

# GLOSSARY

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**absorb:** to take in or soak up a liquid.

**absorbent:** shredded paper, sawdust, and other materials that have the power to absorb.

**acid:** a substance with a quantity of positively charged hydrogen ions.

**acid rain:** rain with a pH of less than 5.6; results from atmospheric moisture mixing with sulfur and nitrogen oxides emitted from burning fossil fuels; may cause damage to buildings, car finishes, crops, forests, and aquatic life.

**aeration:** exposing to circulating air; addition of oxygen to wastewater or water, as in first step of both activated sludge wastewater treatment process and drinking water treatment.

**agriculture:** farming, science of cultivating the soil, producing crops, and raising livestock.

**aquifer:** porous, water-bearing layer of sand, gravel, and rock below the Earth's surface; reservoir for groundwater.

**aquatic:** living or growing in or on water.

**aquitard:** a low-permeability layer of rock or clay that can store water but transmits it very slowly from aquifer to another.

**artery:** hollow tube that carries blood with oxygen and food to all parts of the body.

**atmosphere:** envelope of gases surrounding the Earth.

**bacteria:** very tiny organisms, some can be harmful to people.

**bacterial water pollution:** the introduction of unwanted bacteria to a water body.

**barrier island:** a body of land that is completely surrounded by water; it is roughly parallel to the shore and separated from the shore by a lagoon; barrier islands protect the shore from the direct onslaught of waves.

**base:** a substance that turns hydoin or pH paper blue.

**bay:** a body of water partly enclosed by land, but having a wide outlet to the sea.

**bog:** freshwater marsh with build-up of peat and high acidity, that typically supports mosses adapted to acidic soil conditions (particularly sphagnum); many are located in colder regions.

**brackish water:** water that is a mixture of fresh and salt water.

**buoyancy:** the ability of water to support weight and the degree to which it can support weight.

**career:** a chosen pursuit or life's work; a job or profession one is trained to do.

**chemicals:** substances which are used in factories, farms and homes for a variety of purposes such as cleaning, painting, killing pests, and helping maintain vehicles.

**chlorination:** the addition of chlorine to water to destroy microorganisms especially for disinfection.

**clay:** soil which consists of illite, kaolin, micas, vermiculite, and other mineral particles; clay particles are small and the spaces between them are small; clay soils absorb water slowly but can hold water for longer than a sandy soil.

**coagulation:** the process by which dirt and other small suspended solid particles are chemically bound, forming flocs using a coagulant (flocculant) so they can be removed from the water (the second step in drinking water treatment).

**cohesion:** the force by which the molecules of a substance are held together.

**condensation:** the process of changing from a vapor (gas) to a liquid.

**condense:** water vapor that changes into a liquid.

**conservation:** wise use and protection from depletion and pollution.

**conserve:** save, protect, keep; to use a resource wisely and efficiently.

**contaminate:** to make impure, infected, corrupt or radioactive by contact with or by addition of something.

**contour plowing:** plowing horizontally across the face of the slope.

**cooling pond:** a pond where hot water from factories and power plants is stored until it is the same temperature as nearby bodies of water.

**cycle:** a process that repeats itself.

**dam:** human-made or animal-made barrier across a stream or river that holds and regulates flow of water.

**debris:** the remains of something broken down or destroyed.

**desalinization:** purification of salt or brackish water by removing salt.

**desert:** an arid region lacking enough moisture to support vegetation.

**dissolve:** to make a solution of, as by mixing with a liquid; blend with a liquid.

**drain field:** the part of a septic system where the wastewater is released into the soil for absorption and filtration.

**drought:** period of little or no rain.

**ecosystem:** the relationship between all the parts (living and non-living) within an environmental community.

**effluent:** treated wastewater, flowing from a lagoon, tank, treatment process, or treatment plant released into the environment.

**emissions:** a substance discharged into the environment.

**erosion:** the wearing away of the Earth's surface by running water, wind, ice, or other geological agents, processes, (weathering, dissolution, abrasion, corrosion, and transportation) by which material is removed from the Earth's surface.

**estuary:** a marine ecosystem where freshwater enters the ocean. The term usually describes regions near the mouths of rivers, and includes bays, lagoons, sounds, and marshes.

**evaporate:** to convert or change into a vapor.

**evaporation:** process in which the heat energy of the sun causes the water on the Earth's surface to change into a vapor.

**expand:** to take up more space.

**fertilizer:** natural and synthetic materials including manure, nitrogen, phosphorus and treated sewage sludge that are worked into the soil to provide nutrients and increase its fertility.

**filtration:** the process of passing a liquid or gas through a porous article or mass.

**flood:** a period of above average rain with excess water encroaching on the land.

**flow:** move smoothly.

**food chain:** the chain of living things in an ecosystem in which each link in the chain feeds on a link below it and is fed upon by the one above it.

**fossil fuels:** coal, oil, and natural gas, which were formed from the fossilized remains of ancient organisms.

**fresh water:** inland water that has a low concentration of minerals, salts, and dissolved solids found as surface water or groundwater.

