

# Glossary

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**Acid rain** — Rainfall with a pH of less than 5.6. One source is the combining of rain and sulfur dioxide emissions that are a by-product of the combustion of fossil fuels.

**Acre-foot** — An amount of water that covers one flat acre to a depth of one foot. Equal to about 326,700 gallons, or 43,560 cubic feet.

**Activity day** — Any part of a day during which an individual participates in a specific outdoor recreation activity.

**Adhesion** — The attraction between molecules that causes matter to cling or stick to *other* matter.

**Adsorption** — The adhesion of one substance to the surface of another; clays, for example, can adsorb phosphorus and organic molecules.

**Aeration** — The addition of air to water or to the pores in soil.

**Aerobic** — Characterizing organisms able to live only in the presence of air or free oxygen, and conditions that exist only in the presence of air or free oxygen.

**Aggradation** — The process of building up a streambank through sediment deposition.

**Algae** — Small aquatic plants which occur as single cells, colonies, or filaments.

**Algal bloom** — Rapid growth of algae on the surface of lakes, streams, or ponds; stimulated by nutrient enrichment.

**Alkali** — Any strongly basic substance of hydroxide and carbonate, such as soda, potash, etc., that is soluble in water and increases the pH of a solution.

**Alkaline** — The presence of alkalies in water or soil in amounts sufficient to raise the pH value above 7.0.

**Alluvial** — Refers to a feature that results from sediments deposited by flowing water. The material itself is called alluvium.

**Alluvium** — Sand, clay, and other earth materials deposited along riverbeds and floodplains by streamflow or glacial action.

**Anaerobic** — Biological activity in the absence of free oxygen. The oily-looking black mud found in swampy situations forms due to anaerobic decomposition of algae and plants.

**Animal Unit Month (AUM)** — The amount of forage consumed monthly by one cow with one calf. Used in discussions of livestock carrying capacity and stocking rates.

**Annual flood** — The highest peak discharge of a stream in a water year.

**Appropriated water** — Water from a stream, reservoir, or other source reserved for a specific use under state water-right regulations.

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**Appropriation doctrine** — The doctrine under which the first user of water for a beneficial use acquires a priority right to continue the use.

**Aquifer** — A body of ground water. (This is not a lake in a cave; see “ground water.”)

**Aquifer system** — A series of (more or less) interrelated aquifers providing a source of ground water throughout a large area.

**Arable** — Suitable for cultivation.

**Arid** — Describes regions where precipitation is insufficient in quantity for most crops and where agriculture is impractical without irrigation.

**Artesian aquifer** — An aquifer bounded above and below by earth materials of significantly lower permeability than the aquifer itself; contains confined or artesian water. (Also called a **confined aquifer**).

**Artesian water** — Ground water under pressure greater than atmospheric pressure. (Also called **confined water**).

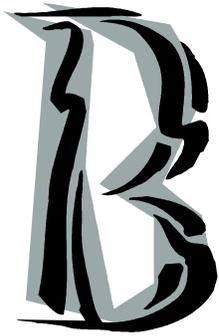
**Artesian well** — A well tapping an artesian aquifer. The water level in such a well rises above the artesian aquifer to a point at which the artesian pressure equals atmospheric pressure. An artesian well will flow if the artesian pressure exceeds atmospheric pressure at land surface.

**Atmospheric** — The layer of gasses surrounding the earth and composed of considerable amounts of nitrogen, water vapor, and oxygen.

**Autecology** — The study of *individual organisms* in their environment.

**Average annual runoff (yield)** — The average of water-year runoff for a total period of record; measured in inches or acre-feet.

**Average flow** — The average of annual volumes converted to an average yearly rate of flow; measured in cubic feet per second (cfs).



**Bank-full** — The maximum discharge capacity of a channel; further discharge spreads onto the floodplain.

**Bank stabilization** — Implementation of structural features along a streambank to prevent or reduce bank erosion.

**Bank storage** — The water which infiltrates the banks of a stream channel during high flows or floods, is stored there, and is gradually released to the stream after the high water recedes.

**Base flood (100-year flood)** — The flood having a 1 percentage probability of being equaled or exceeded in a given year at a designated location. It may occur in any year or even in successive years if the hydrologic conditions are conducive to flooding.

**Base flow** — Streamflow derived primarily from ground water contributions to the stream.

**Basin** — The area of land that contributes runoff from precipitation to a particular stream or river.

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**Bed load** — The particles in a stream channel that mainly move by jumping, sliding, or rolling on or near the bottom of the stream.

**Beneficial use of water** — Water used for the following purposes: domestic (homes, motels, human consumption, etc.), irrigation (crops, lawns), power (hydroelectric), municipal (water supply of a city or town), mining (hydraulic, drilling), industrial (commerce, trade, industry), fish and wildlife preservation, aquaculture (raising fish etc. for commercial purposes), recreational (boating, swimming), stock watering (for commercial livestock), water quality, frost protection (misting or spraying crops to prevent frost damage), heat control (water crops to prevent heat damage), ground water recharge, agriculture, etc.

**Benefit-cost ratio** — The relationship of the economic benefits of an action to its costs.

**Benthic region** — The bottom of a body of water, supporting the benthos.

**Benthos** — All the plant and animals living on or closely associated with the bottom of a body of water.

**Best Management Practices (BMPs)** — A practice which is determined by the state to be the most effective and practicable method of preventing or reducing the amount of pollution generated by pollution sources. Determination is made after public participation and review of all other alternatives. (From the Federal Water Pollution Control Act)

**Bioassay** — Laboratory analytical test in which the effects of a waste stream or effluent upon living organisms are measured.

**Biochemical oxygen demand (BOD)** — A measure of the amount of oxygen potentially removed from aquatic environments by aerobic microorganisms for their metabolic requirements. Measurement of BOD is used to determine the level of organic pollution of a stream or lake.

**Biological community** — All of the living things in a given environment.

**Biomass** — The weight of biological matter. Standing crop is the amount of biomass (e.g., fish or algae) in a body of water at a given time.

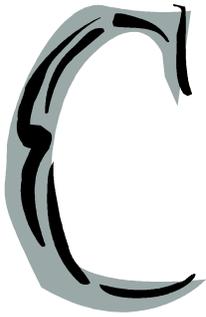
**Biome** — An extensive community of plants and animals whose composition is determined by soil and climate.

