

GLOSSARY

The following glossary of terms are significant because of the divergent use of many words and expressions pertinent to the field of erosion control, storm water pollution control, and channel and shore protection. The definitions given are not necessarily those established by case law but have been adopted because of their rational or prevalent usage and for consistency within the profession. Derived forms are not separately defined when the meaning should be clear from the basic form, such as alluvial and alluviation should be implicit after alluvium is defined.

ACRONYMS

BFM	Bonded Fiber Matrix
BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
ECB	Erosion Control Blanket
EPA	United States Environmental Protection Agency
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NPS	Non-Point Sources
RECP	Rolled Erosion Control Product
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load

DEFINITIONS

Accretion	Outward growth of bank or shore by sedimentation. Increase or extension of boundaries of land by action of natural forces.
Active Construction Area	The area where the contractor intends to be actively involved in soil disturbing work during the ensuing 20 day period during the winter season. This may include areas where soils have been disturbed as well as areas where soil disturbance has not yet occurred.
Aggradation	General and progressive raising of a stream bed by deposition of sediment. Modification of the earth's surface in the direction of uniformity of grade, or slope, by deposition as in a river bed.
Aggressive	Refers to the corrosive properties of soil and water.
Alluvial	Referring to deposits of silts, sands, gravels and similar detrital material that have been transported by running water.
Alluvium	Stream-borne materials deposited in and along a channel.
Apron	A lining of the bed of the channel upstream or downstream from a lined or restricted waterway. A floor or lining of concrete, rock, etc., to protect a surface

	from erosion such as the pavement below chutes, spillways, at the toes of dams, or along the toe of bank protection.
Aquifer	Water-bearing geologic formations that permit the movement of ground water.
Arid Area	Any area receiving less than 10 inches of rainfall per year.
Armor	Artificial surfacing of bed, banks, shore or embankment to resist erosion or scour.
Arroyo	Waterway of an ephemeral stream deeply carved in rock or ancient alluvium.
Artesian Waters	Percolating waters confined below impermeable formations with sufficient pressure to spring or well up to the surface.
Articulated	Made flexible by hinging particularly of small rigid slabs adapted to revetment.
Avulsion	(1) A forcible separation; also, a part torn off (2) The sudden removal of land from the estate of one person to that of another, as by a sudden change in a river (3) A sudden shift in channel location.
Backfill	Earth used to fill a trench or excavation.
Backing Layer	A layer of graded rock between rock riprap and underlying engineering fabric or filter layer to prevent extrusion of the soil or filter layer material through the riprap.
Backshore	The zone of the shore or beach lying between the foreshore and the coastline and acted upon by waves only during severe storms, especially when combined with exceptionally high water.
Backwater	An unnaturally high stage in stream caused by obstruction or confinement of flow, as by a dam, a bridge, or a levee Its measure is the excess of unnatural over natural stage, not the difference in stage upstream and downstream from its cause.
Baffle	A pier, vane, sill, fence, wall or mound built on the bed of a stream to parry, deflect, check or disturb the flow or to float on the surface to deflect or dampen cross currents or waves.
Bank	The lateral boundary of a stream confining water flow The bank on the left side of a channel looking downstream is called the left bank, etc.
Bank Protection	Revetment, or other armor protecting a bank of a stream from erosion, includes devices used to deflect the forces of erosion away from the bank.
Bar	An elongated deposit of alluvium within a channel or across its mouth.
Barrier	A low dam or rack built to control flow of debris.
Base Flood	The flood or tide having a 1 percent chance of being exceeded in any given year (100-year flood) The "base flood" is commonly used as the "standard flood" in Federal flood insurance studies (see Regulatory Flood).
Base Floodplain	The area subject to flooding by the base flood.
Base Flow	The flow contribution to a creek by groundwater During dry periods, base flow constitutes the majority of stream flow.
Basin	(1) The surface area tributary to a stream or lake (2) Space above or below ground capable of retaining or detaining water or debris.
Bay	An indentation of bank or shore, including erosional cuts and slipouts, not necessarily large.
Beach	The zone of sedimentary material that extends landward from the low water line to the place where there is marked change in material or form, or to the line of permanent vegetation (usually the effective limit of storm waves) The seaward limit of a beach, unless otherwise specified, is the mean low water line A beach includes foreshore and backshore.
Bed	The earth below any body of water, limited laterally by bank or shore.
Bed Load	Sediment that moves by rolling, sliding, or skipping along the bed and is essentially in contact with the stream bed.

