

Glossary

Aggradation. The geologic process by which stream beds are raised in elevation and flood plains are formed. It is the opposite of degradation. See also “channel scour and fill.”

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. A general term for all deposits (such as sand, silt, or clay) resulting directly or indirectly from the sediment transport of streams, thus inducing the sediments laid down in riverbeds, flood plains, lakes, fans and estuaries.

Annual peak flow series. A table of the largest annual peak flows for a period of record. Often used in frequency analysis to calculate flood probability curves (see Recurrence Intervals).

Antecedent moisture condition (AMC). The degree of wetness of a watershed at the beginning of a storm. Grouped into three classifications, I, II and III, lowest to highest respectively. Condition I is dry enough for satisfactory plowing of cropland soils; Condition II is average condition; Condition III is practically saturated from antecedent rains.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Aquifer. A water-bearing rock or soil formation capable of storing water and allowing water to pass through it.

- **Confined** - An aquifer in which the groundwater is confined under pressure significantly greater than atmospheric pressure.
- **Unconfined** - An aquifer containing water that is not under pressure; the water level in a well is the same as the water table outside the well.

Bacteria. Microscopic living organisms that can aid in pollution control by metabolizing organic matter in sewage, oil spills or other pollutants. However, bacteria in soil, water or air can also cause human, animal and plant health problems.

Bankfull discharge. The discharge corresponding to the stage at which the channel is nearly full. This flow has a recurrence interval of approximately 1.5 to 3 years.

Bar. Accumulation of sand, gravel, or other alluvial material found in the channel, along the banks, or at the mouth of a stream where a decrease in velocity induces deposition. Also an alluvial deposit or erosion feature composed of sand, gravel, or other material, which obstructs flow. A description of bar types follows:

- **Diagonal** - Elongated bodies with long axes oriented obliquely to the flow. They are roughly triangular in cross-section and often terminate in riffles.
- **Longitudinal** - Elongated bodies parallel to the local flow, of different shape, but typically with convex surfaces. Common in gravelly braided streams.
- **Point** - Bar found on the inside of meander bends. They are typically attached to the stream bank and terminate in pools.
- **Transverse** - Typically solitary, lobate features that extend over much of the active stream width but may also occur in sequence down a given reach of river. They are produced in areas of local flow divergence and are also associated with local deposition. Flow is distributed radially over the bar. Common in sandy braided streams.

Baseflow. See “flow”

Bed load. Sediment moving on or near the stream bed and frequently in contact with it. See also “suspended load.”

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Braided channel. A stream characterized by flow within several channels which successively meet and re-divide. Braiding may be an adjustment to a sediment load too large to be carried by a single channel. Braided channels often occur in deltas of rivers or in the outflow from a glacier.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Buffer zone. An area situated between two zones that have conflicting interests. As applied to streams, a narrow strip of natural vegetation along streambanks to reduce the possibility of adverse impacts from land use on water quality.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Canopy. The leafy crown of trees or shrubs (see “Crown”).

Canopy cover. The vegetation that projects over the stream. Can arbitrarily be divided into two levels: crown cover is more than one meter above the water; overhang cover for fish is less than one foot above the water surface.

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

cfs. Abbreviation for cubic-feet-per-second.

Channel. A natural or artificial waterway that periodically or continuously contains moving water. It has a definite bed and banks that serve to confine the water.

Channel type. Refers to one of the unified methods of classifying streams such as Rosgen 1993.

Channel scour and fill. Erosion and sedimentation during relatively short periods of time; whereas degradation and aggradation apply to similar processes that occur over a period of years.

Channel width. The horizontal distance along a transect line from bank to bank at the high water marks, measured at right angles to the direction of flow. Multiple channel widths are summed to represent total channel width.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Coliform bacteria. Indicates the presence of other pathogenic organisms. Microorganisms found in the intestinal tract of humans and animals; its presence in water indicates fecal pollution and potential adverse contamination by pathogens.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Concave bank of a bend. The outer bank of a sinuous channel.

Confluence. The place where two or more streams join or flow together.

Convex bank of a bend. The inner bank of a sinuous channel.

Cover. The vegetation, or vegetational debris such as mulch, that exists on the soil surface.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cross-section (stream or valley). The shape of a channel, stream or valley viewed across the axis. In watershed investigations, it is determined by a line approximately perpendicular to the main path of water flow, along which measurements of distance and elevation are taken to define the cross-sectional area.