**Biota** — The plant and animal life in a region or ecosystem.

**Boiling point** — The temperature at which a liquid boils. For water, it is 212° Fahrenheit (F) or 100° Celsius (C) at sea level. The boiling point of water decreases with elevation.

**Braided stream** — A stream or river having multiple, dynamic, diverging, and converging channels, operating within a single, usually sandy streambed. Characteristic of intermittent or highly variable flows.

**Buried drain** — A covered drain usually made of clay, concrete, or plastic pipe installed beneath the ground surface at a planned grade and depth.



**Capacity (fishing and hunting)** — An estimate of a number of hunter-days or fisherman-days which are available for use when all habitat is utilized at sustainable harvest levels.

**Capacity (sediment)** — The total amount of sediments a stream can move, including bed, suspended, and dissolved loads.

**Capillary action** — The action by which water is drawn around soil particles because there is a stronger attraction between the soil particles and the water molecules than between the water molecules themselves.

**Carrying capacity (economic)** — The number and type of species which a particular habitat can sustain.

**Channelization** — The artificial enlargement or realignment of a stream channel, generally straightening, shortening, and steepening the channel.

**Chemical oxygen demand (COD)** — A measure of the amount of oxygen needed to oxidize organic and inorganic material present in water or sediment; a measure of the organic and inorganic pollutant level of sewage and industrial waste water.

**Chlorination** — The treatment of waste water or drinking water with chlorine to kill pathogens.

**Cirrus** — A principal cloud type found at high altitudes and composed of ice crystals collected into delicate wisps or patches.

**Cliff and slope** — A terrain type made up of multiple rock terraces that more or less stair-step down to a stream. Formed because some rock layers (strata) are more erosion-resistant than others.

**Climate** — Meteorological elements that characterize the average and extreme conditions of the atmosphere over a long period of time at any one place or region of the earth's surface.

**Closed basin** — A drainage basin having no natural outlet.

**Cloud** — A visible mass of minute water and/or ice particles in the atmosphere above the earth's surface.

**Cloud seeding** — Any process of injecting a substance into a cloud for the purpose of influencing the cloud's subsequent development. Ordinarily, this refers to the injection of a nucleating agent, which creates a nucleus around which precipitation will form.

**Coagulation** — The process, such as in treatment of drinking water, by which suspended sediments, plankton, detritus, and pathogens become chemically "stuck together" into a floc which settles out.

**Coal slurry pipeline** — A pipeline that transports pulverized coal suspended in liquid, usually water.

**Cohesion** — The ability of a substance to stick to itself.

**Coliform bacteria** — A group of organisms found in the colons of animals and humans but also in natural soil and water. The presence of coliform bacteria in water is an indicator of possible pollution by fecal material.

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**Compact** — An agreement between certain states, individuals, etc., concerning their mutual water interests.

**Competency (of a stream)** — A description of the largest item of bed load a stream can move. This is affected by particle shape, dimensions, and density, as well as discharge and turbulence of flow.

**Condensation** — The process by which a vapor becomes a liquid or solid; the opposite of evaporation. In meteorological usage, this term is applied only to the transformation from vapor to liquid.

**Conditional water permit** — An authorization for the permittee to construct any facilities (such as a well and irrigation system) and to begin utilization of the water. A water right and a water permit are not the same thing. See **water right**.

**Cone of depression** — A cone-shaped depression defining the area of influence of a pumping well in the potentiometric surface of an aquifer.

**Confluence** — The place where streams meet.

**Conservation** — The continuing protection and management of natural resources in accordance with principles that assure long-term economic and social benefits concurrent with perpetuation of the natural system.

**Conservation tillage** — A level of reduced tillage combined with one or more soil and water conservation practices.

**Consumption use** — The difference between the total quantity of water withdrawn from a source for any use and the quantity of water returned to the source (e.g., the release of water into the atmosphere; the consumption of water by man, animals, and plants; and the incorporation of water into the products of industrial or feed processing).

**Continental divide** — A drainage divide separating the rivers which flow toward opposite sides of a continent.

**Contributing area** — That portion of a watershed that contributes to measured runoff under normal conditions.

**Cost allocation** — The procedure for dividing total financial cost among the benefiting parties.

**Cost-sharing** — The procedure for implementing the cost allocation in a legally binding agreement between or among the participants.

**Creek** — A small stream of water that serves as the natural drainage course for a drainage basin. The term is relative according to size. Some creeks in a humid region would be called rivers if they occurred in an arid area.

**Crest** — (1) The top of a dam, dike, or spillway. (2) The highest elevation reached by floodwaters flowing in a channel.

**Croplands** — Land currently tilled, including cropland harvested, land on which crops have failed, summer fallowed land, idle cropland, cropland planted in cover crops or soil improvement, crops not harvested or pastured, rotation pasture, and cropland being prepared for crops, or newly seeded cropland. Cropland also includes land planted to vegetables and fruits, including those grown on

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farms for home use. All tame hay is included as cropland. Wild hay is excluded from cropland and included in pasture and range.

**Cubic feet per second (CFS)** — A standard measurement of stream discharge. Harder to measure than it sounds. Always an estimate based on multiple measurements. One cubic foot per second is equal to the discharge in a stream of a cross section one foot wide and one foot deep, flowing with an average velocity of one foot per second; equals 448.8 gallons per minute.

**Cultural landscape** — Man-made features of a region reflecting land-use patterns, population distribution, and other activities of man that have altered the natural landscape.

**Cumulonimbus** — (Commonly called thundercloud, thunderhead, thunderstorm.) A principal cloud type; the ultimate stage of development of cumulus clouds. Cumulonimbus clouds are very dense and very tall, commonly 5 to 10 miles in diameter, and sometimes reaching heights of 12 miles or more. The upper portion is at least partly composed of ice crystals, and it often takes the form of an anvil or vast plume. The base of the cloud is invariably dark and is often accompanied by low, ragged clouds.

**Cumulus** — A principal cloud type characterized by vertical development; usually isolated with a dark, nearly horizontal base and upper parts resembling domes or towers.

**Current** — The portion of a stream or body of water that is moving with a velocity much greater than the average of the rest of the water.



**Dam** — A structure of earth, rock concrete, or other materials designated to retain water, creating a pond, lake, or reservoir.

**Dead reservoir storage** — The volume of water in a reservoir stored below the lowest outlet or operating level.

**Decomposition** — The transformation of organic molecules (e.g., sugar) to inorganic molecules (e.g., carbon dioxide and water) through biological and non-biological processes.

