.

algal growth potential (AGP) - the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory

conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

alkalinity - a measure of the weight of carbonates in water usually given in milligrams per liter (mg/l) as calcium carbonate and represents the buffering capacity of the water. Water with alkalinity less than 60 mg/l is considered soft and greater than 60 mg/l is considered hard.

armocoete - worm-like larval stage of the lampreys.

amphipods - invertebrate animals of the crustacean order Amphipoda that are generally characterized by laterally flattened bodies; comprising the sand fleas and related forms.

anadromous - fishes that ascend from their primary habitat in the ocean to fresh waters to spawn.

anchor gill net - gill net that has the ends secured by anchors and the top kept at the water surface by floats.

Anaerobic digestion - the degradation of organic matter brought about through the action of microorganisms in the absence of elemental oxygen.

aquatic fauna - animals growing or living in or frequenting water.

aquifer - a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs. If a well taps more than one aquifer, the principal aquifer will be the one that yields the greatest amount of water.

artesian - means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

aufwuchs - organisms that are attached to or move about on a submerged substrate, but do not penetrate it; also called periphyton.

available capacity of sewer - the difference between the design capacity of a sewer and the average daily flow recorded at a point in time.

bacteria - single-celled micro-organisms that lack chlorophyll. Some bacteria are capable of causing human, animal or plant diseases; others are essential in pollution control because they break down organic matter.

barbel - fleshy elongated projection found below the lower jaw, under the snout, or around the mouth in catfishes, cods, sturgeons, and other fishes.

barnacles - invertebrate animals of the crustacean order Cirripedia with feathery appendages for gathering food; free-swimming as larvae, but fixed to substrates and having a hard outer covering as adults.

bar screening - a wastewater treatment process during which the largest particulate matter is separated from the sewage by passing the sewage through coarse screens. This often is the first treatment received by waste.

bathymetry - measurement of the depth of a body of water, also the mapping of its floor.

bed load - soil, rock particles, or other debris rolled along the bottom of a stream by the moving water, as contrasted with the "silt load" carried in suspension.

bench mark - sites measuring natural phenomena in areas where man's activity has essentially no effect. These sites would be expected to continue at least as long as natural conditions exist.

benthic organisms - organisms living in or on bottom substrates in aquatic habitats.

biochemical oxygen demand (BOD)-- a microbiological measurement of the quantity of dissolved oxygen, expressed in milligrams per liter (mg/l), required to stabilize the demand for oxygen in a water sample, usually resulting from the process of microorganisms consuming organic matter (decomposition) and utilizing the available dissolved oxygen in the oxidation process. BOD is expressed as a result of five day (BOD₅) incubation of the sample at 20 degrees centigrade.

biodeposition - the process by which organisms deposit suspended materials onto the sediment.

biodisk - a relatively new treatment process which consists of a series of flat, parallel disks which are rotated while partially immersed in the waste being treated. Biological slime covers the surface of the disks and adsorbs colloidal and dissolved organic matter present in the wastewater. This process is quite effective for treating wastes which are *highly* concentrated.

biogeochemical cycle - paths by *which* elements that are essential to life circulate from the nonliving environment to living organisms and back again to the environment.

biological data - the kinds of organisms and how many of each are present in aquatic habitats.

biological waste water treatment - forms of wastewater treatment in which bacterial or biochemical action is intensified to stabilize, oxidize, and nitrify the unstable organic matter present. Biodisks, contact beds, trickling filters, and activated sludge processes are examples.

biomass - the quantity of living matter present at any given time, expressed as the mass per unit area or volume of habitat; frequently used as a measure of standing crop.

biostimulatory test - a test that determines the reaction of an organism to a given substance or set of conditions, such as cold, heat, and excessive nutrients. Algae growth potential is an example of this type of test.

biota - the total plant (flora) and animal (fauna) species living in a specific region or environment.

bioturbation - the process by which bottom sediments are disturbed by infaunal deposit feeders, primarily by their continual ingestion and reingestion of the sediments.

bivalves - molluscs with paired shells; including clams, oysters, and mussels.

bloodworms - segmented worms of the family Glyceridae that have a dark red respiratory fluid, are detritus feeders, and are often used as bait by sportfishermen.

bloom - high concentrations of algae or phytoplankton that occur when sufficient light and excess nutrients are available.

blowdown - the water discharged from a boiler or cooling tower to dispose of accumulated salts.

bottom trawl - any of a variety of cone or wedged-shaped nets towed along the bottom to catch demersal fish.

brackish - refers to water having a salt content between 0.5 and 18 parts per thousand (ppt).
Further qualified as low brackish, .5-5 ppt, and moderately brackish, 5-18 ppt.

brooding - reproductive mode in which adults retain developing eggs or embryonic stages until they are sufficiently developed to be released into the environment.

canal - an artificial waterway designed for navigation or for transporting water for municipal water supply, land irrigation, or drainage.

carapace - hard protective outer covering such as the shell of a blue crab.

carbon - a nonmetallic chemical element occurring in many inorganic compounds and all organic compounds. Diamonds and graphite are pure carbon; carbon is also present, with other substances, in coal, coke, and charcoal.

carnivores - animals that feed on organic matter.

cartilaginous fish - fish of the class Chondrichthyes, having a skeleton that is mostly cartilage rather than bone, such as sharks and rays.

catadromous - fishes that descend from their primary habitat in fresh water to the ocean to spawn.

caudal - pertaining to the tail, or the posterior end.

cells/volume - refers to the number of cells of any organisms which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters V.

Celsius (C) - the measure of temperature most commonly used by scientists. Water freezes at 0⁰ C (32 F) and boils at 100⁰ C (212⁰ F). To convert Celsius to Fahrenheit, $F = 9/5 C^0 + 32$. Celsius was formerly termed Centigrade.

centigrade - see Celsius.

cfs-day - the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

channel (watercourse) - an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.

chemical coagulation - the destabilization and initial aggregation of colloidal and finely divided suspended matter by the addition of a floc-forming chemical.

chemical oxygen demand (COD) - a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

chemical tissue analysis - measurement of the types and/or amounts of chemical substances present in the tissue of an organism.

chemosynthetic activity - the synthesis of organic matter from mineral substances, with the aid of chemical energy.

chlorination - the application of chlorine to water or wastewater, generally for the purpose of disinfection, but frequently in the process of photosynthesis, used as an indicator of plant biomass in water.

chlorine - a common element, best known as a heavy greenish yellow irritating toxic gas of disagreeable odor used chiefly as a powerful bleaching, oxidizing, and disinfecting agent in water purification and in making pesticides.

chlorophyll - a primary plant pigment (green) which functions in the process of photosynthesis, used as an indicator of plant biomass in water.

