

Definitions

Algae: Any of various primitive, chiefly aquatic, one-or multi-celled, nonflowering plants that lack true stems, roots, and leaves, but usually contain chlorophyll. Algae convert carbon dioxide and inorganic nutrients such as nitrogen and phosphorus into organic matter through photosynthesis and form the basis of the marine food chain. Common algae include dinoflagellates, diatoms, seaweeds, and kelp.

Algal bloom: A condition which occurs when excessive nutrient levels and other physical and chemical conditions facilitate rapid growth of algae. Algal blooms may cause changes in water color. The decay of the algal bloom may reduce dissolved oxygen levels in the water.

Ammonia (NH₃+): A colorless gas with a pungent odor. It is easily liquefied and solidified and is very soluble in water. Large quantities of ammonia are used in the production of nitric acid, urea and nitrogen compounds. Since ammonia is a decomposition product from urea and protein, it is found in domestic wastewater. Aquatic life and fish also contribute to ammonia levels in streams. NH₃ is the principal form of toxic ammonia.

Aquifer: An underground layer of rock or soil containing ground water.

Atrazine: An herbicide (trade name Aatrex) widely used for control of broadleaf and grassy weeds in corn.

Benthic: Living in or on the bottom of a body of water.

Benthos: Collectively, all organisms living in, on, or near the bottom substrate in aquatic habitats (examples are oysters, clams, burrowing worms).

Best management practices (BMPs): Management practices (such as nutrient management) or structural practices (such as terraces) designed to reduce the quantities of pollutants-- such as sediment, nitrogen, phosphorus, and animal wastes -- that are washed by rain and snow melt from farms into nearby receiving waters, such as lakes, creeks, streams, rivers, estuaries, and ground water.

Biochemical Oxygen Demand (BOD): The quantity of largely organic, materials present in a water sample as measured by a specific test. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Buffer strip: A barrier of permanent vegetation, either forest or other vegetation, between waterways and land uses such as agriculture or urban development, designed to intercept and filter out pollution before it reaches the surface water resource.

Coldwater fish: Fish such as trout and salmon; preferred water temperature ranges between 7-18 degrees C (45-65 degrees F); coolwater fish, such as striped bass, northern pike, and walleye, have a range between that of coldwater and warmwater fish.

Combined sewer system: A wastewater collection and treatment system where domestic and industrial wastewater is combined with storm runoff. Although such a system does provide treatment of stormwater, in practice, the systems may not be able to handle major storm flows. As a result, untreated discharges from combined sewer overflows may occur.

Combined Sewer Overflow (CSO): A pipe that discharges water during storms from a sewer system that carries both sanitary wastewater and stormwater. The overflow occurs because the system does not have the capacity to transport, store, or treat the increased flow caused by stormwater runoff.

Community water system: A public water system that has at least 15 service connections for year-round residents or that serves at least 25 year-round residents.

Conservation tillage: Any tillage and planting system that maintains at least 30% of the soil surface covered by residue after planting for the purpose of reducing soil erosion by water.

Contour: An imaginary line on the surface of the earth connecting points of the same elevation. A line drawn on a map connecting points of the same elevation

Critical habitat: Areas which are essential to the conservation of an officially-listed endangered or threatened species and which may require special management considerations or protection.

Detention: The process of collecting and holding back stormwater for delayed release to receiving waters.

Diazinon: marketed mostly for household use but is also used in agricultural applications. Spectracide and Bug-B-Gon are popular household pesticides that contain diazinon.

Discharge permit: Legal contract negotiated between federal and state regulators and an industry or sewage treatment plant that sets limits on many water pollutants or polluting effects from the discharges of its pipes to public waters.

Dissolved Oxygen (DO): The amount of oxygen present in the water column. DO refers to the volume of oxygen that is contained in water. Oxygen enters the water by photosynthesis of aquatic biota and by the transfer of oxygen across the air-water interface. The amount of oxygen that can be held by the water depends on the water temperature, salinity, and pressure.

Drainage area: An area of land that drains to one point; watershed.