**Degradation** — The process of lowering the elevation of stream reach through erosion of bed material.

**Demand** — (1) The numerical expression of the desire for goods and services associated with an economic standard for their attainment. (2) The requirement of a particular user group.

**Demography** — The statistical science dealing with the distribution, density, vital statistics, etc., of population.

**Dendritic** — A drainage pattern in which tributaries branch irregularly in all directions from and at almost any angle to a larger stream. From an aerial view, it resembles the branching pattern of trees.

**Depletion** — Loss of water from surface water reservoirs or ground water aquifers at a rate greater than that of recharge.

**Detention dam** — An artificial barrier commonly used for temporarily impounding water. (Also called retention dam.)

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**Detritus** — Another term for sediments; often used to refer to broken-up organic debris such as particles of wood and leaves, etc.

**Dew** — The droplets of water condensed from air onto warm surfaces when the temperature falls.

**Dew point** — The temperature at which a gas or vapor condenses to form a liquid; the point at which dew begins to form.

**Dike** — An embankment to confine or control water. See **levee**.

**Discharge** — The total flow at a given point on a stream at a given moment in time. It includes water and both dissolved and suspended sediments.

**Dissolved** — A condition where solid particles mix, molecule by molecule, with a liquid and appear to become part of the liquid.

**Dissolved load** — Sediments carried in solution. The composition of the dissolved load depends on the geology of the basin and the acidity of the local precipitation.

**Dissolved oxygen (DO)** — The amount of molecular oxygen (O<sub>2</sub>) freely available in water; necessary for aquatic life and the oxidation of organic materials.

**Disposal system** — A system for the disposing of wastes, either by surface or underground methods; includes sewer systems, treatment works, disposal wells, and other systems.

**Diversion** — The transfer of water *from* a stream, lake, aquifer, or other sources of water by a canal, pipe, well, or other conduit to another watercourse or to the land, as in the case of an irrigation system. Contrast with *instream* use.

**Domestic consumption (use)** — The quantity of water used for household purposes such as washing, food preparation, and bathing.

**Drainage area** — The land area contributing runoff to a stream or other body of water, and generally defined in terms of acres or square miles.

**Drainage divide** — A natural ridge on the land surface which divides one drainage area from another.



**Easement** — A legal instrument enabling the giving, selling, or taking of certain land or water rights without transfer or title, such as for the passage of utility lines.

**Ecology** — The study of the interrelationships of living things to one another and to their environment.

**Ecosystem** — A community of animals, plants, and bacteria, and its interrelated physical, chemical, and biological environment.

**Eddy** — A point of flow reversal, generally downstream of a large object partially interrupting the overall flow pattern.

**Effluent** — The sewage or industrial liquid waste which is released into natural waters by sewage treatment plants, industry, or septic tanks.

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**Emergents** — Plants rooted in submerged or saturated soils. Cattails are a typical emergent species in ponds or marshes, watercress in streams.

**Endangered species** — Any plant or animal species on the verge of extinction throughout all or a significant area of its range; identified by the Secretary of the Interior as “endangered” in accordance with the 1973 Federal Endangered Species Act.

**Energy** — The capacity to perform work, or the potential for power and activity; energy may be captured or held in living matter (e.g., food is stored energy).

**Enhancement** — Emphasis on improving the value of particular aspects of water and related land resources.

**Environmental impact statement (EIS)** — A required evaluation of the effects of actions or programs on the natural environment. The National Environmental Policy Act of 1969 requires, in some circumstances, that an EIS be prepared.

**Ephemeral stream** — A stream that flows only during and following precipitation in the immediate area (= intermittent stream). Contrast with *permanent* stream.

**Epilimnion** — The uppermost, warmest, well-mixed layer of a lake during summertime thermal stratification.

**Erosion** — The wearing down or washing away of the soil and land surface by the action of water, wind, or ice.

**Eurythermic** — Organisms capable of tolerating a wide range in environmental temperatures.

**Eutrophication** — The natural process by which lakes and ponds become enriched with dissolved nutrients and sediments, resulting in increased growth of algae and large rooted and/or floating plants.

**Evaporation** — The process by which a liquid changes to vapor.

**Evapotranspiration** — The loss of water from a land area through evaporation from the soil and through plant transpiration.



**Fauna** — The entire animal population of a specific region and/or time.

**Feasibility study** — A complete assessment of alternative courses of action to solve one or more problems, to meet needs, and to recommend the most practical course of action consistent with state and local planning objectives.

**Flood** — The temporary inundation of normally dry land areas resulting from the overtopping of the natural or artificial confines of a river or other body of water.

**Flood control** — The prevention or reduction of flood damages by structural and nonstructural measures.

**Flood damage** — The economic loss caused by floods including damage by inundation, erosion, or sediment deposition. Damages also include emergency costs and business or financial losses.

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**Flood frequency** — An expression or measure of how often a hydrologic event of a given size or magnitude should, on an average, be equaled or exceeded. For example, a 50-year frequency flood (2% chance) should be equaled or exceeded, on the average, once in 50 years.

**Flood probability** — The statistical probability that a flood of a given size will be equaled or exceeded in a given period of time.

**Flood stage** — The stage at which overflow of a stream of body of water from its channel begins.

**Floodplain** — The area submerged by maximum river flow, usually during snowmelt or after major storms. Usually composed of alluvium deposited during such events.

**Floodplain management** — The operation of a program of corrective and preventive measures for reducing flood damage, including but not limited to, flood control projects, floodplain land use regulations, floodproofing of buildings, and emergency preparedness plans.

**Floodproofing** — Any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage.

**Floodway** — The channel of a river or stream and those parts of the adjacent floodplain adjoining the channel that is required to carry and discharge the base flood.

**Flora** — The entire plant population of a specified region and/or time.

**Flow** — (1) The velocity of water, e.g., feet per second (fps).  
(2) The rate of water discharged from a source; expressed in volume per unit time, e.g., cubic feet per second (cfs).

**Flow augmentation** — The addition of water to a stream, especially to meet instream flow needs during low stream flows.

**Flowing well** — A well that yields water at the land surface without pumps or other means or raising water to the land surface. See **artesian well**.

**Flushing rate** — The rate at which water enters and leaves a lake relative to lake volume, usually expressed as time needed to replace the lake volume with inflowing water.