**fresh water degradation:** freshwater that is either polluted or used up faster than it can replenish itself.

**freeze:** to harden into ice or into a solid body; to change from the liquid to the solid state by loss of heat.

**germs:** very small living things in the water that can make people sick.

**ground water:** water that infiltrates the Earth and is stored in usable amounts in the soil and rock below the Earth's surface; water within the zone of saturation.

**gulf:** a large area of sea or ocean partially enclosed by land.

**habitat:** the place or type of site where a plant or animal naturally or normally lives and grows.

**hail:** precipitation in the form of hard pellets of ice or hard snow.

**humus:** organic soil formed from decaying organic materials and mineral particles; most humus is black or dark brown, and holds large amounts of water.

**hydroin paper:** special paper for determining the strength (pH level) of an acid or base.

**hydrologist:** a person that applies scientific knowledge and mathematical principles to solve water-related problems in society such as problems of quantity, quality, and availability.

**hydrology:** the study of water, its properties, distribution on Earth, and effects on the Earth's environment.

**impurities:** materials that dirty water and make it unsafe for people to use.

**inland wetland:** wetlands that are not affected by tides; the type of water can be fresh water or salt water; they are: island marshes, wet meadows, forested wetlands, and shrub wetlands.

**island:** a body of land that is completely surrounded by water.

**kinetic energy:** the energy of a body resulting from its motion.

**lake:** a standing body of water surrounded by land which undergoes thermal stratification and turnover by mixing.

**liquid:** a free flowing substance that borrows the shape of its container.

**limestone:** brittle, sedimentary rock that has many cracks which can fill with water.

**loam:** a fertile rich soil composed of varying amounts of silt, clay, sand, and humus.

**mangroves:** trees that are the dominant plant found in a salt water wetland that occurs along the tropical coasts.

**marine animals:** animals that live in the sea or in a tidal pool.

**marsh:** wetland dominated by grasses.

**melt:** to change from a solid to a liquid usually through the process of heating.

**molecule:** the smallest particle of a compound that can exist in the free state and still retain the characteristics of the compound.

**municipal:** of or relating to municipality (city, town, etc.). Municipal wastewater is primarily domestic wastewater.

**neutral:** a substance that is neither basic or acidic.

**neutralization:** a process that causes toxic waste to react with another chemical to produce a harmless substance.

**nitric acid (HNO<sub>3</sub>):** a component of acid rain; corrosive; damages buildings, vehicle surfaces, crops, forests, and aquatic life.

**nonpoint source pollution:** (NPS) pollution that cannot be traced to a single point (e.g., outlet or pipe) because it comes from many individual sources or a widespread area (typically, urban, rural, and agricultural runoff).

**nutrient pollution:** a nourishing contamination that causes unwanted plant growth.

**ocean:** a very large body of salt water that covers nearly 3/4 of the Earth's surface.

**oil spill:** a form of pollution in which oil from various sources leaks into the water.

**peat:** rich organic material that is made up mostly of partially decayed plant material.

**permeability:** the capacity of a porous material to transmit fluids. Permeability is a function of the sizes, shapes, and degree of connection among pore spaces, the viscosity of the fluid, and the pressure driving the fluid.

**pH:** a measure of the concentration of hydrogen ions in a solution.

**point source pollution:** pollution that can be traced to a single point source such as a pipe or culvert (e.g., industrial, wastewater treatment plant, and certain storm water discharges).

**pollutant:** any substance suspended or dissolved in water that builds up in sufficient quantity to impair water quality.

**pond:** a still body of water smaller than a lake where mixing of nutrients and water occurs primarily through the action of wind (as opposed to turnover).

**porosity:** the property of being porous, having pores; the ratio of minute channels or open spaces (pores) to the volume of solid matter.

**precipitation:** water droplets or ice particles condensed from atmospheric water vapor and sufficiently massive to fall to the Earth's surface, such as rain, sleet, or snow.

**purify:** to clean.

**reclamation:** bringing land that has been disturbed by some process back to its original condition.

**recycle:** a process to regain materials for human reuse.

**reservoir:** a place where water is collected and stored for use.

**red tide:** a reddish discoloration of coastal surface waters due to concentrations of toxic producing algae, fatal to many forms of marine life.

**residential:** pertaining to a place where people live, such as a neighborhood.

**riparian area:** of, adjacent to, or living on the bank of a river, stream, or sometimes, of a lake or pond.

**riprap:** large rocks placed along the bank of a waterway to prevent erosion.

**river:** a large body of flowing water that receives water from other streams and/or rivers.

**runoff:** water (originating as precipitation) that flows across surfaces rather than soaking in; eventually enters a waterbody; may pick up and carry a variety of pollutants.