Chlorophyll a - a primary group of green pigments that occur in plant cells, chiefly in bodies called chloroplasts, that function in the process of photosynthesis, used as a measure of plant (or algal) biomass in the water. Expressed in micrograms per liter (ug/l). The exact levels of chlorophyll-a, needed to indicate a healthy stream, river, lake, or estuary have not yet been determined.

cilia - hair-like structures of cells, which beat rhythmically and cause locomotion in single cells and multicellular organisms, and which are used to create water currents and/or movement of particles.

cladocerans - invertebrate animals of the crustacean order Cladocera, each having a single sessile compound eye; often called water fleas.

clam bed - an area of bottom supporting a dense population of clams.

clarification - any process or combination of processes the primary purpose of which is to reduce the concentration of suspended matter in a liquid.

clarigester - a treatment process in which clarification and aerobic digestion occur in the same tank.

class - see phylogenetic group.

coastal plain - a lowland area extending in a gentle slope inland from the shoreline of an ocean.

coelenterates - invertebrate animals of the phylum Coelenterata (cnidaria) that are basically radially symmetrical; including jellyfishes, sea anemones, and hydroids.

coliform bacteria - rod-shaped bacteria common to the intestinal tract of man

and animals. The presence of high concentrations of coliform bacteria is taken as an indicator that human pathogenic organisms may also be present; however, coliforms themselves are harmless to man and are, in fact, useful in destroying organic matter in biological waste treatment processes. Expressed as Most Probable Number (MPN) per 100 milliliters of water. The presence of coliform does not always mean contamination with human wastes, since coliforms also grow in soil.

color - color in water can be caused by the presence of such things as plankton, decaying organic matter, industrial wastes, and sewage. A distinction is made between "true color" (the color of a water sample after turbidity has been removed by filtration) and "apparent color" (the color of an untreated water sample). True color is usually measured by comparing the color of a water sample to that of a fixed standard. Color is expressed in terms of "color units" where one color unit is the difference in tint produced by one milligram per liter of the chloroplatinate ion.

color unit - produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

comb jellies - invertebrate animals of the phylum Ctenophora that superficially resemble jellyfish (but have few or no tentacles and no stinging nematocysts) and that have cilia, which they use for swimming, arranged in long combs around their bodies; also called ctenophores.

combined sewage - sewage containing both domestic sewage and surface water or stormwater. It includes flow in heavily infiltrated sanitary sewer systems, as well as flow in combined sewer systems.

combined sewer overflow (CSO) - excess flow from an overloaded combined sewer.

comminutor - a device often used with, or in place of, bar screens. Instead of removing large particles, comminutors are designed to grind them into smaller particles, which are then removed by other processes.

complete flow - a term used to indicate that flow (discharge) figures are determined based upon a complete record (full range) of stage, as opposed to partial record flow where figures pertain only to a predetermined limited range in stage.

community - a natural assemblage of animals and plants interacting with each other and with abiotic components of the environment.

compaction - decrease in volume of sediments, as a result of compressive stress, usually resulting from continued deposition above them, but also from drying and other causes.

competition - interaction between organisms for limited resources needed for survival, including food, shelter, and space.

confined aquifer - an aquifer bounded above and below by impermeable beds or beds of distinctly lower permeability than that of the aquifer itself; it contains confined ground water.

contact stabilization process - a modification of the activated sludge process in which raw wastewater is aerated with a high concentration of activated sludge for a short period, usually less than 60 minutes, to obtain BOD removal by adsorption. The solids are subsequently removed by sedimentation and transferred to a stabilization tank where aeration is continued further to oxidize and condition them before their reintroduction to the raw wastewater flow.

contents - the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

continental shelf - the submerged edge of a continent extending from the low-water line to a region with a distinct change in slope.

control - designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

copepod - minute shrimp-like crustacean that are often the most common zooplankton in estuarine and oceanic waters.

copepodite - a juvenile stage of copepods.

crab pot - a baited cage with conical-shaped entrance ways, used to capture crabs.

crustacean - any of the large class Crustacea of mainly aquatic arthropods that characteristically possess chitinous exoskeletons and jointed appendages; including crabs and shrimps.

ctenophores - see comb jellies.

cubic feet per second (FT³/S, ft³/s) - the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

cubic feet per second per square mile (CFSM) - the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

cultch - shells or other material spread over oyster grounds by man, on which oyster larvae can attach and develop.

cypris - a planktonic larval stage of a barnacle that eventually attaches itself to a hard substrate and then metamorphoses into an adult.

DDT - (dichloro-diphenyl-trichloro-ethane) a colorless, odorless, water insoluble crystalline insecticide (C₁₂H₆Cl₄) that may concentrate in certain organisms and whose effects⁴ may be toxic.

datum - any level surface, line, or point used as a reference in measuring elevations.

decapods - invertebrate animals of the crustacean order Decapoda that are characterized by five pairs of legs; including crabs and shrimps.

decomposers,- organisms (chiefly bacteria and fungi) that break down nonliving matter, absorb some of the products of decomposition, and release compounds that become usable by producers.

demersal - living close to or on the bottom.

density - weight in grams of a unit volume (1 ml) of a substance.

dentrification - the anaerobic biological conversion of nitrates to nitrogen gas.

deposit feeders - infaunal organisms that meet their nutritional needs by either selectively or indiscriminately ingesting the sediments in which they live.

design capacity of sewer - the hydraulic capacity of any sewer when installed as indicated by the diameter of the pipe.

detergents - a term applied to a wide variety of cleansing agents used to wash clothes, dishes, and other articles. Generally, detergents are organic materials that are surfactants in aqueous solutions.

detritus - particulate matter, especially that of organic origin, floating in the water or settling to the bottom.

diatoms - unicellular algae of the division Bacillariophyta that have siliceous cell walls; a major division of primary producers found in aquatic ecosystems.

diatomaceous earth - soil composed of the siliceous cell walls of dead diatoms that have settled and accumulated on bottoms of bodies of water.

digester - a tank in which sludge is placed to permit digestion to occur. Also called sludge digestion tank.

digestion - the biological decomposition of organic matter in sludge, resulting in partial gasification, liquefaction, and mineralization.

digitizing - the process of coding points along various boundaries (watersheds, vacant land, gravity spheres) and sewer lines in a coordinate system.

dinoflagellates - aquatic, unicellular algae of the division Pyrrophyta that are major primary producers in temperate estuaries.

dip net - any of a variety of nets that are held by hand and used to catch fish or aquatic invertebrates: generally used in small streams.

discharge - the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

- mean discharge (MEAN) - the arithmetic mean of individual daily mean discharges during a specific period.
- instantaneous discharge - the discharge at a particular instant of time

disinfection - the killing of pathogenic (disease causing) bacteria and viruses found in wastewater.

dissolved - constitutes that material in a representative sample which passes through a 0.45 µm. membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on sub samples of the filtrate.

dissolved air flotation - a process designed to separate solids and liquids. This is accomplished by bubbling air through the liquid, which increases the buoyancy of the solids and lifts them to the surface of the liquid where they can be removed.

dissolved oxygen (DO) - the measurement of oxygen in water expressed in mg/l or in percent of saturation under existing ambient conditions, the amount present reflects chemical, physical, and biological activities in the water body. It can only be increased by aeration and the photosynthetic processes of aquatic matter.

dissolved solids, total (TDS) - the substances in water such as carbonates, sulfates, chlorides, nitrates, phosphates and metallic ions; iron, calcium, potassium, and others that pass through a fine, glass fiber filter (filterable residue).

diurnal vertical migration - the daily vertical movement of organisms up and down in the water column.