Bedding	The foundation under a drainage structure.
Beneficial Uses	As referred to in the State Water Quality Standards, beneficial uses are activities that range from recreational to agricultural uses, depending on the source of the water.
Berm	(1) A bench or terrace between two slopes (2) A nearly horizontal part of the beach or backshore formed at the high water line by waves depositing material Some beaches have no berms, other have one or several.
Best Management Practice (BMP)	(1) A measure that is implemented to protect water quality and reduce the potential for pollution associated with storm water runoff (2) Any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces pollution.
Block	Precast prismatic unit for riprap structure.
Bluff	A high, steep bank composed of erodible materials.
Boil	Turbulent break in a water surface by upwelling.
Boom	Floating log or similar element designed to dampen surface waves or control the movement of drift.
Bore	A transient solitary wave in a narrow or converging channel advancing with a steep turbulent front; product of flash floods or in-coming tides.
Boulder	Largest rock transported by a stream or rolled in the surf; arbitrarily heavier than 12 kg and larger than 200 mm.
Braided Stream	A stream in which flow is divided at normal stage by small islands This type of stream has the aspect of a single large channel with which there are subordinate channels.
Breaker	A wave meeting a shore, reef, sandbar, or rock and collapsing.
Breakwater	A fixed or floating structure that protects a shore area, harbor, anchorage, or basin by intercepting waves.
Bulkhead	A steep or vertical structure placed on a bank, bluff, or embankment to retain or prevent sliding of the land and protect the inland area against damage.
Bulking	The increase in volume of flow due to air entrainment, debris, bedload, or suspended sediment.
Buoyancy	Uplift force on a submerged body equal to the mass of water displaced times the acceleration of gravity.
Camber	An upward adjustment of the profile of a drainage facility under a heavy loading (usually a high embankment) and poor soil conditions, so that as the drainage facility settles it approaches the design profile.
Canal	An artificial open channel.
Canyon	A large deep valley; also the sub-marine counterpart.
Cap	Top layer of stone protective works.
Capacity	The effective carrying ability of a drainage structure Generally measured in cubic meters per second.
Capillarity	The attraction between water and soil particles that cause water to move in any direction through the soil mass regardless of gravitational forces.
Capillary Water	Water that clings to soil particles by capillary action It is normally associated with fine sand, silt, or clay, but not normally with coarse sand and gravel.
Catch Basin	A drainage structure that collects water May be either a structure where water enters from the side or through a grating.
Causeway	A raised embankment or trestle over swamps or overflow areas.
Cavitation	Erosion by suction, especially in the partial vacuum of a diverging jet.