**Food web** — Pattern of production and consumption of organic matter in an ecosystem. Green plants are the major ultimate source of energy for all food chains.

**Fossil fuels** — Hydrocarbons such as natural gas, petroleum, oil, coal, or any fuel derived from such materials for the purpose of creating heat or power.

**Free-flowing** — A stream channel without artificial restrictions.

**Gaging station** — a particular site on a stream, canal, lake, or reservoir where hydrologic data, especially flow volumes, are collected.

**Gallon** — A unit of volume. A U.S. gallon contains 231 cubic inches, 0.133 cubic feet, or 3.785 liters. One U.S. gallon of water weighs 8.3 pounds.



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**Gallons per minute** — A unit expressing rate of discharge, typically used in measuring well capacity.

**Geology** — The science that studies the physical nature and history of the earth.

**Geothermal energy** — Energy that can be extracted from the earth's internal heat, such as naturally occurring warm or hot ground water found in the earth's crust.

**Glacial drift** — All earth material transported and deposited by the ice and/or by water flowing from a glacier.

**Glacial outwash** — Stratified material, chiefly sand and gravel deposited by meltwater streams in front of the margin of a glacier.

**Glacial till** — All earth material deposited directly by a glacier with little or no stratification or reworking by meltwater.

**Glacier** — A huge mass of ice, formed on land by the compaction and recrystallization of snow, that moves very slowly downslope or outward due to its own weight.

**Graded** — A condition approximating equilibrium between a stream's capacity and actual sediment load. Subject to continual adjustment and disturbance.

**Gradient** — Degree of incline; the steepness of a slope.

**Gram** — The basic unit of weight in the metric system, equal to 1/28<sup>th</sup> of an ounce or 0.0022046 of a pound.

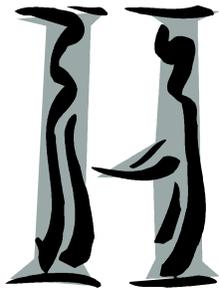
**Grassed waterway or outlet** — A natural or constructed waterway, usually broad and shallow and covered with erosion-resistant grasses, suitable to resist potential damages resulting from runoff.

**Ground water** — Water that has infiltrated porous or highly fractured rock formations. It moves in response to gravity just as surface water does, but the movements may be constrained by both overlying and underlying impermeable rock layers.

**Ground water overdraft** — The portion of ground water withdrawals that exceeds recharge; sometimes called ground water mining.

**Ground water recharge** — The inflow to a ground water aquifer.

**Growing season** — The number of consecutive days having a minimum temperature above 32°F.



**Habitat** — The native environment where a plant or animal naturally grows or lives.

**Hail** — Precipitation that forms into balls or lumps of ice over 0.2 inches in diameter. Hail is formed by alternate freezing and melting as it is carried up and down by turbulent air currents within a cloud.

**Hardwater** — Water with relatively high levels of dissolved minerals such as calcium, iron, and magnesium. Contrast with *soft* water.

**Headward** — Toward the headwaters, or stream origin.

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**Headwaters** — The source and upper reaches of a stream; also the upper reaches of a reservoir.

**Holistic wildlife management** — A system that considers all species, as opposed to the “featured species” concept that selects only a few species for management.

**Hydraulics** — The study of liquids, particularly water, under all conditions of rest and motion.

**Hydric soil** — A soil that, in its undrained condition, is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions favoring the growth and regeneration of hydrophytic vegetation.

**Hydroelectric plant (conventional)** — A hydroelectric power plant that utilizes streamflow only once as the water passes downstream.

**Hydroelectric plant (pumped storage)** — A hydroelectric power plant that generates power during peak load periods by using water pumped into a storage reservoir during off-peak periods.

**Hydroelectricity** — Electric energy produced by water-powered turbine generators.

**Hydrograph** — A graphic representation of stream discharge over a given period of time.

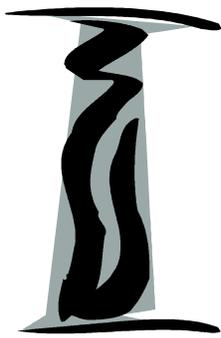
**Hydrologic cycle** — The generalized movement of water in response to solar energy and gravity.

**Hydrology** — The science of waters of the earth; water's properties, circulation, principles, and distribution.

**Hypolimnetic discharge** — The process of removing nutrient-rich, oxygen-deficient water from the bottom of a lake or reservoir to improve water quality conditions.

**Hypolimnion** — The lowermost, non-circulating layer of cold water in a thermally stratified lake; often deficient in oxygen.

**Hyporheic zone** — The hyporheic zone is the volume of saturated sediment beneath and beside streams and rivers where ground water and surface water mix. The interactions between the surface water and ground water make them areas of great biological and chemical activity. This zone is an important habitat for riverine animals.



**Impervious** — Incapable of being penetrated by water.

**Incised meanders** — Stream or river meanders that have cut vertically into the terrain.

**Indigenous** — Existing, growing, or produced naturally in a region.

**Industrial water supply** — Water for industrial use only.

**Infiltration** — The movement of water into soil or porous rock. Infiltration occurs as water flows through the larger pores or rock or between soil particles under the influence of gravity, or as a gradual wetting of small particles by capillary action.

**Influent stream** — A stream that contributes water to the ground water zone of saturation, to bank storage, or to a surface water body.

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**Instream flows** — The minimum amount of water required in a stream to maintain the existing aquatic resources and associated wildlife and riparian habitat.

**Instream use** — Uses of water within the stream channel (e.g., fish and other aquatic life, recreation, navigation, and hydroelectric power production).

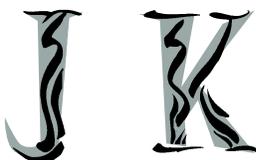
**Interbasin transfer** — The diversion of water from one drainage basin to one or more other drainage basins.

**Interrupted stream** — A stream with reaches that flow underground at certain times of the year because losses from seepage or evaporation are greater than the available streamflow in those sections.

**Irrigable land** — Land possessing favorable soil, topographic, drainage, and climatic conditions, and an adequate water supply capable of economically supporting irrigation.

**Irrigation** — The controlled application of water to cropland, hayland, and/or pasture to supplement that supplied through nature.

**Irrigation return flow** — Nonconsumptive irrigation water returned to a surface or ground water supply. In cases of water rights litigation, the definition may be restricted to measurable water returning to the stream from which it was diverted.