diversion - the taking of significant quantities of water from a stream or other body of water into a canal, pipe, or other conduit. (Applies to groundwater stations when pumping is significant.)

diversity - a measure of the complexity of an ecological community that is generally a function of both the number of species present and the relative proportions of their numbers.

diversity index - a numerical expression of evenness of distribution of aquatic organisms.

division - see phylogenetic group.

dominant yearclass - a segment of population composed of a single age group resulting from a spawn with a particularly high survival; this segment may make up a significant portion of the total population for a period of several years.

dorsal - pertaining to the back.

drain - a small artificial water course designed to drain swampy areas or irrigated lands. Theoretically, it is actually a small canal, but it is referred to as a "drain" in many localities.

drainage area - of a stream at a specified location of the site is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the site.

drainage basin - a part of the surface of the earth that is occupied by a drainage system which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

dredged spoil - the sediment removed by man from the bottoms of aquatic habitats.

drift net - gill net that is held upright by floats and counterweights and that drifts freely in the water column.

driller's log - description by the driller of the geologic materials penetrated from the land surface to the greatest depth of the well.

E

ecology - the study,of the interrelationships of organisms to one another and to the environment.

ecosystem - an interactive system which includes the organism of a natural community together with their environment.

ectoparasite - a parasitic organism that lives on, rather than in, its host and uses the host for energy and habitat.

effluent - wastewater or other liquid, partially or completely treated, or in its natural state, flowing out of a reservoir, basin, treatment plant, or industrial treatment plant, or. part thereof.

elutriation - a process of sludge conditioning whereby the sludge is washed with either fresh water or plant effluent to reduce the demand for conditioning chemicals and to improve settling or filtering characteristics of the solids. Excessive alkalinity is removed in this process.

enrichment - the addition of nitrogen, phosphorus, carbon compounds or other nutrients into a lake or other water way, increasing the growth potential for algae and other aquatic plants. Most frequently enrichment results from the inflow of sewage effluent or from agricultural runoff.

enteric bacteria - those which originate in the intestines of warm-blooded animals.

entrainment - the process of being drawn in and transported by the flow of water; frequently refers to the process whereby organisms are drawn into the cooling systems of electrical power plants and into water intake systems of other industrial facilities.

ephyrae - flattened juvenile medusoid jellyfish released from the top of the polyp form when strobilation is completed.

epibenthic - term used for organisms that live on the surfaces of bottom substrates.

epifauna - organisms that live on substrates in aquatic habitats; including crabs, shrimps, snails, oysters, and mussels.

equalization - the collection of sewage in a storage area to reduce large fluctuations in either its strength or flow.

estuary - any area where freshwater meets saltwater, specifically a semi enclosed, tidal, coastal body of saline water with a free connection to the sea within which sea water is measurably diluted with fresh water derived from land drainage. Examples are bays, river mouths and salt marshes. Estuaries are delicate ecosystems; they serve as nurseries, spawning and feeding grounds for a large group of marine life, provide shelter and food for birds and wildlife, and are remarkably able to store and recycle nutrients.

euglenoids - unicellular algae of the division Euglenophyta, which have one or two flagella.

euphotic zone - the zone in a water column through which there is sufficient penetration by sunlight for photosynthesis to occur.

euryecious - an organism adjusted to wide extremes in environmental conditions.

euryhaline - physiologically adapted for survival in aquatic environments over a broad range of salinities:

eutrophication - a process in which the nutrient levels and productivity within a water body increase, often resulting in depletion of dissolved oxygen. Especially affected are nitrogen and phosphorus. Algae and other microscopic plant life become super-abundant, thereby "choking" the water body.

evaporation - the process by which water is changed from the liquid into the vapor state. In hydrology, evaporation is vaporization that takes place at a temperature below the boiling point.

It is usually measured with

evaporation pans.

evapotranspiration - loss of water from a land area through transpiration of plants and evaporation from the soil.

eyespot - light-sensitive organelle found on some unicellular organisms, used for orientation to light.

family - see phylogenetic group.

fecal coliform bacteria - the coliform bacteria of fecal origin from warm-blooded animals expressed as most probable number (MPN) per 100 milliliters of sample. These bacteria produce gas when incubated at 44.5 C in a lactose broth medium. The EPA criteria for primary contact recreational waters in the Potomac River basin is a maximum log mean of 200 MPN/100 ml.

filter feeders - organisms that obtain food particles from the water column by filtering large quantities of water via a wide variety of mechanisms; mostly invertebrates, plus certain fishes.

filtration - the process of passing a liquid through a filtering medium (which may consist of granular material, such as sand, magnetite, diatomaceous earth, finely woven cloth, unglazed porcelain, or specially prepared paper) for the removal of suspended or colloidal matter.

finfish - term used to refer to true fishes; excluding shellfish species such as clams and oysters.

fishing effort - a quantifiable measure of the allotment of time, energy, money, and/or equipment for fishing.

fishery management - the application of the principles of population dynamics, fish culturing, and stocking, marketing, and conservation for the maintenance and sustained use of fish resources.

fission - asexual reproduction by cell division.

flagella - long hair-like appendages projecting from a cell; primarily used as a means of locomotion.

flatfish - any of a number of asymmetrical fishes that compose the order Pleuronectiformes and live on the bottom; having a laterally compressed body and both eyes on the same side of the head.

flatworms - unsegmented worms of the phylum Platyhelminthes, which are usually flattened, have soft bodies, and have no appendages.

flocculation - in water and wastewater treatment, the agglomeration of colloidal and finely divided suspended matter after coagulation by gentle stirring by either mechanical or hydraulic means.

In biological wastewater treatment where coagulation is not used, agglomeration may be accomplished biologically.

flood frequency - a relationship showing the probability that floods of a certain magnitude are equaled or exceeded in any year; or a similar relationship between flood magnitude and frequency of exceedance.

flood hydrograph - a continuous record of stage and discharge, with respect to time, produced only for the periods when the water elevation exceeds the chosen base.

flow - the volume of water passing a point in a given time interval; usually measured in cubic feet per second (cfs) or million gallons per day (mgd), 1 cfs = .65 mgd.

flow duration - a computed relationship that shows the percentage of time that specified daily discharges were equaled or exceeded in a stated number of complete years.

flyway - the principal migratory pathway by which birds travel between their summer breeding grounds and overwintering areas.

food chain - the sequence in which energy as food is transferred from one group of organisms to another (from a lower to a higher trophic level).

food web - the complex interaction of food chains in a biological community, including the processes of production, consumption, and decomposition.

forage species - a species that is actively sought by another as a major food source.

Foraminifera - order of benthic or planktonic protozoans that generally possess shells, which are usually composed of calcium carbonate.

fouling organisms - aquatic organisms that encrust submerged surfaces such as piers, boats, water intake ducts, etc.

fungi - plants which lack chlorophyll and derive their nourishment directly from other organisms (parasitic fungi) or from dead organic matter (saprophytic fungi). They include molds, yeasts, mildews, rusts, and mushrooms.

fusiform - tapering toward both ends, as in many diatoms.

fyke net - see hoop net.