Escherichia coli (E. coli): is a type of bacteria normally found in the intestines of people and animals. Although most strains of E. coli are harmless, some can cause illness or even death.

Ecological integrity: A measure of the health of the entire area or community based on how much of the original physical, biological, and chemical components of the area remain intact.

Ecoregion: A physical region that is defined by its ecology, which includes meteorological factors, elevation, plant and animal speciation, landscape position, and soils.

Ecosystem: Interrelated and interdependent parts of a biological system.

Erosion: Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical, chemical, or biological forces.

Eutrophic: Usually refers to a nutrient-enriched, highly productive body of water.

Eutrophication: A process by which a water body becomes rich in dissolved nutrients, often leading to algal blooms, low dissolved oxygen, and changes in community composition. Eutrophication occurs naturally, but can be accelerated by human activities that increase nutrient inputs to the water body.

Fecal coliform: Bacteria from the colons of warm-blooded animals which are released in fecal material. Specifically, this group comprises all of the aerobic and facultative anaerobic, gram-negative, non-spore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 degrees Celsius.

Geographic Information Systems (GIS): Computer programs linking features commonly seen on maps (such as roads, town boundaries, water bodies) with related information not usually presented on maps, such as type of road surface, population, type of agriculture, type of vegetation, or water quality information. A GIS is a unique information system in which individual observations can be spatially referenced to each other.

Ground water: The water that occurs beneath the earth's surface between saturated soil and rock and that supplies wells and springs.

Habitat: A specific area in which a particular type of plant or animal lives.

Hectare: An area with 10,000 square meters or 2.47 acres

Herbicide: A substance used to destroy or inhibit the growth of vegetation.

Hydrocarbons: Any of a vast family of compounds originating in materials containing carbon and hydrogen in various combinations. Some may be carcinogenic; others are active participants in photochemical processes in combination with oxides of nitrogen.

Hydrologic Soil Groups: groups of soils that, when saturated, have the same runoff potential under similar storm and ground cover conditions. The soil properties that affect the runoff potential are those that influence the minimum rate of infiltration in a bare soil after prolonged wetting and when the soil is not frozen. These properties include the depth to a seasonal high water table, the infiltration rate, permeability after prolonged wetting, and the depth to a very slowly permeable layer. The influences of ground cover and slope are treated independently and are not taken into account in hydrologic soil groups. The four hydrologic soil groups are A, B, C and D (SSURGO, 1999).

Impervious surface: A surface such as pavement that cannot be easily penetrated by water

Index of Biological Integrity (IBI): composed of several metrics that are combined to produce a total score. The sum of the metric scores is the IBI score. The scores range from 12 (worst) to 60 (best). The metrics include total number of fish, community function or feeding types, tolerant species, intolerant species, presence of hybrids, reproductive function, and abnormalities. The IBI is positively correlated with habitat quality as measured by the QHEI

Intermittent stream: A watercourse that flows only at certain times of the year, conveying water from springs or surface sources; also, a watercourse that does not flow continuously, when water losses from evaporation or seepage exceed available stream flow.

K factor: Indicates the susceptibility of a soil to sheet and rill erosion by water; a factor used in the Universal Soil Loss Equation and the Revised Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year (SSURGO, 1999).

Lake: A man-made impoundment or natural body of freshwater of considerable size, whose open-water and deep-bottom zones (no light penetration to bottom) are large compared to the shallow-water (shoreline) zone, which has light penetration to its bottom.

Land use: The types of activities on a given area (agriculture, residences, industries, etc.). Certain types of pollution problems are often associated with particular land uses, such as sedimentation from construction activities.

Leachate: Water or other liquid that has washed (leached) from a solid material, such as a layer of soil or debris. Leachate may contain contaminants such as organics or mineral salts. Rainwater that percolates through a sanitary landfill and picks up contaminants is called the leachate from the landfill.

Lentic: Still or standing (water).

Loading: The influx of pollutants to a selected water body.

Lotic: Flowing (water).

Macroinvertebrate: Invertebrates visible to the naked eye, such as insect larvae and crayfish.

Mitigation: Actions taken with the goal of reducing the negative impacts of a particular land use or activity.