Celerity	Velocity of a moving wave, as distinguished from velocity of particles oscillating in the wave.
Channel	The space above the bed and between banks occupied by a stream.
Channelization	The process of making a channel or channels A channel is the bed of a stream or river, or the hollow or course in which a stream flows.
Check	A sill or weir in a channel to control stage or velocity.
Check Dam	A small dam generally placed in steep ditches for the purpose of reducing the velocity in the ditch.
Cienega	A swamp formed by water rising to the surface at a fault.
Cleanout	An access opening to a roadway drainage system Usually consists of a manhole shaft, a special chamber or opening into a shallow culvert or drain.
Cliff	A high, steep face of rock; a precipice.
Cloudburst	Rain storm of great intensity usually over a small area for a short duration.
Coast	(1) The strip of land, of indefinite width (up to several kilometers), that extends from the shoreline inland to the first major change in terrain features. (2) As a combining form, upcoast is northerly and downcoast is southerly.
Cobble	Rock smaller than a boulder and larger than gravel; arbitrarily 0.5 to 12 kg, or 75 to 200 mm in diameter.
Coefficient of Runoff	Percentage of gross rainfall that appears as runoff.
Composite Hydrograph	A plot of mean daily discharges for a number of years of record on a single year time base for the purpose of showing the occurrence of high and low flows.
Concentrated Flow	Flowing water that has been accumulated into a single fairly narrow stream.
Concentration	In addition to its general sense, means the unnatural collection or convergence of waters so as to discharge in a narrower width, and at greater depth or velocity.
Conduit	Any pipe, arch, box or drain tile through which water is conveyed.
Cone	Physiographic form of sediment deposit washed from a gorge channel onto an open plain; a debris cone, also called an alluvial fan.
Confluence	A junction of streams.
Constriction	An obstruction narrowing a waterway.
Construction Activity	Includes clearing, grading, or excavation and contractor activities that result in soil disturbance.
Construction Site	The area involved in a construction project as a whole.
Contraction	The reduction in cross sectional area of flow.
Contractor	Party responsible for carrying out the contract per plans and specifications.
Control	(1) A section or reach of an open conduit or stream channel that maintains a stable relationship between stage and discharge (2) For flood, erosion, debris, etc., remedial means or procedure restricting damage to a tolerable level.
Conveyance	(1) A measure of the water carrying capacity of a stream or channel (2) Any natural or man-made channel or pipe in which concentrated water flows.
Core	Central zone of dike, levee, rock groin, jetty, etc.
Corrasion	Erosion or scour by abrasion in flowing water.
Corrosion	Erosion by chemical action.
Cradle	A concrete base generally constructed to fit the shape of a structure that is to be forced through earthen material by a jacking operation The cradle is constructed to line and grade Then the pipe rides on the cradle as it is worked through the given material by jacking and tunneling methods Also serves as bedding for pipes in trenches in special conditions.
Creek	A small stream, usually active.

Crest	(1) Peak of a wave or a flood (2) Top of a levee, dam, weir, spillway or other water barrier or control.
Crib	An open-frame structure loaded with earth or stone ballast to act as a baffle in bank protection.
Critical Depth	(Depth at which specific energy is a minimum) - The depth of water in a conduit at which under certain other conditions the maximum flow will occur These other conditions are the conduit is on the critical slope with the water flowing at its critical velocity and there is an adequate supply of water The depth of water flowing in an open channel or a conduit partially filled, for which the velocity head equals one-half the hydraulic mean depth.
Critical Flow	That flow in open channels at which the energy content of the fluid is at a minimum Also, that flow that has a Froude number of one.
Critical Slope	That slope at which the maximum flow will occur at the minimum velocity The slope or grade that is exactly equal to the loss of head per meter resulting from flow at a depth that will give uniform flow at critical depth; the slope of a conduit that will produce critical flow.
Critical Velocity	Mean velocity of flow when flow is at critical depth.
Culvert	A closed conduit, other than a bridge, that allows water to pass under a highway A culvert has a span of less than 6.1 m, or if multispan, the individual spans are 3.0 m or less.
Current	Flow of water, both as a phenomenon and as a vector. Usually qualified by adjectives like downward, littoral, tidal, etc. to show relation to a pattern of movement.
Current Meter	An instrument for measuring the velocity of a currentIt is usually operated by a wheel equipped with vanes or cups that is rotated by the action of the impinging currentAn indicating or recording device is provided to indicate the speed of rotation, which is correlated with the velocity of the current.
Cutoff Wall	A wall at the end of a drainage structure, the top of which is an integral part of the drainage structure This wall is usually buried, and its function is to prevent undermining of the drainage structure if the natural material at the outlet of the structure is scoured by the water discharging from the end of the structureCutoff walls are sometimes used at the upstream end of a structure when there is a possibility of erosion at this point.
Debris	Any material including floating woody materials and other trash, suspended sediment, or bed load moved by a flowing stream.
Debris Barrier	A deflector placed at the entrance of a culvert upstream, which tends to deflect heavy floating debris or boulders away from the culvert entrance during high-velocity flow.
Debris Basin	Any area upstream from a drainage structure utilized for the purpose of retaining debris in order to prevent clogging of drainage structures downstream.
Debris Rack	A straight barrier that, when placed across the stream channel, tends to separate light and medium floating debris from stream flow and prevent the debris from reaching the culvert entrance.
Degradation	General and progressive lowering of the longitudinal profile of a channel by erosion.
Delta	System of channels through an alluvial plain at the mouth of a stream.
Denuded	Land stripped of vegetation.
Deposit	An earth mass of particles settled or stranded from moving water or wind.
Depth	Vertical distance, (1) from surface to bed of a body of water, or (2) from crest or crown to invert of a conduit.