G

gage height (G.H.) - the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage", although gage height is more appropriate when used with a reading on a gage.

gaging station - a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

gastropods - molluscs of the class Gastropoda, including shell-less as well as frequently coiled, univalve species; usually have distinct heads that bear sensory organs.

genus - see phylogenetic group; pl.-genera.

geochemical cycle - the process of introduction, storage, transformation, and output of a particular chemical component in the nonliving environment.

gill net - a type of gear that captures fish by entangling their gill covers in the meshes of the net.

grass shrimp - shrimp of the genus Palaemonetes, which are most abundant in submerged aquatic vegetation.

gravity sphere - aggregation of watersheds and subsheds within which connections to the existing sewer system are possible as defined by topography.

grit - the heavy suspended mineral matter present in water or wastewater, such as sand, gravel, or cinders.

grit chamber - a detention chamber or an enlargement of a sewer designed to reduce the velocity of flow of the liquid to permit the separation of mineral from organic solids by differential settling.

ground water - water in the ground that is in the zone of saturation, from which wells, springs and ground water runoff are supplied.

H

habitat - the sum total of environmental conditions of a specific place that is occupied by an organism, population, or community.

hand tongs - a hand-operated, hinged, grasping device used to collect oysters from shallow water.

hardness - a property of water causing formation of an insoluble residue when used with soap and causing formation of a scale in vessels in which water has been allowed to evaporate. It is primarily due to the presence of calcium and magnesium ions. It is generally expressed in milligrams per liter.

harpacticoids - copepods of the suborder Harpacticoida; most genera are meiofaunal.

haul seine - a net operated in the shallows, usually by hand, which is used to encircle fish and is then hauled to shore.

herbicide - any compound, usually a synthetic organic chemical, used to control plant growth.

herbivores - organisms that feed on plants (primary producers) and are considered primary consumers.

histopath analysis - determines changes in an organism's tissue structure as a result of some physical (parasitism) or chemical (toxic substances) activity.

holdfasts - structures by which seaweeds attach themselves to a solid substrate.

holoplankton - group of organisms that are planktonic throughout their lives.

hoop net - a tubular net consisting of a series of conical shaped components into which fish enter and become trapped. hydraulically overloaded - a condition in which the quantity of flow through a treatment plant is greater than that for which it is designed, which often results in the decrease in operational efficiency of the plant.

hydraulic clam dredge - apparatus used in clam harvesting, in which clams are collected on a towed conveyor-dredge.

hydraulic conductivity - the rate at which water moves through aquifer material under a unit hydraulic gradient, expressed as volume per unit time per unit cross section (ft³/day/ft or m³/day/m reduced to feet per day or meters per day).

hydrogen ion (pH) - the cation H⁺ of acids consisting of a hydrogen atom whose electron has been transferred to the anion of the acid

hydroids - invertebrate animals of the jellyfish class Hydrozoa (phylum Cnidaria).

hydrologic unit - a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit

Maps; each hydrologic unit is identified by an 8-digit number.

hydrology - the science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere.

ichthyoplankton - planktonic stages of fish (i.e., eggs and larvae). impingement - process of being forced and held against structures; frequently refers to the process whereby organisms are forced by water flow against screens in the water intake systems of electrical power plants and industrial facilities.

incineration - consists of burning the sludge to remove the water and reduce the remaining residues to a safe, non burnable ash. The ash can be disposed of safely on land, in some waters, or into caves or other underground locations.

indicator organisms - a readily identifiable species, often bacteria, commonly found among organisms of public health interest. For example, *E. coli* are considered to be bacterial indicators of the possibility of pollution from domestic sewage.

infauna - animals that live or burrow through bottom sediments.

infiltration - the flow or movement of water through the soil surface into the ground.

interceptor - a sewer that receives dry-weather flow from a number of transverse sewers or outlets and frequently additional predetermined quantities of storm water (if from a combined system), and conducts such waters to a point for treatment or disposal.

interface region - region in which saltwater and freshwater masses come into contact.

intertidal habitat - a shoreline area that is alternately covered and uncovered by tidal waters.

invertebrate - animal that has no backbone (i.e., lacking a notochord or a dorsal vertebrate column).

isohalines - lines drawn on a map connecting points of equal salinity.

isopods - invertebrate animals of the crustacean order Isopoda that are characterized by dorsal-ventrally flattened bodies.

J

jellyfish – invertebrate animals of the phyla Ctenophora (comb jellies) and Cnidaria (Coelenterata)

K

kinorhynchs - minute, superficially segmented, worm-like marine animals that feed on detritus and microscopic algae.

lagoon - a pond containing raw or partially treated wastewater in which aerobic or anaerobic stabilization occurs.

lake - an inland body of standing water, an expanded part of a river, or an impoundment formed by a dam.

land application - the discharge of raw or treated wastewater onto the ground for treatment or reuse. The wastewater penetrates into the ground where the natural filtering and straining action of the soil removes most of the pollutants. Three techniques are used: spray irrigation, rapid infiltration and overland flow.

landings - the quantity of fish and/or shellfish harvested.

land-surface datum - a datum plane that is approximately at the_ land surfade at the well.

LC 50 - the concentration of a substance which is lethal to fifty percent of the test organisms within a specific time period (96 hours).

leeches - segmented worms of the class Hirudinea, each having a distinct sucker at each end of a cylindrically-shaped body.

leptocephali - the transparent, leaf-shaped marine larvae of various eel species, including Anguilla rostrata.

livebearers - organisms that give birth to live young, as opposed to those that deposit eggs.

lithophytes - algae (seaweeds) that grow attached to submerged rocks or stones.

low brackish - having a salt content between 0.5 and 5 parts per thousand.

macrofauna - benthic animals larger than 0.5 millimeters.

macroinvertebrates - invertebrate organisms including larvae of deptera, mayflies, caddisflies and other insects, molluscs, crustaceans and worms that are generally visible to the unaided eye and retained on a screen with .595 millimeter (mm) mesh apertures. The community diversity index, D-Bar, is a mathematical expression of the number of individuals within the taxa represented.

macrophyton - large aquatic plants that can be seen without magnification, including misses and seed plants.

macroplankton - see macrozooplankton.

macrozooplankton - group of generally mobile zooplankters, that are usually retained by a plankton net with a mesh size of 505 micrometers.

main stem - the main body of a river or estuary, excluding its tributaries.

major ions - major ions include elements which are (or could be) in fairly high concentration in most natural waters, such as calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, and chloride.

marsh - soft wetland areas, usually with grasses and other low vegetation, that support a great variety of plant and animal life.

mass transport - a volume of water transported per unit time across a given plane in a body of water.

MBAS (methylene blue active substance) - a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

mean - the "average" value for a series of counts. The arithmetic mean (\bar{x}) is found by dividing the sum of all of the counts by the total number of observations. The geometric (log) mean is found by dividing the sum of the logs of the counts by the total number of observations and then transforming that value back into a natural number. Calculation of log means minimizes the influence of extreme values of highly variable data as in the case with bacterial counts.