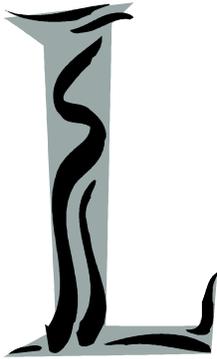


**Jetty** — A structure extending into a sea, lake, or river to influence the current or tide, in order to protect harbors, shores, and banks.

**Kilowatt (KW)** — A unit of electrical power equal to 1,000 watts or 1,341 horsepower.

**Kilowatt hour (KWH)** — One kilowatt of power applied for one hour.

**Knickpoint** — A sudden vertical drop in the longitudinal profile of a stream; usually indicative of a headcut or waterfall.



**Lake** — An inland body of standing water, fresh or salt water, larger than a pool or pond; a body of water filling a depression in the earth's surface.

**Land subsidence** — The sinking or settling of land to a lower level, often because of ground water withdrawal.

**Land treatment measures** — The application of vegetative tillage, structural, and land management measures, individually or in combination, to alter runoff, to reduce erosion and sediment production, to increase fertility, and to improve drainage and irrigation applications.

**Laterally unstable channel** — A channel prone to short-term, side-to-side migration across a floodplain; symptomatic of undeveloped or depleted riparian vegetation.

**Leaching** — The removal of soluble organic and inorganic substances from the topsoil downward by solution in percolating water.

**Left or right bank** — The left- or right-hand bank of a stream when the observer faces downstream.

**Lentic** — Characterizing aquatic communities found in lakes or ponds.

**Levee** — See **dike**.

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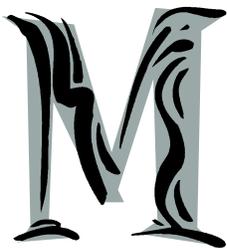
**Limnology** — The branch of science pertaining to the study of the historical, geological, physical, chemical, and biological aspects of fresh water, including ponds, lakes, streams, and wetlands.

**Liter** — The basic unit of measurement for volume in the metric system; equal to 61.025 cubic inches or 1.0567 liquid quarts.

**Littoral** — The region along the shore, extending to the greatest depth occupied by rooted aquatic plants.

**Longitudinal profile** — A graphic representation of the progressive change in elevation along a stream or stream reach.

**Lotic environment** — Characterizing aquatic communities found in streams.



**Macroinvertebrates** — Aquatic insects, worms, clams, snails, and other animals visible without aid of a microscope; associated with, or live on substrates such as sediments and macrophytes. They supply a major portion of fish diets and consume detritus and algae.

**Maximum probable flood** — The largest flood for which there is any reasonable expectancy.

**Mean sea level (MSL)** — The level of the surface of the sea between mean high and mean low tide; used as a reference point for measuring elevations.

**Meander** — A sinuous channel alignment that results from floodplain structure amenable to channel lengthening or enhanced expression of the thalweg. In other words, where the stream tends to loop back and forth a lot.

**Meander line** — A line delineated by government survey for the purpose of defining the bends or windings of the banks of a stream or the shore of a body of water.

**Megawatt** — A unit of electricity equivalent to 1,000 kilowatts.

**Mesic** — A relatively wet or moist habitat. The riparian zone is more mesic than adjacent uplands.

**Metalimnion** — Near-surface layer of rapid temperature and density change in a thermally stratified lake.

**Milligram (mg)** — One-thousandth of a gram.

**Minimum tillage** — A level of reduced tillage; effective in erosion control.

**Mitigation** — An action designed to lessen or reduce adverse impacts; frequently used in the context of environmental assessment.

**Model** — A simulation, by reduced physical size, mathematical, statistical, or other means, of a process or thing that is difficult or impossible to observe directly.

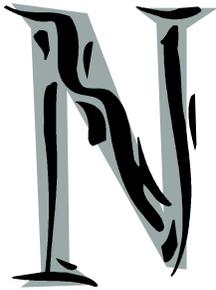
**Morphometry** — Description of a lake's physical structure (e.g., depth, mean depth, shoreline length, volume, etc.).

**Mouth of stream** — The point of discharge of a stream into another stream, a lake, or the sea.

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**Multiple-purpose reservoir** — A reservoir planned and constructed to provide water for more than one purpose.

**Mulching** — The use of plant residues or other suitable materials on the soil surface, primarily to prevent evaporation of water and erosion of soil.



**Natural flow** — The flow of a stream as it would be if unaltered by upstream diversion, storage, import, export, or change in upstream consumptive use caused by development.

**Need** — The portion of present or anticipated demand not met by current or projected supply.

**Nimbus** — A rain-producing cloud.

**Nonconsumptive use** — Using non-diverted water in a way that does not reduce the supply, or using diverted water and returning it to the source without reducing the supply.

**Nonpoint source pollution** — Diffuse discharges of waste throughout the natural environment which are a major cause of water pollution. Difficult to pinpoint physically, but can be classified by type: urban runoff, agriculture, mining, septic tank leach fields, and silviculture.

**Nonstructural measures** — Managing, using, or controlling water and related lands to achieve a desired objective without structural development. Such measures have been broadly defined to include best management practices, flood warning systems, education, and legal restraints such as floodplain zoning.

**No-till farming** — Misnomer for **minimum tillage**.

**Nutrients** — Elements or compounds essential to life, including oxygen, carbon, nitrogen, phosphorus, and many others.



**Observation well** — A well used to monitor changes in water levels of an aquifer and to obtain samples for water quality analyses.

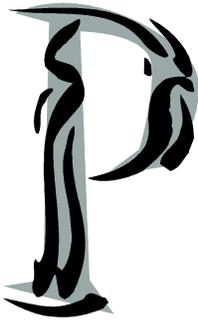
**Offstream use** — Water withdrawn from a surface water source for uses such as irrigation, municipal water supply, steam electric generation, industrial use, etc. Contrast with *instream*.

**Oligotrophic** — “Poorly nourished,” from the Greek. Describes surface water of low nutrients, low plant productivity, and high transparency.

**Ooze** — Lake or stream bottom accumulation of very fine inorganic sediments and the partially-decomposed remains of algae, weeds, fish, and aquatic insects. Sometimes called “muck”.

**Order** — Stream order is a description of the place of a particular stream or reach in the hierarchy of tributaries. A first order stream has no tributaries; a second order stream is fed by two or more first order streams, etc.