Design Discharge	The quantity of flow that is expected at a certain point as a result of a design storm Usually expressed as a rate of flow in cubic meters per second.
Design Flood	The peak discharge (when appropriate, the volume, stage, or wave crest elevation) of the flood associated with the probability of exceedance selected for the design of an encroachment in a FEMA flood plain.
Design Frequency	The recurrence interval for hydrologic events used for design purposes As an example, a design frequency of 50 years means a storm of a magnitude that would be expected to recur on the average of every 50 years (See Probability of Exceedance.)
Design High Water	The flood stage or tide crest elevation adopted for design of drainage and bank protection structures (See Design Flood and High Water).
Design Storm	That particular storm that contributes runoff that the drainage facilities were designed to handle This storm is selected for design on the basis of its probability of exceedance or average recurrence interval (See Probability of Exceedance.)
Detention	The process of temporarily collecting and holding back storm water for later release to receiving waters.
Detention Storage	Surface water moving over the land is in detention storage Surface water allowed to temporarily accumulate in ponds, basins, reservoirs or other types of holding facility and that is ultimately re-turned to a watercourse or other drainage system as runoff is in detention storage (See Retention Storage)
Detritus	Loose material such as; rock, sand, silt, and organic particles.
Dike	(1) Usually an earthen bank alongside and parallel with a river or open channel to restrict overflow (See Levee) (2) An asphalt concrete berm along the edge of a shoulder.
Dike, Finger	Relatively short embankments constructed normal to a larger embankment, such as an approach fill to a bridge Their purpose is to impede flow and direct it away from the major embankment.
Dike, Spur	Relatively short embankments constructed at the upstream side of a bridge end for the purpose of aligning flow with the waterway opening and to move scour away from the bridge abutment.
Dike, Toe	Embankment constructed to prevent lateral flow from scouring the corner of the downstream side of an abutment embankment Sometimes referred to as training dikes.
Dike, Training	Embankments constructed to provide a transition from the natural stream channel or floodplain, both to and from a constricting bridge crossing.
Discharge	A volume of water flowing out of a drainage structure or facility Measured in cubic meters per second.
Dissipate	Expend or scatter harmlessly, as of energy of moving water.
Disturbed Areas	Areas that have been purposefully cleared, grubbed, excavated, or graded by the contractor; ground surface that has been disrupted by construction activities, including construction access/roads, staging, and storage sites producing significant areas of exposed soil and soil piles
Ditch	Small artificial channel, usually unlined.
Diversion	(1) The change in character, location, direction, or quantity of flow of a natural drainage course (a deflection of flood water is not a diversion) (2) Draft of water from one channel to another (3) Interception of runoff by works that discharge it through unnatural channels.