Mean low water (MLW) - the average height of all low tides at a given location.

median value - the value of the middle item when items are arrayed according to size.

medusa - free-swimming life stage of coelenterate jellyfishes, having a disc or bell-shaped body of jelly-like consistency; pl.-medusa, adj.-medusoid.

megalops - last larval stage of decapods before they metamorphose into juveniles.

meicfauna - benthic animals between 0.5 and 63 micrometers in size.

mercury - a heavy metal, highly toxic if breathed or ingested. Mercury is residual in the environment, which accumulates in the organs and tissues of aquatic organisms, especially fish or shellfish.

mesohaline - having a salt content between 5 and 18 parts per thousand.

meroplankton - group of organisms that are planktonic for only a part of their life cycles.

mesozooplankton - group of zooplankters that can pass through a plankton net with a mesh size of 202 micrometers.

metamorphic stage - refers to the stage of development that an organism exhibits during its transformation from an innature form to an adult form. This development process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

meteorology - study of the earth's atmosphere, including its movements and other phenomena, especially as they relate to weather forecasting.

MGD - million gallons per day.

microbiota - organisms that are less than 63 micrometers in size, e.g., bacteria.

micrograms per gram (pg/g) - a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

micrograms per liter (UG/L, pg/L) - a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

microinverts - small animals (without backbones) that will pass through a U.S. Standard #30 sieve (0.595 millimeter mesh opening).

microstraining - the filtration of a fluid through a specially created media designed to remove essentially all of the fluid's suspended solids and colloidal material.

microzooplankton - group of zooplankters that can pass through a plankton net with a mesh size of 202 micrometers.

mid-depth habitat - term used for a region where waters are approximately 3 to 30 feet in depth: also called shoal habitat.

mid water trawl - any of variety of nets towed through the water column to capture pelagic fish.

milligrams per liter (MG/L, mg/L) - a unit expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

mixing zone - an area, contiguous to a discharge, in which dilution occurs such that there is a transition between effluent limitations and water quality standards.

moderately brackish - having a salt content between 5 and 18 parts per thousand; mesohaline.

molluscs - invertebrate animals of the phylum Mollusca, each having a soft, unsegmented body that is usually enclosed in a calcereous shell; including shellfish such as snails and clams.

morphology - the physical form or structure of plants or animals.

most probable number (MPN) - a statistical index of the number of coliform bacteria in a given volume of sample as derived by a specific laboratory test. It is used for appraising the sanitary quality of water.

mud flat - an unvegetated muddy region that is alternately exposed and covered by the tide.

mysid shrimp - invertebrate animals of the crustacean order Mysidacea that are shrimp-like in appearance and make up a significant component of the diet of many juvenile fish species.

N

nanoplankton - group of phytoplankters that are between 5 and 60 micrometers in size.

National Geodetic Vertical Datum of 1929 (NGVD) - a geodetic datum derived from a general adjustment of the first order level of both the United States and Canada.

It was formerly called "Sea Level Datum of 1929" or "mean sea level" in U.S. Geological Survey reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

native bacteria - those which are indigenous to a natural body of water.

natural trout waters - waters capable of supporting naturally sustaining trout populations.

nauplii - the earliest larval stages of zooplanktonic groups such as copepods and barnacles; sing.-nauplius; adj.-nauplioid.

nautical river mile - any of various units of distance used for sea and air navigation based on the length of a minute of arc of a great circle of the earth and differing because the earth is not a perfect sphere.

nekton - actively-swimming aquatic organisms such as fish and mammals.

nematocysts - stinging cells of many coelenterates.

nematodes - cylindrical worms of the group Nematoda that have no appendages and are parasitic or free-living, commonly called roundworms.

net plankton - group of phytoplankters that are larger than 60 micrometers.

neutralization - the adjustment of the pH of acidic or basic fluids.

nitrate nitrogen (NO₃-N) - the predominant form of inorganic nitrogen that supports algal production. Other inorganic nitrogen forms, such as nitrite nitrogen (NO₂-N) and ammonia nitrogen (NH₃-N) vary in abundance in streams. Lwage treatment plant effluents may contain high ammonia nitrogen concentrations if nitrification (conversion of NH₃-N to NO₃-N) is not a part of the treatment process.

nitrification - a microbial process in which nitrogenous matter in the form of ammonium ions is converted into nitrates.

nitrogen - a colorless, tasteless, odorless, gaseous element that constitutes 78percent of the atmosphere by volume and is a constituent of all living things.

NOAA - National Oceanographic and Atmospheric Administration.

nonpoint source - a discharge which originates over a broad area, such as storm water runoff from forested, agricultural, and urban areas. Distinguished from POINT SOURCE.

nudibranch - gastropods in which the shell is entirely absent in the adult form.

nuisance species - those species that interfere with normal recreational or occupational uses of a body of water.

nursery grounds - areas utilized by juvenile fish or shellfish during their development, such as striped bass in the Potomac estuary.

nutrients - an element or compound, primarily nitrogen and phosphorus, that are necessary for the growth, development, and reproduction of plants. An excessive input of nutrients into a water system may lead to algal blooms and eutrophication.

nutrient loading - the input of nutrients into a body of water, which leads to increased primary productivity (usually implies excess input of nutrients).

O

ocean - the great body of salt water which occupies two-thirds of the surface of the earth, or one of its major subdivisions.

odor - in water can be caused by a variety of materials, both natural and foreign, in the water body. Odor tests are made by using the human sense of smell, whereby a panel of "testers", in turn, each sniff dilutions of a water sample until that dilution with the least, but definitely perceptible, odor to all on the panel is determined.

organically overloaded - a condition in which the poundage of organic wastes entering a sewage treatment plant is greater than that for which it is designed. As with hydraulic overloading, this often results in a decrease in the operational efficiency of the plant.

oligochaetes - segmented worms of the class Oligochaeta (phylum Annelida) having segments that are similar from head to tail.

oligohaline - having a salt content between 0.5 and 5 parts per thousand.

omnivores - organisms that consume both animal and plant matter.

opossum shrimp - the mysid shrimp, Neomysis americana, which is common in the Potomac estuary.

order - see phylogenetic group.

organic carbon, total (TOC) - the total amount of organic material in water; determined by combustion method and expressed in mg/l. Natural waters usually contain less than 5 mg/l and greater values indicate organic contamination.

organic compounds - chemical compounds containing carbon, usually of living origin.

-organic groups - this component refers to the reporting of the presence of organic groups such as phenols or the methols, rather than of specific organic molecules, such as chloroform or DDT. Results are obtained from the application of analytic techniques such as mass spectrometry, NMR (Nuclear Magnetic Resonance) and IR (Infrared Spectroscopy).

organisms - any living entity, such as an insect, phytoplankter, or zooplankter.

organism count/area - refers to the number of organisms collected and enumerated in a sample adjusted to the number per area habitat, usually square meters (m²), acres, or hectares. Periphyton benthic organisms and macrophytes are expressed in these terms.

organism count/volume - refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (mL) or liters (L). Numbers of planktonic organisms can be expressed in these terms.

total organism count - is the total number of organisms collected and enumerated in any particular sample.

ortho phosphate ($0-PO_4$) - the soluble form of phosphorus that is utilized by algae for growth and generally is associated with domestic sewage discharge, industrial waste and agricultural runoff. Ortho phosphate greater than .03 mg/l in-lakes can support algal blooms.

ostracods - organisms of the crustacean order Ostracoda, each characterized by a carapace which completely encloses the body.

oyster bar - an area of sea bottom covered by oyster shells, frequently supporting dense populations of oysters.

oyster drill - the snail, Urosalpinx cinereus, which preys on oysters by boring small holes through their shells.

oyster seed - young newly settled oysters that are transplanted by man to new habitats for maturation.

oyster spat - oyster juveniles that have settled and attached to a substrate.