Cross-sectional area. The area of a stream or waterway, usually taken perpendicular to the stream centerline.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cubic-foot-per-second (cfs). A unit of stream discharge. It represents one cubic foot of water moving past a given point in one second. Expressed another way, it is the rate of discharge of a stream whose channel is one square foot in cross-sectional area and whose average velocity is one foot per second.

Debris. Includes gravel, cobble, rubble and boulder-sized sediments as well as trees and other organic material scattered about by either natural processes or human influences, such as log jams.

Degradation. The geologic process by which stream beds are lower in elevation and flood plains are removed. It is the opposite of aggradation (see "Aggradation").

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock. Bedrock is too near the surface for the specified use.

Direct runoff. The water that enters the stream channels during a storm or soon after, forming a runoff hydrograph. It may consist of rainfall on the stream surface, surface runoff, and seepage of infiltrated water (rapid subsurface flow).

Discharge. Rate of flow expressed in volume per unit of time, for instance, in cubic feet per second or liters per second. Discharge is the product of the mean velocity and the cross-sectional area of flow. See “mean annual discharge”.

Drainage area. The area draining into a stream at a given point. The area may be different sizes for surface runoff, subsurface flow and base flow, but generally the surface runoff area is used as the drainage area.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized: excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained and very poorly drained. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Ecosystem. An organic community of plants and animals and the physical environment they inhabit, e.g., wetlands, river, upland. The ecosystem describes the interaction among soil, climate vegetation, and animal life.

Entrenchment. The vertical control of a stream system and its degree of incision in the valley flow (Rosgen 1993).

Emergent plants. Aquatic plants with part protruding above the water surface. See also “Hydrophitic Vegetation”.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times. Compare “Intermittent Stream”.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Dike. A tabular igneous intrusion that cuts across the bedding or foliation of the country rock.

Direct runoff. The water that enters the stream channels during a storm or soon after, forming a runoff hydrograph. It may consist of rainfall on the stream surface, surface runoff, and seepage of infiltrated water (rapid subsurface flow).

Discharge. Rate of flow expressed in volume per unit of time, for instance, in cubic feet per second or liters per second. Discharge is the product of the mean velocity and the cross-sectional area of flow. See “mean annual discharge”.

Drainage area. The area draining into a stream at a given point. The area may be different sizes for surface runoff, subsurface flow and base flow, but generally the surface runoff area is used as the drainage area.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized: excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained and very poorly drained. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Ecosystem. An organic community of plants and animals and the physical environment they inhabit, e.g., wetlands, river, upland. The ecosystem describes the interaction among soil, climate vegetation, and animal life.

Entrenchment. The vertical control of a stream system and its degree of incision in the valley floor (Rosgen 1993).

Emergent plants. Aquatic plants with part protruding above the water surface. See also “Hydrophytic Vegetation”.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times. Compare “Intermittent Stream”.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Evapotranspiration. The loss of water from the soil both by evaporation from the surface and by transpiration from the plants growing thereon.

Excess rainfall. Direct runoff at the place where it originates.

Exotic plant species. Species that have been introduced from other areas. This includes introduction from other continents as well as different geographic regions within a continent, e.g., Asia to North America or Texas to Oregon. These may also be referred to as alien species.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flat water or “**flats**”. See “water types”.

Flood. In common usage, an event where a stream overflows its normal banks. In frequency analysis, it means an annual flood that may not overflow the banks.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially. Flood plains are generally formed by the progressive channel migration and deposition from overbank flows.

Flood routing. Determining changes in a flood wave as it moves downstream through a valley or through a reservoir.

Flow. The movement of a stream of water and/or other mobile substances from place to place; the movement of water, and the moving water itself; and the volume of water passing a given point per unit of time. (Discharge)

- **Base flow.** The portion of the stream discharge that is derived from natural storage, i.e., groundwater outflow and the draining of large lakes and swamps or other sources outside the net rainfall that creates surface runoff; discharge sustained in a stream channel, not a result of direct runoff and without the effects of regulation, diversion or other works of man. Also called sustaining, normal, ordinary or groundwater flow.

- **Low flow.** The lowest discharge recorded over a specified period of time. Also called minimum flow.
- **Mean flow.** The average discharge at a given stream location, usually expressed in cubic feet per second, computed for the period of record by dividing the total volume of flow by the number of days, month, or year, in the specified period.
- **Minimum flow.** The lowest discharge recorded over a specified period of time; or negotiated lowest flow in a regulated stream that will sustain an aquatic population at agreed upon levels. This flow may vary seasonally.
- **Peak flow.** The highest discharge recorded over a specified period of time. Often thought of in terms of spring snowmelt, summer, fall or winter rainy season flow. Also call maximum flow.
- **Subsurface flow.** That portion (part or all) of the water that infiltrates the stream bed and moves horizontally through and below it. It may or may not return to the stream channel at some point downstream.

