

GLOSSARY – Erosion and Sedimentation Terms

(Adapted from Washington State Department of Transportation publication and Journal for Erosion and Sediment Control Professionals (IECA))

Abrasion – Removal of streambank soil as a result of sediment-laden water, ice, or debris rubbing against the bank.

Accelerated Erosion – Erosion caused or increased by human activity, such as agriculture or construction, as opposed to naturally occurring erosion.

Acid Soil – Soil with a low pH (below 7.0).

Alkaline Soil – Soil with pH above 7.0.

Armor – To protect; protective covering; shield.

Basin Plan – A plan and all implementing regulations and procedures including but not limited to land use management adopted by ordinance for managing surface and storm water quality and quantity management facilities and features within individual subbasins.

Best Management Practice (BMP) – Physical, structural, and/or managerial practices that when used singly or in combination, reduce the downstream quality and quantity impacts of stormwater.

Biodegradable – Able to decompose when exposed to biological agents and soil chemicals.

Bioengineering – Combination of vegetative and structural practices to prevent erosion or stabilize slopes or streambanks.

Buffer – A small area of permanent vegetation bordering a field, stream, or lake or running through cropland, protecting the soil from wind and rain erosion, slowing water runoff, and trapping sediment and other pollutants.

Catchbasin – A chamber or well, usually built at the curb line of a street, for the admission of surface water to a sewer or subdrain, having at its base a sediment sump designed to retain grit and detritus below the point of overflow.

Catchment – Surface drainage area.

Channel – A feature that conveys surface water and is open to the air.

Channelization – Alteration of a stream channel by widening, deepening, straightening, cleaning, or paving certain areas to change flow characteristics.

Check Dam – Small dam constructed in a gully or other small watercourse to decrease the streamflow velocity, minimize channel scour, and promote deposition of sediment.

Clay – Cohesive soil whose individual particles are not visible to the unaided human eye (less than 0.002 mm in diameter). Clay can be molded into a ball that will not crumble.

Cohesion – The capacity of a soil to resist shearing stress, exclusive of functional resistance.

Coir – Coconut fiber.

Coir Log or Coir Roll – Roll of coconut fiber, often used in bioengineering systems to provide erosion control along a streambank support the establishment of vegetation.

Contour Cropping – Tillage and planting of a crop across, rather than in the direction of, a slope to reduce soil loss.

Conveyance – A mechanism for transporting water from one point to another, including pipes, ditches, and channels.

Conveyance System – The drainage facilities, both natural and man-made, which collect, contain, and provide for the flow of surface and stormwater from the highest points on the land down to a receiving water. The natural elements of the conveyance system include swales and small drainage courses, streams, rivers, lakes, and wetlands. The human-made elements of the conveyance system include gutters, ditches, pipes, channels, and most retention/detention facilities.

CPESC – Certified Professional in Erosion and Sediment Control

C-TRM – Composite turf reinforcement mat.

Curb Inlet Sediment Barrier – Temporary barrier constructed from concrete block and gravel or gravel-filled sandbags, designed to reduce sediment discharged into storm drains by ponding the runoff and allowing sediment to settle out.

Cutbank – The outside bank of a bend, often eroding and across the stream from a point bar.

Design Storm – A prescribed hyetograph and total precipitation amount (for a specific duration recurrence frequency) used to estimate runoff for a hypothetical storm of interest or concern for the purpose of analyzing existing drainage, designing new drainage facilities or assessing other impacts of a proposed project on the flow of surface water.

Discharge – Outflow; the flow of a stream, canal, or aquifer. One may also speak of the discharge of a canal or stream into a lake, river, or ocean. (Hydraulics) Rate of flow, specifically fluid flow; a volume of fluid passing a point per unit of time, commonly expressed as cubic feet per second, cubic meters per second, gallons per minutes, gallons per day, or millions of gallons per day.

Drainage – Refers to the collection, conveyance, containment, and/or discharge of surface and storm water runoff.

Drain – A buried pipe or other conduit (closed drain). A ditch (open drain) for carrying off surplus surface water or ground water.

Embankment – The part of the soil next to a stream, lake, or body of water where the soil elevation adjacent to the water is higher than the water level; usually referred to as the bank.

Erosion – The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. Also, detachment and movement of soil or rock fragments by water, wind, ice, or gravity. The following terms are used to describe different types of water erosion.

Erosion and Sediment Control – Any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave a site.