P

parapodia - appendages that are frequently paddle-like and that are found on each body segment of polychaete worms, used in locomotion, feeding, and respiration.

parameter - a variable such as temperature, salinity, or dissolved oxygen that sets the physical conditions in the environment.

partial-record station - a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

particle size - the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or *sedimentation* methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

parthenogenetic reproduction - reproduction by development of an unfertilized egg.

patent tongs - hydraulically operated grab-like apparatus operated from a boom on a boat to harvest oysters.

parts per million (ppm) - parts per million parts of water (by weight).

parts per thousand (ppt) - parts material per thousand parts of water (by weight), term generally used for salinity measurements as parts salt per thousand parts water.

pathogenic - capable of causing disease.

PCB (polychlorinated biphenyls) - a class of industrial compounds that are toxic environmental pollutants and tend to accumulate in animal tissue.

peak available capacity of sewer - the difference between the design capacity of a sewer and the peak flow which is calculated based on average daily flow.

pectoral fins - the front pair of fins on fishes, corresponding to the front legs of a four-limbed animal.

peeler crab - a blue crab 1 to 3 days before it sheds its shell.

pelagic - pertaining to organisms living in the water column.

percent composition - a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

periphyton - the community of microorganisms that are attached to or live upon submerged surfaces.

pesticides - chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

pH -the-negative_logarithm of the hydrogen ion concentration, parts hydrogen is a term used to express the intensity of the acid or alkaline condition of a solution. This hydrogen ion activity is expressed in moles per liter. The pH scale is "zero" to 14; a pH of 7.0 indicates that the water sample solution is neutral while readings lower than 7.0 denote increasing acidity and higher than 7.0 denote increasing alkalinity. Natural waters have a pH typically between 6.5-8.5.

phosphorus, total (TP) - all of the phosphorus forms in the sample (mg/l as P) including ortho phosphate, polyphosphate and organic phosphorus. Total phosphorus concentrations greater than .1 mg/l in streams can support algal blooms.

photosynthesis - the synthesis of organic compounds from water and carbon dioxide using light energy (photons) in the presence of chlorophyll.

phylogenetic group - a group of organisms defined by evolutionary origin; also called taxonomic category or taxon; categories from least to most specific include phylum (for animals) or division (for plants), class, order, family, genus, species, subspecies, variety, and form.

phylum - see phylogenetic group; pl.-phyla.

phytoplankton - group of passively drifting or weakly swimming organisms (animal or plant); sing.-plankter.

picocurie (PC, pCi) - one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A

picocurie yields 2.22 dpm (disintegrations per minute).

plankton - the community of suspended, floating, or weakly swimming organisms (animal or plant) that live in the open water of lakes and rivers; sing.-plankter.

planula larva - a freely-swimming larval stage of jellyfish, produced by sexual reproduction.

Pleistocene glacial age - a geological epoch of the Quaternary period of the Cenozoic Era, lasting from 2.5 million years to about 10,000 years ago, during which there were four glacial and three interglacial periods.

point source - a discharge with a definite outlet such as a pipe, tunnel or channel. Usually industrial and/or municipal discharges.

Distinguished from NONPOINT SOURCE.

polishing - the final treatment process which involves the conversion of ammonia nitrogen into nitrate and nitrite nitrogen (referring to waste-water treatment).

polychaetes - estuarine and marine segmented worms of the class Polychaeta (phylum Annelida) that have foot-like appendages called parapodia.

polychlorinated biphenyls (PCBs) - industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine used in chemical preparations for industrial products including electrical insulating fluids, hydraulic fluids, heat exchanger fluids, additives to plastics, inks and paints. They are similar in structure to organochlorine insecticides.

polyhaline - having a high salt content, between 18 and 30 parts per thousand.

polyp - the attached stage of a coelenterate that develops from a planula larva.

population - in general, a group of organisms of the same species occupying a particular habitat.

pound net - a type of stationary fishing gear with a long net attached to stakes (a wall), which directs the fish through a maze and into a trap or pocket.

precipitation - the discharge of water, in liquid or solid state, out of the atmosphere, generally upon a land or water surface.

predation - process of feeding by which one animal preys on another animal.

primary consumers - plant-eating organisms that make up the level. second trophic

primary producers - those organisms capable of synthesizing complex organic compounds from simple inorganic substances by photosynthesis (green plants) or by chemosynthesis, first trophic level.

primary productivity - a measure of the rate at which radiant energy is converted into new organic matter and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

primary treatment - the first major (sometimes only) treatment in a waste water treatment works, usually sedimentation; removes a substantial amount of suspended matter, but little or no colloidal and dissolved matter.

proboscis worm - invertebrate animal of the phylum Rhynchocoela that is carnivorous and characterized by a tubular tongue-like structure (proboscis) which it extends to capture prey.

protozoans - microscopic, single-celled organisms that have skeletons of siliceous spicules.

radiation (solar) - the process in which energy (as waves or particles) is emitted from the sun, transmitted through space, and absorbed by the Earth.

radiochemical species - refers to the individual radioactive elements that produce radioactivity, such as radium 226, cobalt 60, strontium 90, and tritium.

Radiolaria - order of single-celled organisms characterized by typical cellular structures.

radula - a rasping tongue-like organ used in food-gathering by snails

rainfall - the quantity of water that falls as rain, only, in a given period of time.

range - the highest and lowest values in a set of data.

receiving waters - rivers, lakes, oceans, or other water courses that receive treated or untreated wastewaters.

recoverable from bottom material - the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total

— amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion are likely to produce different analytical results.

regulation - the artificial manipulation of streamflow.

reservoir - a pond, lake, or basin, either natural or artificial, for the storage, regulation, and control of water

riffle - a stretch of choppy water caused by a shallow extending across a stream bed.

riparian - relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.

riparian right - a right (as access to or use of the shore, bed, and water) of one owning riparian land.

river basin - the total area drained by a river and its tributaries.

rooted aquatics - plants that are rooted to the bottom of a water body.

rotifers - minute aquatic invertebrates of the phylum Rotifera; also known as wheel animalcules, the name being suggested by the rotating motion of their ciliated crowns, which they use in feeding and locomotion.

runoff - the portion of the precipitation on the surface of the land that ultimately reaches the streams.

runoff in inches (IN, in) - shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

salt balance - phenomenon of salt discharge equaling salt input in a given body of water.

sand shrimp - shrimp of the genus Crangon.

sanitary sewer - a pipe that carries liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with varying quantities of groundwater and storm water that are not admitted intentionally.

scavengers - animals that eat dead plant or animal material.

screen record - information about openings that permit water to enter a well, including perforations and uncased sections of the aquifer.