**Organic matter** — Plant and animal residues, or substances made by living organisms and containing linked carbon atoms and other elements.



**Parts per million (ppm)** — The number of “parts” by weight of a substance per million parts of water. This unit is commonly used to represent pollutant concentrations. Large concentrations are expressed in percentages.

**Pathogen** — A microorganism capable of producing disease. They are of great concern to human health relative to drinking water and swimming beaches.

**Peak load** — The maximum amount of electrical power delivered to a given point during a stated period of time.

**Peak stream flow** — The maximum expected flow of surface water at a waste management facility from a tributary watershed for a given recurrence interval.

**Pelagic zone** — The open, deep water zone of a lake, from the outer edge of the *littoral* zone to the center of the lake.

**Penstock** — A gate or sluice used in controlling the flow of water, a tube or trough for carrying water to a water wheel, or a pipe carrying water to an electric turbine.

**Percolation** — The movement of water through soil or rock; infiltration.

**Perennial stream** — A stream that flows from source to mouth throughout the year.

**Perfected water permit** — A permit issued after the permittee has initiated beneficial use of water in accordance with the terms and conditions of the conditional water permit. The perfected water permit is the instrument of conveyance of a water right.

**Permeability** — The capacity of porous rock, sediment, or soil to transmit water.

**pH** — A measure of the hydrogen ion concentration of a solution; an expression of both acidity and alkalinity on a scale of 0-14, with 7 representing neutrality; numbers less than 7 indicate increasing acidity and numbers greater than 7 indicate increasing alkalinity.

**Photic zone** — The near-surface, lighted region of a lake where photosynthesis takes place.

**Photosynthesis** — The process of “fixing” the sun’s energy into organic compounds from carbon dioxide, nutrients, and water; effected by green plants in their chlorophyll molecules.

**Phreatophyte** — A plant adapted to direct use of ground water. Mostly used to describe perennials; riparian trees and shrubs are considered to be phreatophytes. This term tends to carry the negative connotation of water-wasting.

**Phytoplankton** — Microscopic algae and microbes that float freely in the water of lakes and stream.

**Plan** — A compilation of goals and objectives, policy statements, and implementation strategies for guiding the physical, social, and/or economic development of an area or region; may be comprehensive or may relate to a specific resource, such as timber.

**Planning** — A comprehensive study of present trends and of probable future developments, together with recommendations of policies to be pursued. Planning embraces such subjects as population growth and distribution; social

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forces; availability of land, water, minerals, and other natural resources; technological progress; and probable future revenues, expenditures, and financial policies. Planning must be responsive to rapidly changing conditions.

**Point bar** — An alluvial feature that results from the deposition of sediments along the inside edge of a stream meander.

**Point source pollution** — A discernible, confined, and discrete conveyance such as a pipe, ditch or channel, tunnel, conduit, well container, concentrated animal feeding operation or vessel, from which pollutants are or may be discharged. Does not include agricultural stormwater discharges and return flows from irrigated agriculture.

**Pollutant** — Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, ammunitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agriculture waste discharged into water.

**Pollution** — An alteration of the quality of state waters by waste to a degree which unreasonably affects their beneficial uses or facilities which serve their beneficial uses.

**Polychlorinated biphenyls (PCBs)** — A group of toxic, chlorinated, organic chemicals found in industrial wastes.

**Pool** — A point at which a stream is relatively deep, where stream energy is dissipated by increased volume of water. The surface of the pool is essential level.

**Porosity** — The ratio (usually expressed as a percentage) of the volume of openings in a rock to the total volume of the rock.

**Potable** — Water fit for human consumption.

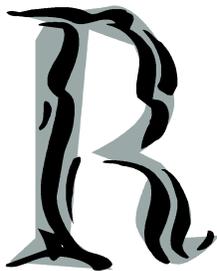
**Potential supply** — That part of the resource base that has the potential for development or further expansion.

**Precipitation** — Water falling in liquid or solid state from the atmosphere to a land or water surface.

**Primary waste treatment** — The removal of suspended and floatable solids that will settle out of sewage and industrial wastes. Primary treatment plants generally remove 25 to 35 percent of the biological oxygen demand and 45 to 65 percent of the total suspended matter.

**Primary drinking water standards** — Enforceable standards related directly to the safety of drinking water; set by the U.S. Environmental Protection Agency.

**Profundal zone** — The mass of lake water and sediment occurring on the lake bottom below the depth of light penetration.



**Rain** — Water falling to earth in drops that have been condensed from moisture in the atmosphere.

**Reach** — Any arbitrarily defined length of a stream.

**Recessional moraine** — Glacial till occurring as ridges where the front of a retreating glacier temporarily held a fixed position.

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**Recharge** — The process involved in the addition of water to the zone of saturation; also the amount of water added.

**Reduced tillage** — See **minimum tillage**.

**Relative humidity** — The ratio expressed as a percentage of the quantity of water vapor in the air compared to the quantity of water vapor the air could hold at that temperature.

**Residence time** — The amount of time required to completely replace the lake's current volume of water with an equal volume of "new" water (= *hydraulic* residence time).

**Reservoir** — A pond, lake, or basin (natural or artificial) that stores, regulates, or controls water.

**Respiration** — Process by which organic matter is oxidized by organisms, including plants, animals, and bacteria; releases energy, carbon dioxide, other nutrients, and water.

**Ridge and swale** — A type of floodplain topography that results from accumulated stream meandering.

**Riffle** — A point at which the stream is relatively energetic due to constriction or steep gradient; the counterpart of pool, above.

**Rill erosion** — The removal of rock and soil material by numerous small, closely spaced streamlets flowing across the soil surface.

**Riparian** — Literally, "streamside" or referring to stream banks.

**Riparian doctrine** — The doctrine under which the owner of land next to a stream has certain rights to the flow of the water.

**Riparian vegetation** — The vegetation along a watercourse which is distinguished from other vegetation by its dependence on the combination of soil moisture and other environmental factors provided by a permanent or intermittent stream.

**Riprap** — A facing layer (protective cover) of stones placed to prevent the erosion or the sloughing of a structure or embankments.

**River** — A natural stream of water of substantial volume.

**River basin** — A term used to designate the area drained by a river and its tributaries.

**Runoff** — Rainfall or snow melt which is not absorbed by soil, evaporated, or transpired by plants, but finds its way into streams as surface flow.