Monitor: To systematically and repeatedly measure conditions in order to track changes.

Nitrate: A form of nitrogen which is readily available to plants as a nutrient. Generally, nitrate is the primary inorganic form of nitrogen in aquatic systems. Bacteria in water quickly convert nitrites [NO₂-] to nitrates [NO₃-] and in the process deplete oxygen supply.

Nitrogen (N) - Nitrogen an abundant element found in air, water, and soil. About 80 percent of the air we breathe is nitrogen. It is found in the cells of all living things and is a major component of proteins. Inorganic nitrogen may exist in the free state as a gas, N₂, or as nitrate NO₃, nitrite NO₂ or ammonia NH₃. Organic nitrogen is found in proteins, and is continually recycled by plants and animals. Nitrogen-containing compounds act as nutrients in streams, rivers, and reservoirs.

Nitrification: The oxidation of ammonia to nitrate and nitrite, yielding energy for decomposing organisms.

Non-Point Source Pollution (NPSP): Pollution originating from runoff from diffuse areas (land surface or atmosphere) having no well-defined source

No-till: The practice of leaving the soil undisturbed from harvest to planting except for nutrient injection. Planting or drilling is accomplished in a narrow seedbed or slot created by coulters, row cleaners, disk openers, or in-row chisels. Weed control is accomplished primarily with herbicides.

Nutrients: Chemicals that are needed by plants and animals for growth (e.g., nitrogen, phosphorus). In water resources, if other physical and chemical conditions are optimal, excessive amounts of nutrients can lead to degradation of water quality by promoting excessive growth, accumulation, and subsequent decay of plants, especially algae. Some nutrients can be toxic to animals at high concentrations.

Nutrient management: A BMP designed to minimize the contamination of surface and ground water by limiting the amount of nutrients (usually nitrogen) applied to the soil to no more than the crop is expected to use. This may involve changing fertilizer application techniques, placement, rate, or timing. The term fertilizer includes both commercial fertilizers and manure.

Orthophosphate: Orthophosphate is an inorganic form of phosphorus found in natural waters and readily available to plants. Organic forms of phosphorus found in natural waters are not plant available.

Parts per million (ppm): A unit of measurement; the number of parts of a substance in a million parts of another substance. Can be expressed as mass or volume. For example, 10 ppm nitrate in water means 10 parts of nitrate in a million parts of water or 10 milligrams of nitrate in one liter of water.

Pesticide: Any substance that is intended to prevent, destroy, repel, or mitigate any pest.

pH: The negative log of the hydrogen ion concentration (-log₁₀ [H⁺]); a measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The scale is 0-14.

Phosphorus: An element essential to the growth and development of plants, but which, in excess, can cause unhealthy conditions that threaten aquatic animals in surface waters.

Pollutant: A contaminant that adversely alters the physical, chemical, or biological properties of the environment. The term includes nutrients, sediment, pathogens, toxic metals, carcinogens, oxygen-demanding materials, and all other harmful substances. With reference to nonpoint sources, the term is sometimes used to apply to contaminants released in low concentrations from many activities which collectively degrade water quality. As defined in the federal Clean Water Act, pollutant means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

Point source: Any confined and discrete conveyance from which pollutants are or may be discharged. These include pipes, ditches, channels, tunnels, conduits, wells, containers, and concentrated animal feeding operations.

Qualitative Habitat Evaluation Index (QHEI): composed of several metrics that describe physical attributes of physical habitat that may be important in explaining species presence or absence and composition of fish communities in a stream. QHEI represents a measure of stream geography. The interrelated metrics include stream cover, channel morphology, riparian and bank condition, substrate, pool and riffle quality, and gradient. The QHEI is a score of the combination of these metrics, in which 100 is the best possible score. These attributes have shown to be correlated with stream fish communities

Reservoir: A constructed impoundment or natural body of freshwater of considerable size, whose open-water and deep-bottom zones (no light penetration to bottom) are large compared to the shallow-water (shoreline) zone, which has light penetration to its bottom.