sea anemone - invertebrate animal of the class Anthozoa; coelenterate that has tentacles and somewhat resembles a flower.

sea nettle - the stinging jellyfish *saora quinquecirrha*.

sea walnut - a species of the phylum Ctenophora (Mnemiopsis leidy) commonly occurring in the Potomac estuary.

sea (salt) water - the average salinity of sea water is 35 parts of salt by weight per 1,000 parts of water (equals 35 ppt). Brackish water has salinity of over 0.5 ppt.

seaweeds - macroscopic, multicellular species of benthic algae.

secondary consumers - carnivores that make up the third trophic level.

secondary productivity- the rate at which organic matter is produced by the heterotrophic organisms of a community.

secondary wastewater treatment - following primary treatment by sedimentation, the second step in most wastewater treatment systems in which biological organisms decompose most of the organic matter into an innocuous, stable form.

sediment - particulate organic and inorganic matter that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

sedimentation - the process of subsidence and deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid

below the point at which it can transport the suspended material. Also called settling.

semiandromous - fishes that ascend from their primary habitat in an estuary to fresh waters to spawn.

septic tank - an on-site system used for domestic wastes when a sewer line is not available to carry them to a treatment plant. The wastes are piped to underground tanks directly from the home or homes. Bacteria in the wastes decompose the organic matter and the sludge settles on the bottom of the tank. The effluent flows out of the tank into the ground through a system of drainage pipes. The sludge should be pumped out of the tanks at regular intervals.

sessile - permanently attached; not free to move about.

setting - process by which pelagic larvae attach to substrates.

shallow habitat - term used for a region where waters are less than 3 feet in depth.

shellfish - a general term used to describe commercially harvested molluscs or crustaceans.

shoal habitat - see mid-depth habitat.

silt - small-grained sediments ranging in size from .004 millimeters (mm) (4 microns) to .062 mm (62 microns).

siphons - tube-like structures used by some benthic organisms during feeding and respiration.

sludge - the accumulated solids separated from liquids, such as water or wastewater, during processing, or deposits on bottoms of streams or other bodies of water. The precipitate resulting from chemical treatment, coagulation, or sedimentation of water or wastewater that settles to the bottom, or is skimmed from the surface in the sedimentation tanks and must be disposed of by appropriate means.

soft crab - a blue crab after shedding and before its new shell hardens. soil moisture (soil water) - water diffused in the soil immediately below

the land surface (zone of aeration), from which water is discharged by transpiration in plants or by evaporation.

solute - any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

solvent - a liquid capable of dispersing or dissolving another substance.

species - a reproductively isolated group of interbreeding organisms; see phylogenetic group.

species diversity - the number of species in an ecological community. Generally, high species diversity makes the community more readily adaptable to new or changed stresses, and indicates a high quality environment.

specific conductance - a measure of the ability of a water to conduct an electrical current; measured in micromhos per centimeter at 25⁰C.

specific source - an artificial conduit or other conveyance where pollutants are discharged (from factories, sewage treatment plants, etc.) into a water body or aquifer.

spawning - the release of eggs and sperm or the release of brooded young.

spring - a place where water flows from bedrock or soil upon the land surface or into a body of water.

stage (complete) - the stage of a stream or lake is the height of the water surface above an established datum plane.

stage-discharge relation - the relation between gage height (stage) and volume of water per unit of time flowing in a channel.

stake gill net - gill net held in position by long stakes or poles spaced along the length of the net.

standing crop - the amount of organic material in a trophic level; usually expressed in terms of the number per unit area or in terms of biomass (i.e., the quantity of living matter); also called standing stock.

still fishing - the act of fishing from a stationary boat, other structure, or shoreline.

storage coefficient - the volume of water released from storage in a vertical column of 1.0 square foot, when the water table or piezometric surface declines 1 foot.

storm sewer - a conduit for carrying off surplus precipitation from the surface of the land (as opposed to carrying off wastewater and materials).

STP - sewage treatment plant.

stream - a body of water flowing in a natural channel as distinct from a canal.

streamflow - the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

stream-gaging station - a gaging station where a record of discharge of a stream is obtained. Within the Geological Survey this term is used only for those gaging stations where a continuous record of discharge is obtained.

strobilation - asexual body division in which jellyfish polyps produce ephyrae and eventually the medusoid sexual stage.

subsidence - the lowering of the elevation of the land surface due to withdrawal of subsurface fluids, resulting from the compaction of sediments composing an aquifer system.

substrate - the physical surface upon which an organism lives

surface area - of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered.

surface water - water on the surface of the Earth.

surface water telemetry - the surface water telemetry component identifies the type of system or equipment being used to transmit surface water information (primary stage data) from the data collecting site to a central receiving site.

surficial bed material - that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

suspended - (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

suspended, recoverable - the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 μ m membrane filter has been

digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are unlikely to produce different analytical results.

suspended sediment - the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

suspended-sediment concentration - the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment

mixture (mg/L).

suspended-sediment discharge - (tons/day) the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge in ft³/s times mg/L times 0.0027.

suspended-sediment load - quantity of suspended sediment passing a section in a specified period.

total sediment discharge - (tons/day) the sum of the suspended sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

mean concentration - the time weighted concentration of suspended sediment passing a stream during a 24-hour day.

suspended solids (SS) - the term "suspended solids" (colloidal and particulate matter such as clay, sand, and finely divided organic material, etc.) is synonymous with "suspended sediment"; however, it is generally used by sanitary engineers in connection with water treatment facilities when referring to small particles of solid pollutants present in wastewater which resist separation from the water by treatment, while "suspended sediment" is generally used by civil or hydraulic engineers in connection with sediment transport studies. Most of these materials settle out of the body of water and become bottom sediment as the water flow decreases. In sufficient quantities, these materials can clog the gills of fish and choke out plants, shellfish, and other life forms on the river bottom.

Suspended, total - the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 dun membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total".

swamp - wetland saturated with water, sometimes inundated with water; vegetation usually dominated by shrubs and trees.

T

tardigrades - animals of the phylum Tardigrada; characterized by short, cylindrical bodies, each with four pairs of stubby legs; commonly called water bears.

taxon - see phylogenetic group; pl.-taxa.

taxonomic category - see phylogenetic group.

taxonomy - the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is as follows:

Kingdom Animal
 Phylum Arthropoda
 Class Insecta
 Order Ephemeroptera
 Family Ephemeridae
Genus Hexagenia
Species Hexagenia limbata

temperature - a measure of the intensity aspect of heat energy present in a body of water.

tertiary treatment - the processes which remove pollutants not adequately removed by secondary treatment, particularly nitrogen and phosphorus; accomplished by means of sand filters, microstraining, or other methods (referring to wastewater treatment).

thermal pollution - discharge of heated effluents at temperatures that can be detrimental to aquatic life. Usually a concern with cooling water discharges from electric generating stations and industries using high temperature processes.

tidal excursion - the displacement of a parcel of water (or a float) during one half-tidal cycle.

tidal flats - marshy or muddy areas that are covered and uncovered by the rise and fall of the tide; the vegetated parts are called tidal marshes.

tidal marshes - vegetated areas that are covered and uncovered by the rise and fall of the tide.

time of travel - refers to the rate of movement of water, or waterborne materials, through a defined reach of stream channel for steady or gradually varied flow conditions. Determined by dye tracing methods where dye is injected at some location on a stream and detected at other locations downstream.

time-weighted average - computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tinntinnidae - family of microscopic planktonic protozoans having tubular or vase-shaped outer shells.

tons per acre-foot - indicates the dry mass of dissolved solids in 1 acrefoot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

tons per day - the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

topography - the physical features of a geographical area, particularly land elevations.

total - the total amount of a given constituent in a representative watersuspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total". (Note that the term "total" here indicates both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample).

total in bottom material - the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material".