**Rural-domestic water** — Household use and livestock watering associated with ranch and farm operations, and used by the rural non-farm population.



**Saline seeps** — Wet areas in non-irrigated soils where soluble salts accumulate from the evaporation of the seeping water.

**Salinity** — The concentration of dissolved salts in water.

**Secondary waste treatment** — Treatment (following *primary treatment*) which generally removes 80 to 95 percent of the BOD and suspended matter.

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**Secondary drinking water standards** — Nonenforceable standards related to the aesthetic quality of drinking water; set by the U.S. Environmental Protection Agency.

**Sediment** — Fragmented organic or inorganic material derived from the weathering of soil, alluvial, and rock materials; removed by erosion and transported by water, wind, ice, and gravity.

**Sedimentation** — The deposition of sediment from a state of suspension in water or air.

**Sediment load** — The non-water portion of streamflow, consisting of dissolved materials, suspended silt, sand, etc., and larger objects (e.g., cobble and boulders) that intermittently move along the streambed.

**Sediment storage (reservoir)** — That portion of total reservoir storage dedicated for sediment encroachment. Normally a part of dead storage.

**Sensitive species** — Those plant or animal species susceptible or vulnerable to activity impacts or habitat alterations.

**Septic tanks** — Underground tanks used to anaerobically decompose domestic wastes when a sewer line is not available to carry wastes to a treatment plant; part of a rural on-site sewage treatment system.

**Sewage system** — Pipelines or conduits, pumping stations, force mains, and all other structure, devices, and facilities used for collecting or conducting wastes to a point for treatment or disposal.

**Sheet erosion** — The removal of thin, fairly uniform layers of surface material from gently sloping land by rainfall and runoff water acting in continuous sheets of water.

**Silt** — Sedimentary particles smaller than sand particles, but larger than clay particles.

**Sinuosity** — A measure of a channel's tendency to meander; given as one of the following ratios: thalweg length/valley length, channel length/meander belt axis length, or stream length/valley length.

**Snowpack** — The winter accumulation of snow; measured in inches.

**Spillway** — A type of structure that conveys water released from a reservoir.

**Spring** — A source of water where ground water flows naturally onto the land surface.

**Stable channel** — Remembering that all channels are dynamic; a channel is stable when its movement is neither vertically nor laterally accelerated due to management influences.

**Stage** — The height of a water surface above some established reference point.

**Stratification** — The vertical forming or arrangement of layers.

**Stratum (pl. = strata)** — Horizontal layer or section.

**Stratus** — Low altitude cloud typically resembling a horizontal layer of fog.

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**Stream** — Any body of running water moving under gravity flow through clearly defined natural channels to progressively lower levels.

**Streambank erosion** — The wearing away of streambanks by flowing water.

**Streambank erosion damage** — Value of land areas destroyed, reduced value of land due to threat of future erosion, and the destruction or damage of wildlife habitat, buildings, bridges, utilities, or other structures.

**Streambed** — The boundary between surface water and ground water (or impermeable rock), composed of alluvium or surface bedrock.

**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. “Streamflow” is a more general term than “runoff,” since streamflow may be applied to discharge whether or not it is affected by diversions or regulation.

**Stream load** — All the material transported by a stream either as visible sediment (bed load and suspended load) or in solution (dissolved load).

**Stubble mulching** — The management of plant residues by harvesting, tilling, planting, and cultivating in such a way so as to keep protective amounts of vegetation on the soil surface.

**Sub-basin** — Subdivision of a major river basin, drained by tributaries or groups of tributaries, including associated closed basins.

**Sublimation** — The transition of a substance from the solid phase directly to the vapor phase, or vice versa, without passing through an intermediate liquid phase.

**Substrate** — A generic term for a substance that underlies another; soil is the substrate for plants, while bedrock is the substrate for soil.

**Subsurface water** — All water; solid, liquid, or gaseous, that occurs beneath the Earth's surface.

**Supercooled water** — Water cooled below its freezing point but not solidifying, as in rapidly flowing rivers in sub-zero weather.

**Surface runoff** — Water that travels downhill overland until entering a defined channel.

**Surface water** — All water, fresh and salty, on the Earth's surface. Oceans, lakes, streams, snow, and glaciers are all surface water.

**Suspended load** — The non-dissolved, particulate portion of sediment load that is transported without being deposited on or bouncing along the streambed. Particle size may vary from reach to reach due to different gradients and energy levels.

**Suspended solids (SS)** — The small, solid particles in water that cause a cloudy condition. Particles of suspended sediment tend to settle at the channel bottom (settleable solids), but upward current in turbulent flow counteract gravitational setting.

**Synecology** — The study of different natural *communities* or *ecosystems*.



**Terraces** — Remnants of an abandoned floodplain, composed of alluvium, or in the case of a deeply incised canyon, of solid rock.

**Terrestrial** — Living or growing in a land-based ecosystem rather than in water or air.

**Tertiary waste treatment** — Selected biological, physical, and chemical separation processes to remove organic and inorganic substances that resist conventional (primary and secondary) treatment practices.

**Thalweg** — A line connecting the deepest points along a stream channel.

**Thermal pollution** — The impairment of water quality through temperature increase; usually occurs as a result of industrial cooling water discharges, irrigation return flows, or removal of riparian shrub and timber cover.

**Thermal stratification** — Vertical layering of lakes caused by temperature-created differences in water density.

**Threatened species** — Any plant or animal species likely to become an “endangered” species throughout all or a significant area of its range; identified by the Secretary of the Interior as “threatened,” in accordance with the 1973 Endangered Species Act.

**Topographic maps** — Maps with lines showing equal elevation or a region’s relief; also showing natural surface features, including hills, valleys, rivers, and lakes; and man-made surface features such as canals, bridges, roads, cities, etc.

**Topography** — The general configuration of the land surface including relief and position of natural and man-made features.

**Total dissolved solids (TDS)** — The quantity of dissolved materials in the water.

**Total storage (reservoir)** — The volume of storage below the maximum designed water surface level, including dead storage.

**Total suspended solids** — Solids, found in waste water or in a stream, that can be removed by filtration. The origin of suspended matter may be man-made wastes or natural sources such as silt.

**Toxin** — Any of a variety of unstable, poisonous compounds produced by some microorganisms and causing certain diseases.