D-Load (Cracking D-Load)	A term used in expressing the strength of concrete pipe The cracking D-load represents the test load required to produce a 0.3 mm crack for a length of 300 mm.
Downdrain	A prefabricated drainage facility assembled and installed in the field for the purpose of transporting water down steep slopes.
Downdrift	The direction of predominant movement of littoral materials.
Drain	Conduit intercepting and discharging surplus ground or surface water.
Drainage	(1) The process of removing surplus ground or surface water by artificial means (2) The system by which the waters of an area are removed (3) The area from which waters are drained; a drainage basin.
Drainage Area (Drainage Basin) (Basin)	That portion of the earth's surface upon which falling precipitation flows to a given location
Drainage Course	Any path along which water flows when acted upon by gravitational forces.
Drainage Divide	The rim of a drainage basin A series of high points from which water flows in two directions, to the basin and away from the basin.
Drainage Easement (See Easement).	
Drainage System	Usually a system of underground conduits and collector structures that flows to a single point of discharge.
Drawdown	The difference in elevation between the water surface elevation at a constriction in a stream or conduit and the elevation that would exist if the constriction were absent Drawdown also occurs at changes from mild to steep channel slopes and weirs or vertical spillways.
Drift	(1) Floating or non-mineral burden of a stream. (2) Deviation from a normal course in a cross current, as in littoral drift.
Drop	Controlled fall in a stream to dissipate energy.
Dry Weather Flows	A small amount of water that flows almost continually due to lawn watering, irrigation or springs.
Dune	A sand wave of approximately triangular cross section (in a vertical plane in the direction of flow) formed by moving water or wind, with gentle upstream slope and steep downstream slope and deposition on the downstream slope.
Easement	Right to use the land of others.
Ebb	Falling stage or outward flow, especially of tides.
Eddy Loss	The energy lost (converted into heat) by swirls, eddies, and impact, as distinguished from friction loss.
Eddy	Rotational flow around a vertical axis.
Embankment	Earth structure above natural ground.
Embayment	Indentation of bank or shore, particularly as caused by progressive erosion.
Encroachment	Extending beyond the original or customary limits, such as by occupancy of the river and/or flood plain by earth fill embankment.
Endwall	A wall placed at the end of a culvert It may serve three purposes; one, to hold the embankment away from the pipe and prevent sloughing into the pipe outlet channel; two, to provide a wall that will prevent erosion of the roadway fill; and three, to prevent flotation of the pipe.
Energy	Potential or kinetic, the latter being expressed in the same unit (meters) as the former.
Energy Dissipator	A structure for the purpose of slowing the flow of water and reducing the erosive forces present in any rapidly flowing body of water.
Energy Grade Line	The line that represents the total energy gradient along the channel It is established by adding together the potential energy expressed as the water surface

- elevation referenced to a datum and the kinetic energy (usually expressed as velocity head) at points along the stream bed or channel floor.
- Energy Head** The elevation of the hydraulic grade line at any section plus the velocity head of the mean velocity of the water in that section.
- Entrance.** The upstream approach transition to a constricted waterway.
- Entrance Head** The head required to cause flow into a conduit or other structure; it includes both entrance loss and velocity head.
- Entrance Loss** The head lost in eddies and friction at the inlet to a conduit or structure.
- Environmental Protection Agency (EPA)** Agency that issued the regulations to control pollutants in storm water runoff discharges (The Clean Water Act and NPDES permit requirements).
- Ephemeral** Of brief duration, as the flow of a stream in an arid region.
- Equalizer** A drainage structure similar to a culvert but different in that it is not intended to pass a design flow in a given direction. Instead it is often placed level so as to permit passage of water in either direction. It is used where there is no place for the water to go. Its purpose is to maintain the same water surface elevation on both sides of an embankment.
- Erosion** The wearing away of natural (earth) and unnatural (embankment, slope protection, structure, etc.) surfaces by the action of external forces. In the case of drainage terminology, this term generally refers to the wearing away of the earth's surface by flowing water. It can also refer to the wear on a structural surface by flowing water and the material carried therein.
- Erosion and Accretion** Loss and gain of land, respectively, by the gradual action of a stream in shifting its channel by cutting one bank while it builds on the opposite bank. Property is lost by erosion and gained by accretion but not by avulsion when the shift from one channel to another is sudden. Property is gained by reliction when a lake recedes.
- Erosion and Scour** The cutting or wearing away by the forces of water of the banks and bed of a channel in horizontal and vertical directions, respectively.
- Erosion Control** Vegetation, such as grasses and wildflowers, and other materials, such as straw, fiber, stabilizing emulsion, protective blankets, etc., placed to stabilize areas disturbed by grading operations, reduce loss of soil due to the action of water or wind, and prevent water pollution.
- Estuary** That portion of a river channel occupied at times or in part by both sea and river flow in appreciable quantities. The water usually has brackish characteristics.
- Evaporation** A process whereby water as a liquid is changed into water vapor, typically through heat supplied from the sun.
- Excavation** The process of removing earth, stone, or other materials.
- Existing Vegetation** Any vegetated area that has not already been cleared and grubbed.
- Face** The outer layer of slope revetment.
- Fair Weather Prediction** When there is no precipitation in the forecast between the current calendar day and the next working day.
- Fan** A portion of a cone, but sometimes used to emphasize definition of radial channels. Also reference to spreading out of water or soils associated with waters leaving a confined channel.
- Feasible** Economically achievable or cost-effective measures that reflect a reasonable degree of pollutant reduction achievable through the application of available nonpoint pollution control practices, technologies, processes, site criteria, operating methods, or other alternatives.