Total Kheldal nitrogen (TKN) - the organic nitrogen, as found in plant cells, plus the ammonia nitrogen.

total load - (tons) the total quantity of any individual constituent, as measured by dry volume, that is dissolved in a specific amount of water (discharge) during a given time t . It is computed by multiplying the total discharge in ft³/s, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

total organic carbon (TOC) - the total amount of organic material in water.

total phosphorus (TP) - all of the phosphorus forms in the water sample (mg/l as P) including ortho phosphate, polyphosphate and organic phosphorus.

total, recoverable - the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and this the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

toxicity test - a test *which* determines the potency of a toxic substance by measuring the intensity of a biological response.

trace elements - elements of compounds that are necessary for the operation of living systems, but that are present in the environment only in minute quantities.

trace metals - trace metallic elements found in surface waters and sediments, the principal ones in the Potomac basin; strontium, aluminum, boron, barium and zinc.

transmissivity - the rate at *which* water of the prevailing kinematic viscosity is transmitted through a unit width under a unit hydraulic gradient.

transport processes - mechanisms that result either in displacement, advection, or mixing (turbulence) of water masses.

trickling filter - a filter consisting of an artificial bed of coarse material, such as broken stone, clinkers, slate, slats, brush, or plastic materials, over which wastewater is distributed or applied

in drops, films, or spray from troughs, drippers, moving distributors, or fixed nozzles, and through which it trickles to the underdrains, giving opportunity for the formation of zoological slimes which remove dissolved organic matter from the wastewater and reduce

the BOD₅.

trochopore - the free-swimming early life stage of some segmented worms and molluscs.

trolling - method of fishing in which the bait or lure is towed through the water.

trophic level - collection of organisms that occupy the same stratum of a food web, and that are the same number of steps from the primary producers. Primary producers (phytoplankton) constitute the first trophic level, herbivorous zooplankton the second, and carnivorous organisms the third and higher trophic levels in many estuarine ecosystems.

trot line - long line with bait attached at intervals. Fish trot lines have bait attached to hooks, and hookless lines are used for crabbing.

tunicates - organisms of the phylum Chordata that are invertebrate-like as adults but have larval stages with distinct chordate characteristics; commonly called sea squirts.

turbidity - an expression of the optical property of water that causes light to be scattered and absorbed rather than transmitted in straight lines. It is caused by the presence of a wide variety of suspended matter, such as clay, silt, plankton, etc., and is usually measured in terms of milligrams per liter, Jackson turbidity units, or nephelometric turbidity units (NTU).

tychoplankton - organisms of the benthic community occurring accidentally in the plankton.

ultraplankton - planktonic organisms less than 5 micrometers in length or diameter.

unconfined aquifer - an aquifer that has a water table; contains unconfined ground water.

unsaturated zone - the zone between the land surface and the water table containing water held by capillary, and containing air or gases generally under atmospheric pressure.

urban runoff - stormwater from city streets and gutters. It usually contains litter and organic and bacterial wastes. In the past, urban runoff has gone untreated, but recently it has been recognized as a significant pollutant that needs retention and treatment.

v

vacuum filter - a filter consisting of a cylindrical drum mounted on a horizontal axis, covered with a filter cloth, and revolving with partial submergence in the liquid to be treated. A vacuum is maintained under the cloth for the larger part of a revolution to draw the liquid through the filter cloth. Solids accumulate on the exterior of the drum as "cake" which is scraped off continuously.

var. - variety; a taxonomic category below the subspecies level, used to separate members of a species that have special, but similar, differences from other members of their species group.

veliger - free-swimming early life stage of molluscs.

ventral - pertaining to the lower surface.

vertebrate - animal that has a backbone (i.e., possessing a notochord or a dorsal vertebrate column).

viruses - a class of ultramicroscopic, filterable, infectious agents, chiefly protein in composition, which are typically inert except when in contact with certain living cells.

water column - word used to refer to a water body in its vertical extent.

waterfowl - aquatic or semiaquatic birds of the order Anseriformes (ducks, geese, and swans).

water-level - see water table.

water quality - the fitness of water for use, being affected by physical, chemical, and biological factors.

water-related data - any data having significance to users of water data or to those conducting water-resource projects or investigations. Examples are meteorological, water use, oceanographic, agricultural, demographic, etc.

watershed - the region drained by a stream, a river with its tributaries, a lake, or other bodies of water.

water table - that surface in a groundwater body at which the water pressure is atmospheric. It is defined by the levels at which water stands in wells that penetrate the water body just far enough to hold standing water. In wells which penetrate to greater depths, the water level will stand above the confining upper bed of the aquifer.

water year - In Geological Survey reports and statistics dealing with surface-water supply, the 12 month period of October 1 through September 30 is known as a water year. The water year is designated by the calendar year in which it ends and which includes 9 of 12 months. For example, the year ending September 30, 1959, is called the "1959 water year".

waste stabilization ponds - the oxidation of waste in ponds by sedimentation, the removal of settleable solids and the decomposition of this resulting sediment by microorganisms. The sludge is converted to inert residues and soluble organic substances. Decomposition of organic matter is the work of microorganisms, either aerobic or anaerobic. It is desirable to maintain aerobic conditions, since aerobic microorganisms cause the most complete oxidation of organic matter. Also referred to as lagooning or polishing, after previous treatment.

wastewater - the flow of used water from a community.

weighted average - generally refers to discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water passing a given location during the water year after thorough mixing in the reservoir.

well depth - the greatest depth below land surface at which water can

enter the well will be reported. For screened or perforated wells, the depth to the bottom of the screen or to the lowest perforations will be reported. For open-hole or open-end wells, the total depth will be reported.

wetlands - marshes, swamps, and other land-water interface areas that receive enough moisture and sunlight to support extensive growths of specially adapted vegetation.

winter jellyfish - the medusoid stage of Cyanea capillata, which is abundant during winter months in the Chesapeake Bay region.

WWTP - wastewater treatment plant.

yearclass - part of a species population consisting of all individuals produced during a given year (see also dominant yearclass).

Z

Zoea - early larval planktonic stage of many decapod crustaceans; including crabs and shrimp.

zooplankton - group of animals whose distributions in the water column are governed primarily by currents; sing.-zooplankton; include protozoans, entomostracans, and various larvae.

zone of saturation - the zone in which the functional permeable rocks are saturated with water under hydrostatic pressure.
in the zone of saturation will flow into a well, and is called ground water.

Water

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