Flow duration curve. A graphical representation of the percent of time on record of flows being equal to or less than a given discharge.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Gauge height. See “stage”.

Glide (stream). Section of stream that has low water velocities (<0.8 feet/second) but are too shallow to be a pool (<1.0 feet deep). There is no pronounced water surface agitation and the water surface gradient is near zero.

Gradient. The general slope, or rate of change in vertical elevation per unit of horizontal distance, of water surface of a flowing stream. The rate of change of any characteristic per unit of length. See “stream bed gradient”.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Growing season. The part of the year when soil temperatures at 19.7 inches below the soil surface are higher than biologic zero (5 degrees Celsius). The growing season can be approximated as the period of time between the average date of the last killing frost in the spring to the average date of the first killing frost in the fall. This represents a temperature threshold of 28 degrees Fahrenheit or lower at a frequency of 5 years in 10.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

- **O horizon.** An organic layer of fresh and decaying plant residue.
- **A horizon.** The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
- **E horizon.** The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum or some combination of these.
- **B horizon.** The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

- **C horizon.** The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.
- **Cr horizon.** Soft, consolidated bedrock beneath the soil.
- **R layer.** Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hydraulic control point. The top of an obstruction to which stream flow must rise before passing over, or a point in the stream where the flow is constricted.

Hydraulic gradient. The slope of the water surface (see “gradient”). The drop in head per length in the direction of stream flow.

Hydraulics. Refers to water, or other liquids, in motion and their action.

Hydric soil. A soil formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

Hydrograph. A graph showing, for a given point on a stream or for a given point in any drainage system, the discharge, stage, velocity or other property of water with respect to time.

Hydrologic. Refers to water in all its stages, and its properties, distribution and circulation through the hydrologic cycle.

Hydrologic soil cover complex. A combination of a hydrologic soil group and a type of cover.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Hydrology. The science that deals with the occurrence and behavior of water in the atmosphere, on the ground and underground.

Hydrophytic Vegetation. Macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

Hydroperiod. The seasonal pattern of the water level in a wetland.

Impervious soil. A soil through which water, air or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intermittent stream. A stream, or reach of a stream, that does not flow year round and that flows only when it receives baseflow solely during wet periods or from groundwater discharge or long-continued contribution from melting snow or other erratic surface and shallow subsurface sources. Compare “ephemeral stream”

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

- **Basin.** Water is applied rapidly to nearly level plains surrounded by levees or dikes.
- **Border.** Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.
- **Controlled flooding.** Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.
- **Corrugation.** Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.
- **Drip (or trickle).** Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing or perforated pipe.
- **Furrow.** Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
- **Sprinkler.** Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
- **Subirrigation.** Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

- **Wild flooding.** Water, released at high points, is allowed to flow onto an area without controlled distribution.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones. Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Large organic debris or large woody debris (LWD). Any large piece of relatively stable woody material having at least diameter greater than 10 centimeters and a length greater than 1 meter that intrudes into the stream channel.

- **Affixed logs.** Single log or groups of logs that are firmly embedded, lodged or rooted in a stream channel.
- **Bole.** Term referring to the stem or trunk of the tree. Large boles being 10 meters or more in length often embedded and remain in the stream for extended periods.
- **Digger log.** Log anchored to the stream banks and/or channel bottom in such a way that a scour pool is formed.
- **Free logs.** Logs or groups of logs that are not embedded, lodged or rooted in the stream channel.
- **Snag.** A standing dead tree or submerged fallen tree in a large stream; with the top exposed or only slightly submerged.

Types of large organic debris accumulation:

- **Clumps.** Accumulations of debris at irregularly spaced intervals along the channel margin, not forming major impediments to flow.
- **Jams.** Large accumulations of debris partially or completely blocking the stream channel, creating major obstructions to flow.
- **Scattered.** Single pieces of debris at irregularly spaced intervals along the channel.

Leaching. The removal of soluble material from soil or other material by percolating water.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Longitudinal profile. A graph of the vertical fall of the stream bed or water surface measured along the course of the stream.

Mass movement (mass wasting). Dislodgement and downslope transport of soil and rock material as a unit under direct gravitational stress. The process includes slow

displacements, such as creep and solifluction, and rapid movements, such as landslides, rock slides and falls, earthflows, debris flows and avalanches. Agents of fluid transport (water, ice, air) may play an important, if subordinate, role in the process.