Fetch	The unobstructed distance over water in which waves are generated by wind of relatively constant direction and speed.
Filter	A porous article or mass (as of fabric or even-graded mineral aggregate) through which water will freely pass but that will block the passage of soil particles.
Filter Fabric (RSP fabric)	An engineering fabric (geotextile) placed between the backfill and supporting or underlying soil through which water will pass and soil particles are retained.
Filter Layer	A layer of even-graded rock between rock riprap and underlying soil to prevent extrusion of the soil through the riprap.
Flap Gate	A form of valve that is designed so that a minimum force is required to push it open but when a greater water pressure is present on the outside of the valve, it remains shut so as to prevent water from flowing in the wrong direction Construction is simple with a metal cover hanging from an overhead rod or pinion at the end of a culvert or drain.
Flood Frequency	Also referred to as exceedance interval, recurrence interval or return period; the average time interval between actual occurrences of a hydrological event of a given or greater magnitude; the percent chance of occurrence is the reciprocal of flood frequency, e.g., a 2 percent chance of occurrence is the reciprocal statement of a 50-year flood (See Probability of Exceedance.)
Flood Plane	The position occupied by the water surface of a stream during a particular flood Also, loosely, the elevation of the water surface at various points along the stream during a particular flood.
Flood Stage	The elevation at which overflow of the natural banks of a stream begins to cause damage in the reach in which the elevation is measured.
Flood Stage	The elevation at which overflow of the natural banks of a stream begins to run uncontrolled in the reach in which the elevation is measured.
Flood Waters	Former stream waters that have escaped from a watercourse (and its overflow channel) and flow or stand over adjoining lands They remain as such until they disappear from the surface by infiltration, evaporation, or return to a natural watercourse They do not become surface waters by mingling with such waters, nor stream waters by eroding a temporary channel.
Floodplain Encroachment	An action within the limits of the base flood plain.
Floodplain	Normally dry land areas subject to periodic temporary inundation by stream flow or tidal overflow Land formed by deposition of sediment by water; alluvial land.
Floodproof	To design and construct individual buildings, facilities, and their sites to protect against structural failure, to keep water out or reduce the effects of water entry.
Flow	A term used to define the movement of water, silt, sand, etc.; discharge; total quantity carried by a stream.
Flow Line	A term used to describe the line connecting the low points in a watercourse.
Flow Regime	The system or order characteristic of streamflow with respect to velocity, depth, and specific energy.
Flow, steady	Flow at constant discharge.
Flow, unsteady	Flow on rising or falling stages.
Flow, varied	Flow in a channel with variable section.
Foreshore	The part of the shore lying between the ordinary high water mark or upper limit of wave wash traversed by the runup and return of waves and the water's edge at the low water.
Free Outlet	A condition under which water discharges with no interference such as a pipe discharging into open air.