**salinity:** the amount of salt dissolved in water.

**salt water:** water that has a high level of dissolved salts (oceans, seas).

**sand:** tiny, loose grains of crushed mineral particles formed by the weathering of rocks.

**saturated zone:** a portion of the soil profile where all pores are filled with water. Aquifers are located in this zone. There may be multiple saturation zones at different soil depths separated by layers of clay or rock.

**scrubbers:** a device in a smokestack that uses water to remove particles and some polluting gases.

**sediment:** eroded soil material (often suspended in water that consists mainly of particles from rocks, soil, and inorganic materials).

**sedimentation:** (1) the process of depositing sediment, or the addition of soils to lakes that is part of the natural aging process; (2) the drinking water treatment process of letting heavy particles in raw water settle out into holding ponds or basins before filtration (also called "settling"); (3) the process used in both primary and secondary wastewater treatment that takes place when gravity pulls particles to the bottom of a tank (also called "settling").

**septic tank:** a tank, commonly buried, to which all of the wastewaters from the home should flow and in which, primary digestion of the organic matter occurs by anaerobic bacteria; the main part of a septic system where scum and solids accumulate; derived from “sepsis” meaning “putrid decay” or “decay without oxygen.”

**sewage:** waste and wastewater produced by residential, commercial, and light industrial establishment; typically discharged into sewers and sometimes into septic tanks.

**sinkhole:** a hole caused by collapse of the land surface, commonly because underlying limestone rock has dissolved away.

**sludge:** solid material that isn't broken down by bacterial digestion which settles to the bottom of septic tanks or wastewater treatment plants; it must be pumped out and disposed of in landfills, application to land, or by incineration.

**sleet:** precipitation consisting of generally transparent frozen or partially frozen raindrops.

**snow:** solid precipitation in the form of white or translucent ice crystals of various shapes originating in the upper atmosphere as frozen particles.

**solid:** a hard substance that keeps its own shape.

**storage tanks:** water tanks are used for storage and they are in several shapes and sizes; elevated, ground and standpipe.

**stream:** a body of flowing fresh water.

**sublimate:** to change from a solid to a vapor.

**sulfuric acid:** (chemical formula,  $H_2SO_4$ ) the most widely used industrial chemical; a major component of acid rain that is formed by sulfur oxides combining with atmospheric moisture.

**surface tension:** a property of liquids in which the exposed surface tends to contract to the smallest possible area, as in the formation of a meniscus. It is caused by unequal molecular cohesive forces near the surface.

**surface water:** precipitation that does not soak into the ground or return to the atmosphere by evaporation or transpiration. It is stored in streams, lakes, rivers, ponds, wetlands, oceans, and reservoirs.

**suspended solids:** small particles of solid materials in water that cause cloudiness or turbidity.

**swamp:** wetland dominated by shrubs and trees.

**terracing:** series of level plots in step-like fashion on a slope.

**thermal pollution:** varying temperatures above or below the normal condition.

**tides:** the alternate rising and falling of the ocean's surface which occurs twice in each lunar day (24 hours).

**topsoil:** rich, upper layer of soil.

**toxic pollution:** harmful, chemical contamination in water.

**transpiration:** process in which water absorbed by the root systems of plants moves up through the plants, passes pores (stomata) in their leaves or other parts, and then evaporates into the atmosphere as water vapor; the passage of water vapor from a living body through a membrane or pores.

**urban stormwater runoff:** road salt, soil, lawn and garden chemicals, and pet wastes travel via streets and storm drains to nearby rivers, lakes, and ponds.

**vapor:** a substance in the form of a gas having no fixed shape.

**vein:** hollow tube that carries blood back to the heart.

**waft:** moving the hand in a wave-like motion over a substance causing a breeze which carries a faint odor of the substance.

**wastes:** discarded or unwanted by-products of human activities.

**wastewater:** water that has been used for domestic or industrial purposes.

**wastewater treatment:** physical, chemical, and biological processes used to remove pollutants from waste water before discharging it into the water.

**wastewater treatment plant:** a place where water is made safe to use; wastewater is filtered several times, and the germs left in the water is killed.

**water:** a clear liquid, solid, or gas made up of tiny molecules of 2 parts hydrogen and one part oxygen.

**water cycle:** continuous movement of water from the oceans and fresh water sources to the air and land and then back to the oceans.

**water pollution:** water that has been made unclean for aquatic life and plants by dumping in foreign objects or liquids from human activities or natural processes.

**water table:** upper surface of the zone of saturation of groundwater.

**watershed:** land area from which water drains to a particular surface water body.

**wave:** a ridge or swell moving along the surface of a large body of water and generated by the wind or gravity.

**weathering:** to break down rock naturally; water, growing plants, heat, cold, and ice all weather rocks; over many years weathering turns rock into soil.

**well:** a bored, drilled, or driven shaft or dug hole. Wells range from a few feet to more than 6 miles in depth, but most water wells are between 100 and 2,000 feet in depth.

**wetland:** areas that periodically have waterlogged soils or are covered with a shallow layer of water resulting in reduced soil conditions; wetland areas typically support plant life that are adapted to life in wet environments.