Erosion and Sediment Control Facility – A type of drainage facility designed to hold water for a period of time to allow sediment contained in the surface and stormwater runoff directed to the facility to settle out so as to improve the quality of the runoff.

Erosion Control Blanket – Blanket made from straw, coir, excelsior, or synthetic material and enveloped in plastic or biodegradable netting. Use to stabilize disturbed or highly erosive soils while vegetation is established. Temporary blankets made from biodegradable or photodegradable components last several months to a year, and permanent blankets (also called turf reinforcement mats) can last for several years.

Face Planting – Planting vegetation in the frontal openings of retaining structures.

Filter – Layer of fabric, sand, gravel, or graded rock placed between the bank revetment or channel lining and soil for one or more of three purposes: to prevent the soil from moving through the revetment; to prevent the revetment from sinking into the soil; and to permit natural seepage from the streambank, thus preventing buildup of excessive groundwater pressure.

Fine Particles – Silt and clay particles; also called fines.

Forebay – Any easily maintained, extra storage area provided near an inlet of a BMP to trap incoming sediments before they accumulate in a pond or wetland BMP.

Freeboard – The vertical distance between the design water surface elevation and the elevation of the barrier which contains the water.

French Drain – A drainage device in which a hole or trench is backfilled with sand or gravel.

Frost-Heave – The upward movement of soil surface due to the expansion of water stored between particles in the first few feet of the soil profile as it freezes. May cause surface fracturing of asphalt or concrete.

Frequency of Storm (Design Storm Frequency) - The anticipated period in years that will elapse, based on average probability of storms in the design region, before a storm of a given intensity and/or total volume will recur; thus a 10-year storm can be expected to occur on the average once every 10 years. Sewers designed to handle flows which occur under such storm conditions would be expected to be surcharged by any storms of greater amount or intensity.

Gabion – A rectangular or cylindrical wire mesh cage filled with rock and used as a protecting agent, revetment, etc., against erosion. Soft gabions, often used in stream bank stabilization, are made of geotextiles filled with dirt, in between which cuttings are placed.

Geotextile – Textile made from synthetic fibers, usually nonbiodegradable. Geotextiles can be woven or nonwoven and have varying degrees of porosity. They are used as moisture barriers, for separation or reinforcement of soils, for filtration, and for drainage.

Gravel – Soil particles ranging from 1/5 inch to 3 inches in diameter.

Ground Water Table – The free surface of the ground water, that surface subject to atmospheric pressure under the ground, generally rising and falling with the season, the rate of withdrawal, the rate of restoration, and other conditions. It is seldom static.

Gully – A channel caused by the concentrated flow of surface and stormwater runoff over unprotected erodible land.

Hydraulic Mulching – Applying wood fiber mulch and often a mixture of seed, water, and fertilizer in one application help retain soil and moisture; also hydromulching.

Hydrograph - A graph of runoff rate, inflow rate or discharge rate, past a specific point over time.

Hydrologic Soil Groups – A soil characteristic classification system defined by the U.S. Soil Conservation Service in which a soil may be categorized into one or four soil groups (A, B, C, or D) based upon infiltration rate and other properties.

Hydrology – The science of the behavior of water in the atmosphere, on the surface of the earth, and underground.

Hydroseeding – A method of seeding by mixing seed with water and fertilizer and then spraying the solution onto a seedbed.

Hyetograph – A graph of precipitation versus time.

Impermeable Material – A soil or material whose properties prevent movement of water through the material.

Impervious Surface – A hard surface area, which either prevents or retards the entry of water into the soil. Common impervious surfaces include roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled surfaces.

Infiltration – The downward movement of water from the surface to the subsoil.

Infiltration Facility (or system) – A drainage facility designed to use the hydrologic process of surface and stormwater runoff soaking into the ground, commonly referred to as a percolation, to dispose of surface and stormwater runoff.

Infiltration Pond – A facility that provides stormwater quantity control by containing excess runoff in a detention facility, then percolating that runoff into the surrounding soil.

Inlet – A form of connection between surface of the ground and a drain or sewer for the admission of surface and stormwater runoff.

Live Staking – A bioengineering technique in which cuttings from living branches are inserted and tamped into the ground, where they eventually take root.

Loam – An easily crumbled soil consisting of a mixture of clay, silt and sand.

Low Flow Channel – An incised or paved channel from inlet to outlet in a dry basin, which is designed to carry low runoff flows and/or baseflow, directly to the outlet without detention.

Mass Wasting – The movement of large volumes of earth material downslope.