Free Water	Water that can move through the soil by force of gravity.
Freeboard	(1) The vertical distance between the level of the water surface usually corresponding to the design flow and a point of interest such as a bridge beam, levee top or specific location on the roadway grade (2) The distance between the normal operating level and the top of the sides of an open conduit; the crest of a dam, etc., designed to allow for wave action, floating debris, or any other condition or emergency, without overtopping the structure.
French Drain	A trench loosely backfilled with stones, the largest stones being placed in the bottom with the size of stones decreasing towards the top The interstices between the stones serve as a passageway for water.
Friction	Energy-dissipating conflict among turbulent water particles disturbed by irregularities of channel surface.
Froude Number	A dimensionless expression of the ratio of inertia forces to gravity forces, used as an index to characterize the type of flow in a hydraulic structure in which gravity is the force producing motion and inertia is the resisting force It is equal to a characteristic flow velocity (mean, surface, or maximum) of the system divided by the square root of the product of a characteristic dimension (as diameter or depth) and the gravity constant (acceleration due to gravity) all expressed in consistent units $Fr = V/(gy)^{1/2}$.
Gabion	A wire basket or cage filled with stone and placed as, or as part of, a bank-protection structure.
Gaging Station	A location on a stream where measurements of stage or discharge are customarily made The location includes a reach of channel through which the flow is uniform, a control downstream from this reach and usually a small building to house the recording instruments.
General Permit	A general permit for storm water discharges associated with industrial or construction activity issued by EPA or a delegated state under the NPDES storm water regulations.
Gorge	A narrow deep valley with steep or vertical banks.
Grade	Elevation of bed or invert of a channel.
Grade to Drain	A construction note often inserted on a plan for the purpose of directing the Contractor to slope a certain area in a specific direction, so that the surface waters will flow to a designated location.
Gradient (Slope)	The rate of ascent or descent expressed as a percent or as a decimal as determined by the ratio of the change in elevation to the length.
Gradually Varied Flow	In this type of flow, changes in depth and velocity take place slowly over large distances, resistance to flow dominates and acceleration forces are neglected.
Gravel	Rock larger than sand and smaller than cobble, arbitrarily ranging in diameter from 5 to 50 mm.
Groin	A fingerlike barrier structure usually built perpendicular to the shoreline or oblique to primary motion of water, to trap littoral drift, retard erosion of the shore, or to control movement of bed material.
Ground Water	That water that is present under the earth's surface Ground water is that situated below the surface of the land, irrespective of its source and transient status Subterranean streams are flows of ground waters parallel to and adjoining stream waters, and usually determined to be integral parts of the visible streams.
Grouted	Bonded together with an inlay or overlay of cement mortar.
Gulch	A relatively young, well-defined and sharply cut erosional channel.
Gully	Diminutive of gulch.

Head	Represents an available force equivalent to a certain depth of water. This is the motivating force in effecting the movement of water. The height of water above any point or plane of reference. Used also in various compound expressions, such as energy head, entrance head, friction head, static head, pressure head, lost head, etc.
Headcutting	Progressive scouring and degrading of a streambed at a relatively rapid rate in the upstream direction, usually characterized by one or a series of vertical falls.
High Water	Maximum flood stage of stream or lake; periodic crest stage of tide. Historic HW is stage recorded or otherwise known.
Hydraulic	Pertaining to water in motion and the mechanics of the motion.
Hydraulic Gradient	A line that represents the relative force available due to the potential energy available. This is a combination of energy due to the height of the water and the internal pressure. In any open channel, this line corresponds to the water surface. In a closed conduit, if several openings were placed along the top of the pipe and open tubes inserted, a line connecting the water surface in each of these tubes would represent the hydraulic grade line.
Hydraulic Jump (or Jump)	Transition of flow from the rapid to the tranquil state. A varied flow phenomenon producing a rise in elevation of water surface. A sudden transition from supercritical flow to the complementary subcritical flow, conserving momentum and dissipating energy.
Hydraulic Mean Depth	The area of the flow cross section divided by the water surface width.
Hydraulic Radius	The cross sectional area of a stream of water divided by the length of that part of its periphery in contact with its containing conduit; the ratio of area to wetted perimeter.
Hydric	Characterized by, relating to or requiring an abundance of moisture.
Hydrograph	A graph showing stage, flow, velocity, or other property of water with respect to time.
Hydrographic	Pertaining to the measurement or study of bodies of water and associated terrain.
Hydrography	Water Surveys The art of measuring, recording, and analyzing the flow of water; and of measuring and mapping watercourses, shore lines, and navigable waters.
Hydrologic	Pertaining to the cyclic phenomena of waters of the earth; successively as precipitation, runoff, storage and evaporation, and quantitatively as to distribution and concentration.
Hydrology	The science dealing with the occurrence and movement of water upon and beneath the land areas of the earth. Overlaps and includes portions of other sciences such as meteorology and geology. The particular branch of Hydrology that a design engineer is generally interested in is surface runoff that is the result of excessive precipitation.
Hydrophyte	A perennial vascular aquatic plant having its overwintering buds under water; a plant growing in water or in soil too waterlogged for most plants to survive.
Hydrostatic	Pertaining to pressure by and within water due to gravitation acting through depth.
Hyetograph	Graphical representation of rainfall intensity against time.
Impervious.	A surface that cannot be easily penetrated; for instance, rain does not readily penetrate asphalt or concrete surfaces.
Impinge	To strike and attack directly, as in curvilinear flow where the current does not follow the curve but continues on tangent into the bank on the outside of bend in the channel.