Ridge-till: The leaving of the soil undisturbed from harvest to planting except for nutrient injection. Planting is completed in a seedbed prepared on ridges with sweeps, disk openers, coulters, or row cleaners. Residue is left on the surface between ridges. Weed control is accomplished with herbicides and/or cultivation. Ridges are rebuilt during cultivation.

Riffle: Area of a stream or river characterized by a rocky substrate and turbulent, fast-moving, shallow water.

Riparian: Relating to the bank or shoreline of a body of water.

Runoff: Water that is not absorbed by soil and drains off the land into bodies of water, either in surface or subsurface flows.

Sediment: Particles and/or clumps of particles of sand, clay, silt, and plant or animal matter carried in water.

Sedimentation: Deposition of sediment.

Soil Component Name: The name of the component (series, taxonomic unit, or miscellaneous area) of the soil map unit.

Soil Drainage Classes: Classes identifying the natural drainage condition of the soil and refers to the frequency and duration of periods when the soil is free of saturation; classes include excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained (SSURGO, 1999).

Soil Map Unit: Represents an area dominated by one major kind soil or an area dominated by several kinds of soil; identified and named according to the taxonomic classification of the dominant soil or soils (SSURGO, 1999).

Soil Textural Triangle: Soil textures are identified by the USDA textural triangle (loam, clay, etc.); the orientation of the each axis of the triangle indicate how to read the triangle to determine the textural class name.

Soil Texture: The relative proportion of the various soil separates (sand, silt, and clay) that make up the soil texture classes as defined by the soil textural triangle (Singer and Munns, 2002).

Storm drain: A system of gutters, pipes, or ditches used to carry stormwater from surrounding lands to streams or lakes. In practice storm drains carry a variety of substances such as sediments, metals, bacteria, oil, and antifreeze which enter the system through runoff, deliberate dumping, or spills. This term also refers to the end of the pipe where the stormwater is discharged.

Stormwater: Rainwater that runs off the land, usually paved or compacted surfaces in urban or suburban areas, and is often routed into drain systems in order to prevent flooding.

Stratification: Division of an aquatic community into distinguishable layers on the basis of temperature.

Stream: A watercourse that flows at all times, receiving water from groundwater and/or surface water supplies, such as other streams or rivers. The terms "river" and "stream" are often used interchangeably, depending on the size of the water body and the region in which it is located.

Substrate: The surface with which an organism is associated; often refers to lake or stream beds.

Subwatershed: A drainage area within a watershed.

Suspended solids: Organic and inorganic particles, such as solids from wastewater, sand, clay, and mud, that are suspended and carried in water

Sustainable use: Conserved use of a resource such that it may be used in the present and by future generations.

T factor: An estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period, the rate is expressed in tons per acre per year (SSURGO, 1999).

Total Suspended Solids (TSS): The weight of particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles. Differentiated from Total dissolved solids by a standardized filtration process, the dissolved portion passing through the filter.

Toxic: Poisonous, carcinogenic, or otherwise directly harmful to life.

Transport: The movement of a soil particle, nutrient, or pesticide from its original position. This movement may occur in water or air currents. Nutrients and pesticides can be attached to soil particles or dissolved in water as they move.

Tributary: A stream or river that flows into a larger stream or river.

Turbidity: A measure of the amount of light intercepted by a given volume of water due to the presence of suspended and dissolved matter and microscopic biota. Increasing the turbidity of the water decreases the amount of light that penetrates the water column. High levels of turbidity are harmful to aquatic life.

Universal Soil Loss Equation (USLE): An empirical erosion model designed to compute long-term average soil losses from sheet and rill erosion under specified conditions.

Warmwater fish: Prefer water temperatures ranging between 18-29 degrees C (65-85 degrees F); includes fish such as smallmouth bass, largemouth bass, and bluegill.

Water table: The depth or level below which the ground is saturated with water.

Watershed: The area of land from which rainfall (and/or snow melt) drains into a single point. Watersheds are also sometimes referred to as drainage basins or drainage areas. Ridges of higher ground generally form the boundaries between watersheds. At these boundaries, rain falling on one side flows toward the low point of one watershed, while rain falling on the other side of the boundary flows toward the low point of a different watershed