Mean annual discharge. Daily mean discharge in units per second averaged over a period of years. Mean annual discharge usually fills a river channel to about one-third of its bankfull depth.

Mean velocity. The average velocity of water in one vertical segment of a cross section of a stream. Surface velocity is usually much stronger than bottom velocity. A velocity equal to mean velocity is most often found at 0.6 of the depth at any given point in the stream.

Meander. A reach of stream with a ratio of channel length/valley length greater than 1.5. By definition, any value exceeding unity can be taken as evidence of meandering, but 1.5 has been widely accepted by convention.

Medium textured soil. Very fine sandy loam, loam, silt loam or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miocene. The epoch of the Tertiary Period of geologic time, immediately preceding the Pliocene Epoch (from approximately 5 million to 24 million years ago); also corresponding (time-stratigraphic) "series" of earth materials.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam or silty clay loam.

Moisture regimes. Defined in terms of the ground water level and in terms of the presence or absence of water held at a tension <15 bars in the moisture control section by periods of the year.

- **Udic** – In most years the soil is not dry in any part for as long as 90 days.
- **Xeric** – In most years the soil is dry in all parts for 45 or more consecutive days with the four months that follow the summer solstice in six or more years out of 10.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Nonpoint source (pollutants). Substances of widespread origin that run off, wash off or seep through the ground, eventually entering the public waters of the state.

Nonwetland. Any area that has sufficiently dry conditions that indicators of hydrophytic vegetation, hydric soils and /or wetland hydrology are lacking.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron and zinc obtained from the soil and carbon, hydrogen and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

- | | |
|------------------|-----------------------|
| • Very low | less than 0.5 percent |
| • Low | 0.5 to 1.0 percent |
| • Moderately low | 1.0 to 2.0 percent |
| • Moderate | 2.0 to 4.0 percent |
| • High | 4.0 to 8.0 percent |
| • Very high | more than 8.0 percent |

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Pathogens. Organisms which are usually microscopic that produce disease. Common pathogens include: bacteria, viruses, fungi, protozoa and parasites.

Perched water table. See “episaturation”

Percolation. The downward movement of water through the soil.

Perennial stream. A stream, or reach of a stream, that flows continuously in years with average precipitation. It commonly receives subsurface water from melting snow or other sources. Its channel usually is at or below the water table.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional

usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

- Extremely slow 0.0 to 0.01 inch
- Very slow 0.01 to 0.06 inch
- Slow 0.06 to 0.2 inch
- Moderately slow 0.2 to 0.6 inch
- Moderate 0.6 inch to 2.0 inches
- Moderately rapid 2.0 to 6.0 inches
- Rapid 6.0 to 20 inches
- Very rapid more than 20 inches

Point Bar. A deposit of sand, gravel or other material on the inside of a stream bend, which causes some obstruction to the flow.

Pollutant. Any substance introduced into the environment that adversely affects the usefulness of the resource.

Pool (stream). A portion of the stream with reduced current velocity, often with water deeper than the adjacent areas, and which is frequently usable by fish for resting and cover.

Pool (floodplain, marsh). A small body of standing water.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Relief. The elevations or inequalities of a land surface, considered collectively.

Riffles (stream). Section of a stream containing gravel, cobbles and boulders in which surface water is at least slightly turbulent and the current is swift enough that the surface of the gravel and cobble is swept fairly free of sand and silt. Riffles are essential for trout spawning and food production.

Riparian. Relating to or living on or near the bank of a watercourse. These zones range in width from narrow bands in desert or mountainous areas to wide bands in valley bottoms.

Riparian area. The area between a stream or other body of water and the adjacent upland identified by soil characteristics and distinctive vegetation. It includes wetlands and those portions of flood plains and valley bottoms that support riparian vegetation.

Riparian vegetation. Vegetative growth along the banks of a stream.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff or overland flow. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Runoff curve number. An index number indicating the relative runoff potential for a soil cover complex, denoted as (RCN) or (CN).

Salmonid. A member of the fish family classed as Salmonidae, including the salmons, trouts, chars, whitefishes and gayling.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sediment. Any mineral or organic matter that is in suspension, being transported, or has been moved from its site of origin by air, water gravity or ice. Also the solid particulate organic and inorganic material such as sand and silt that settles to the bottom of a water body.

Sediment discharge. Rate of flow of sediment contained in a stream, expressed as volume or weight per unit time. Sediment discharge includes “suspended load” and “bed load discharge”. Suspended load discharge is the product of stream flow discharge and concentration of suspended sediment.