**Transpiration** — The process by which water absorbed by plants, usually through roots, is evaporated into the atmosphere from the plant surface, principally from the leaves.

**Transverse profile** — A graphic representation of a channel cross-section. Unlike the longitudinal profile, this describes only a single point along the channel.

**Treaty** — A formal agreement between two nations.

**Tributary** — A stream that contributes its water to another stream or body of water.

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**Trophic state** — The degree of eutrophication of a lake. Water transparency, chlorophyll phosphorus, weed density, or quantity of oxygen in the hypolimnion can all be used to assess trophic state.

**Turbidity** — A measure of the extent to which light passing through water is reduced due to suspended materials. Excessive turbidity may interfere with light penetration and minimize photosynthesis, thereby causing a decrease in primary productivity. It may interfere directly with essential physiological function of fish and other aquatic organisms, making it difficult for fish to locate a good food source and altering water temperature.



**Unconfined aquifer** — An aquifer in which the upper boundary is the top of the zone of saturation (water table).

**Unconsolidated deposits** — Sediments not cemented together; may consist of gravel sand, silt, or clay, as well as any combination of these.

**Understory** — Vegetation that occurs as the bottom layer of a multilevel plant community, such as the herbs and grasses growing beneath trees or shrubs.

**Unsaturated zone** — The subsurface zone between the water table (one of saturation) and the land surface where some of the spaces between the soil particles are filled with air.

**Vadose water** — Water occurring in the zone of aeration between the land surface and the water table.

**Vertically unstable channel** — A channel which tends to downcut and abandon its floodplain; a situation where erosion is progressing faster than deposition.

**Vested rights** — A person's absolute rights which are not subject to defeat or cancellation by the act of any other person.



**Waste water** — Water that carries wastes from homes, businesses, and industries; a mixture of water, dissolved, and suspended solids.

**Waste water treatment** — Any of the mechanical or chemical processes used to modify the quality of waste water in order to make it more compatible or acceptable to man and his environment.

**Water (H<sub>2</sub>O)** — An odorless, tasteless, colorless liquid formed by a combination of hydrogen and oxygen; forms streams, lakes, and seas, and is a major constituent of all living matter.

**Water budget** — An accounting of the inflows and outflows of water to and from a system.

**Water column** — Water in the lake between the interface with the atmosphere at the surface and the interface with the sediment layer at the bottom.

**Water conservation** — The wise management, use, protection, and in some cases, preservation of water resources.

**Water contamination** — Impairment of water quality to a degree that reduces the usability of the water for ordinary purposes, or that creates a hazard to public health through poisoning or spread of disease.

**Water cycle** — A friendlier term for “hydrologic cycle.”

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**Water equivalent** — The depth or amount of water that would result from the complete melting of a sample of deposited snow.

**Water permit** — See **conditional water permit** and **perfected water permit**.

**Water pollution** — Industrial wastes, institutional wastes, and other harmful or objectionable materials in sufficient quantities to result in a measurable degradation of the water quality and/or some impairment of use.

**Water quality** — A term used to describe the chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

**Water quality control plan** — Defines beneficial water uses, establishes water quality objectives to protect those uses, identifies water quality threats, and outlines corrective measures.

**Water quality standard** — Legally mandated and enforceable maximum contaminant levels of chemical parameters (e.g., BOD, TDS, iron, arsenic, etc.) of water. These parameters are established for water used by municipalities, industries, agriculture, and recreation.

**Water resources district (WRD)** — A legal entity established by state statute to facilitate local administration in all phases of water development, utilization, and control. A lake district is a special type of WRD.

**Water right** — A legal right to use a specified amount of water for beneficial purposes.

**Watershed** — Area of land that contributes surface runoff to a given point in a drainage system.

**Water table** — The upper surface of ground water, i.e., the top of the zone of saturation.

**Water year** — The 12-month period October 1 through September 30, and designated by the calendar year in which it ends.

**Water yield** — The surface runoff from a drainage basin; precipitation minus the evapotranspiration; usually measured in cubic feet per second or acre-feet per square mile. For ground water, the volume of water pumped from a well in a given period of time; usually measured in gallons per minute (gpm).

**Weather** — The composite condition of the near-earth atmosphere, which includes temperature, barometric pressure, wind, humidity, clouds, and precipitation. Weather variations over a long period create the climate.

**Weather modification** — The intentional or inadvertent alteration of clouds for the benefit of people.

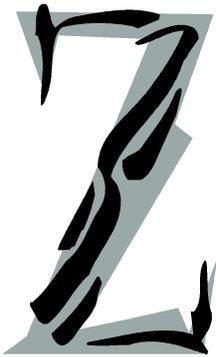
**Well** — A pit, hole, or shaft sunk into the earth to tap an underground source of water.

**Wetland** — Land where water saturation of hydric soils is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the surrounding environment. Other common names for wetlands are sloughs, ponds, and marshes.

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**Wetland, jurisdictional** — A wetland that meets the criteria for being part “of the United States” under the Clean Water Act. Management activities affecting jurisdiction wetlands require permits from the Army Corps of Engineers.

**Winter kill** — The complete or partial kill of the fish population in a body of water, usually occurring during prolonged periods of ice and snow cover. The kill can be attributed to a number of circumstances, including diminished dissolved oxygen due to a lack of photosynthesis; the depletion of dissolved oxygen by decomposing organic matter; the production of harmful chemicals (e.g., ammonia, hydrogen sulfide, and ethanes) resulting from anaerobic decomposition; and the harmful influence of insecticides and herbicides. May also occur in the hypolimnia of stratified lakes in the summer.



**Zone of aeration** — A subsurface zone that contains vadose water. The bottom of the zone of aeration is the water table; the top is the land surface.

**Zone of saturation** — A subsurface zone in which all the pores of the material are filled with ground water under pressure greater than atmospheric pressure.

**Zooplankton** — Microscopic animals (predominantly crustaceans, rotifers, and protozoans) that float freely in lake water graze on detritus particles, bacteria, and algae, and may be consumed by fish.



*Links and References*

Rangeland Watershed Program Fact Sheets 1 and 3. Oregon State University Extension Service, Grant County Office, 201 S. Humbolt, Suite 190, Canyon City, OR 97820-6186. Phone: 541-575-1911; Fax: 541-575-2248.

Project WET Curriculum and Activity Guide (1995) Western Regional Environmental Education Council, 4014 Chatham Lane, Houston, TX 77027.