Mean Velocity – The average velocity of a stream flowing in a channel or conduit at a given cross-section or in a given reach. It is equal to the discharge divided by the cross-sectional area of the reach.

Mechanically Stabilized Earth – Use of steel bars or other material to stabilize the earthen mass behind a retaining wall.

Mitigation – means, in the following order of preference:

1. Avoiding the impact altogether by not taking a certain action or part of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
5. Compensation for the impact by replacing, enhancing, or providing substitute resources or environments.

Monitor – To systematically and repeatedly measure something in order to track changes.

Monitoring – The collection of data by various methods for the purposes of understanding natural systems and features, evaluating the impacts of development proposals on such systems, and assessing the performance of mitigation measures imposed as conditions of development.

Mulch – Any material used to cover a soil surface to reduce evaporation or prevent erosion.

Navigable Streams – Waterways of sufficient depth and width to handle a specified traffic load.

Noncohesive Soil – Soil particles that have no natural resistance to being pulled apart at their point of contact, such as silt, sand and gravel.

Off-site – Any area lying upstream of the site that drains onto the site and any area lying downstream of the site to which the site drains.

Outlet – Point of water disposal from a stream, river, lake, tidewater, or artificial drain.

Outlet Channel – A waterway constructed or altered primarily to carry water from man-made structures, such as terraces, tile lines, and diversions.

Overbank Drainage – Water flow over top bank and down the slope.

Peak Discharge – The maximum instantaneous rate of flow during a storm, usually in reference to a specific design storm event.

Permeability Rate – The rate at which water will move through a saturated soil.

Permeable Soils – Soil materials with a sufficiently rapid infiltration rate so as to greatly reduce or eliminate surface and stormwater runoff. These soils are generally classified as SCS hydrologic soil types A and B.

Photodegradable – Materials that are not resistance to ultraviolet radiation and therefore break down relatively quickly when exposed to sunlight.

Piping – Flow of groundwater through subsurface conduits in the bank.

Point Bar – The bank in a bend that has built up because of sediment deposition.

Rational Method – A means of computing storm drainage flow rates (Q) by use of the formula $Q = CIA$, where C is a coefficient describing the physical drainage area, I is the rainfall intensity and A is the area.

RCEP – Rolled erosion control product.

Recharge – The flow to ground water from the infiltration of surface and stormwater runoff.

Retention – The process of collecting and holding surface and stormwater runoff with no surface outflow.

Revegetation – Reestablishing vegetative cover on ground that has been disturbed, such as a construction site.

Revetment – A facing of stone, bags, blocks, pavement, etc. used to protect or armor a bank against erosion.

Rhizome – A below-ground stem capable of growing a new plant.

Rill – A small intermittent watercourse with steep sides, usually only a few inches deep. Often rills are caused by an increase in surface water flow when soil is cleared of vegetation.

Riprap – A facing layer or protective mound of stones placed to prevent erosion or sloughing of a structure or embankment due to flow of surface and stormwater runoff.

Riparian – Pertaining to the banks of streams, wetlands, lakes or tidewater.

River Training Works – Structures placed in a stream to direct the current into a predetermined channel.

Rock – Soil particles greater than 3 inches in diameter.

Runoff – Water originating from rainfall and other precipitation that is found in drainage facilities, rivers, streams, springs, seeps, ponds, lakes and wetlands as well as shallow ground water.

Sand – Soil particles ranging from 0.05 to 2.0 mm in diameter; individual particles are visible to the unaided human eye.

Scour – The erosive action of flowing water in streams that removes and carries away material from the bed and banks.

Sediment – Fragmented material that originates from weathering and erosion of rocks or unconsolidated deposits, and is transported by, suspended in, or deposited by water.

Sedimentation – The depositing or formation of sediment.

Sediment Basin – A pond created to retain runoff long enough to allow excess sediment to settle out.

Seepage – Groundwater emerging on the face of a streambank.

Shear – Force parallel to a surface as opposed to directly on the surface. An example of shear would be the tractive force that removes particles from a streambank as flow moves over the surface of the slope; on the other hand, a floating log that directly strikes the bank would not be a shear force.

Sheet Erosion – The removal by surface runoff of a fairly uniform layer of soil from a bank slope.

Sheetflow – Runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

Silt – Noncohesive soil whose individual particles are not visible to the unaided human eye (0.002 to 0.05 mm). Silt will crumble when rolled into a ball.

Siltation – The process by which a river, lake, or other water body becomes clogged with sediment. Silt can clog gravel beds and prevent successful salmon spawning.