Sediment transport. The rate of sediment movement through a given reach of stream.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Septic systems. An on-site system designed to treat and dispose of domestic sewage. A typical septic system consists of a tank that receives waste from a residence or business and a system of tile lines or a pit for disposal of the liquid effluent (sludge) that remains after decomposition of the solids by bacteria in the tank; must be pumped out periodically.

Side channel. Lateral channel with an axis of flow roughly parallel to the mainstem and which is fed by water from the mainstem; a braid of river with flow appreciably lower than the main channel. Side channel habitat may exist either in well-defined secondary (overflow) channels, or in poorly defined watercourses flowing through partially submerged gravel bars and islands along the margins of the mainstem.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Sinuosity. The ratio of channel length to direct down valley distance.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

- | | |
|-----------------------|------------------|
| • Level | 0 to 3 percent |
| • Nearly level | 3 to 5 percent |
| • Very gently sloping | 5 to 12 percent |
| • Gently sloping | 12 to 20 percent |
| • Moderately sloping | 20 to 30 percent |

- Strongly sloping 30 to 50 percent
- Moderately steep 50 to 70 percent
- Steep 70 to 90 percent
- Very steep 90 percent and higher

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

- Very coarse sand 2.0 to 1.0
- Coarse sand 1.0 to 0.5
- Medium sand 0.5 to 0.25
- Fine sand 0.25 to 0.10
- Very fine sand 0.10 to 0.05
- Silt 0.05 to 0.002
- Clay less than 0.002

Stage. (Also known as **water level** or **gauge height**.) Elevation of water surface above any chosen reference plane.

Stage-discharge curve. A graphical representation of the relationship between channel discharge at a given cross-section and the corresponding gauge height (stage).

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stream. A natural water course containing flowing water, at least part of the year, supporting a community of plants and animals within the stream channel and the riparian vegetation zone.

Stream Bank. The portion of the channel cross-section that restricts lateral movement of water at normal water levels.

- **Lower bank.** The periodically submerged portion of the channel cross-section from the normal high water line to the water's edge during the summer low-flow period.
- **Upper bank.** The portion of the topographic cross-section from the break in the general slope of the surrounding land to the normal high water line.

Stream bed. The substrate plane, bounded by the stream banks, over which the water column moves. Also called stream bottom.

Substratum. The part of the soil below the solum.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer” or the “Ap horizon.”

Surface soil. The A, E, AB and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Suspended load. That part of the sediment load whose immersed weight is carried by the fluid. See also “bed load”

Temperature regime. Mean annual soil temperature within the main root zone, which is at a depth of 5 to 100 cm.

- **Cryic** – mean annual temperature higher than 0 degrees Celsius (32 degrees Fahrenheit) but lower than 8 degrees Celsius (47 degrees Fahrenheit).
- **Frigid** – mean annual temperature is lower than 8 degrees Celsius (47 degrees Fahrenheit) and difference between summer and winter temperatures is more than 5 degrees Celsius (9 degrees Fahrenheit) at a depth of 50 cm.
- **Mesic** – mean annual temperature is 8 degrees Celsius or higher, but lower than 15 degrees Celsius (59 degrees Fahrenheit).

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake or the sea.

Texture, soil. The relative proportions of sand, silt and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay* and *clay*. The sand, loamy sand and sandy loam classes may be further divided by specifying “coarse,” “fine” or “very fine.”

Tributary. Any channel or inlet that conveys water into a stream.

Turbulence. The motion of water where local velocities fluctuate wildly in all three dimensions, resulting in abrupt changes in flow directions. It causes surface disturbances and uneven surface levels, and often masks subsurface areas due to the entrapment of air.

Undercut bank. A bank that has had its base cut away by the water or has been man-made and overhangs part of the stream.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Watershed. A convex surface such as a mountain or hill that sheds water from one high point or ridge into several streams that may form its boundary. “Watershed” is commonly confused with “drainage basin,” a concave surface collecting precipitation into one stream.

Watershed assessment. A means of describing physical and biological processes in the context of a watershed.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wetland Definitions

1. US Army Corps of Engineers and Environmental Protection Agency wetland definition: “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” [33CFR 328.3(b) and 40 CFR 230.3(t)].
2. Natural Resources Conservation Service wetland definition: “An area that has a predominance of hydric soils and that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of hydrophytic vegetation typically adapted

for life in saturated soil conditions.” (180-V-NFSAM, Third ED., March 1994; NRCS Food Security Act Manual)

Wetted perimeter. The length of the wetted contact between a stream flowing water and the stream bottom in a vertical plane at right angle to the direction of flow.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Woody debris. See “large organic debris”