Silt Fence – Temporary sediment barrier consisting of filter fabric, sometimes backed with wire mesh, attached to supporting posts and partially buried.

Sloughing – Movement of a mass of soil down a bank into the channel, similar to a landslide; also slumping.

Sod – Plugs, squares, or strips of turf with the adhering soil.

Soil – Soil finer than sand but coarser than clay, but not so fine that it can remain suspended in water for long periods. The grain size is considered to be less than 0.0625 mm.

Soil Group – A classification of soils by the Soil Conservation Service into four runoff potential groups. The groups range from A soils, which are very permeable and produce little or no runoff, to D soils, which are not very permeable and produce much more runoff.

Soil Permeability – The ease with which gases, liquids, or plant roots penetrate or pass through a layer of soil.

Soil Stabilization – The use of measures such as rock lining, vegetation or other engineering structures to prevent the movement of soil when loads are applied to the soil.

Source Control BMP – A BMP that is intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, constructing roofs over storage and working areas, and directing was water and similar discharges to the sanitary sewer or a dead end sump.

Spiking – A method of cultivation in which a solid tine or pointed blade penetrates the turf and soil.

Spillway – A passage such as a paved apron or channel for surplus water over or around a dam or similar obstruction. An open or closed channel, or both, used to convey excess water from a reservoir. It may contain gates, either manually or automatically controlled, to regulate the discharge of excess water.

Stolon – An above-ground stem capable of growing a new plant.

Storm Frequency – The time interval between major storms of predetermined intensity and volumes of runoff for which storm sewers and other structures are designed and constructed to handle hydraulically without surcharging and backflooding, e.g., a 2-year, 10-year or 100-year storm.

Stormwater – The portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels or pipes into a defined surface water channel, or a constructed infiltration facility.

Straw Bale – Temporary barriers made of straw bales are sometimes installed across a slope or around the perimeter of a construction site to intercept and detain sediment transported by runoff.

Streambank Erosion – Removal of soil particles from a bank slope primarily caused by water action but also by climatic conditions, ice and debris, chemical reactions, and changes in land and stream use.

Streams – Those areas where surface waters flow sufficiently to produce a defined channel or bed. A defined channel or bed is indicated by hydraulically sorted sediments or the removal of vegetative litter or loosely rooted vegetation by the action of moving water. The channel or bed need not contain water year-round.

Subbasin – A drainage area which drains to a water course or waterbody named and noted on common maps and which is contained within a basin.

Swale – A shallow drainage conveyance with relatively gentle side slopes, generally with flow depths less than one foot.

SWMP – Stormwater management plan.

Tackifier – Material sprayed onto a soil surface to bind soil particles and prevent erosion.

Toe of Slope – A point or line of slope in an excavation or cut where the lower surface changes to horizontal or meets the existing round slope; or a point or line on the upper surface of a slope where it changes to horizontal or meets the original surface.

Topography – General terms to include characteristics of the ground surface such as plains, hills, mountains; degree of relief, steepness of slopes, and other physiographic features.

Total Suspended Solids – The entire amount of organic and inorganic particles dispersed in water.

Tractive Force – The drag on a streambank caused by passing water which tends to pull soil particles along with the streamflow.

TRM – turf reinforcement mat.

Turbidity Barrier – a device to prevent sediment migration in a body of water, consisting of filter fabric that allows the passage of water but retaining sediment particles. The fabric is attached to a flotation device at the top and usually anchored or weighted at the bottom; also turbidity curtain.

Unstable Slopes – The sloping areas of land which have in the past exhibited, are currently exhibiting, or will likely in the future exhibit, mass movement of earth.

Watershed – An area confined by drainage divides usually having only one streamflow outlet. In the UK the term “watershed” refers to what in the US is called the drainage divide, and the term “catchment” refers to what in the US is called a watershed.

Wattles – Live branch cuttings, usually willows, bound together into long bundles; also live fascines.

Wattling – Use of wattles to stabilize slopes and streambanks.

Weephole – Opening left in a revetment or bulkhead to allow groundwater drainage.

Wetlands – 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. This includes wetlands created, restored or enhanced as part of a mitigation procedure. This does not include constructed wetlands or the following surface waters of the state intentionally constructed from sites that are not wetlands: irrigation and drainage ditches, grass-lined swales canals, agricultural detention facilities, farm ponds, and landscape amenities.

Wind Erosion – Removal of soil particles by wind, causing dryness and deterioration of soil structure; occurs most frequently in flat, dry areas covered by sands and loamy soils.