Incised Channel	Channel that has been cut relatively deep into underlying formation by natural processes	Characteristics include relatively straight alignment and high, steep banks such that overflow rarely occurs, if ever.
Infiltration	The passage of water through the soil surface into the ground.	
Inlet	An entrance into a ditch, storm drain, or other water conveyance system.	
Inlet Time	The time required for storm runoff to flow from the most remote point, in flow time, of a drainage area to the point where it enters a drain or culvert.	
Inlet Transition	A special entrance to a box or pipe culvert that is shaped in such a manner that in passing from one flow condition to another, the minimum turbulence or interference with flow is permitted.	
Inundate	To cover with a flood.	
Invert	The bottom of a drainage facility along which the lowest flows would pass.	
Invert Paving	Generally applies to metal pipes where it is desirable to improve flow characteristics or prevent corrosion at low flows	The bottom portion of the pipe is paved with an asphaltic material, concrete, or air-blown mortar.
Inverted Siphon	A pipe for conducting water beneath a depressed place	A true inverted siphon is a culvert that has the middle portion at a lower elevation than either the inlet or the outlet and in which a vacuum is created at some point in the pipe
		A sag culvert is similar, but the vacuum is not essential to its operation.
Isohyet/Isohyetal Line	A line drawn on a map or chart joining points that receive the same amount of precipitation.	
Isohyetal Map	A map containing isohyetal lines and showing rainfall intensities.	
Isovel	Line on a diagram of a channel or channel section connecting points of equal velocity.	
Jack (or Jack Straw)	Bank protection element consisting of wire or cable strung on three mutually perpendicular struts connected at their centers.	
Jacking Operations	A means of constructing a pipeline under a highway without open excavation	
	A cutting edge is placed on the first section of pipe and the pipe is forced ahead by hydraulic jacks	As the leading edge pushes ahead, the material inside the pipe is dug out and transported outside the pipe for disposal.
Jam	Wedged collection of drift in a constriction of a channel, such as a gorge or a bridge opening.	
Jet	An effluent stream from a restricted channel, including a fast current through a slower stream.	
Jetty	An elongated, artificial obstruction projecting into a stream or the sea from bank or shore to control shoaling and scour by deflection of strength of currents and waves.	
Jump	Sudden transition from supercritical flow to the complementary subcritical flow, conserving momentum and dissipating energy; the hydraulic jump.	
Kolk	Rotational flow about a horizontal axis, induced by a reef and breaking the surface in a boil.	
Lag	Variously defined as time from beginning (or center of mass) of rainfall to peak (or center of mass) of runoff.	
Lake	A water filled basin with restricted or no outlet	Includes reservoirs, tidal ponds and playas.
Laminar Flow	That type of flow in which each particle moves in a direction parallel to every other particle and in which the head loss is approximately proportional to the velocity (as opposed to turbulent flow).	
Lateral	In a drainage system, a drainage conduit transporting water from inlet points to the main drain trunk line.	

Levee	An embankment to prevent inundation, usually on or along the bank of a stream or lake to protect outer lowlands (See Dike)
Lining	Protective cover of the surface of a channel.
Littoral	Pertaining to or along the shore, particularly to describe currents, deposits, and drift.
Littoral Drift	The sedimentary material (sand) moved along the shoreline under the influence of waves and currents.
Littoral Transport	The movement of littoral drift along the shoreline by waves and currents. Includes movement parallel (longshore transport) and perpendicular (on-offshore transport) to the shore.
Loading	The total amount of material entering a system from all sources.
Local Depression	A low area in the pavement or in the gutter established for the special purpose of collecting surface waters on a street and directing these waters into a drainage inlet.
Longshore	Parallel to and near the shoreline.
Marginal	Within a borderland area; more general and extensive than riparian.
Marsh	An area of soft, wet, or periodically submerged land, generally treeless and usually characterized by grasses and other low vegetation.
Mature	Classification for streams that have established flat gradients not subject to further scour.
Maximum Historical Flood	The maximum flood that has been recorded or experienced at any particular highway location.
Mean Annual Flood	The flood discharge with a recurrence interval of 2.33 years.
Mean Depth	For a stream at any stage, the wetted normal section divided by the surface width. Hydraulic mean depth.
Meander	In connection with streams, a winding channel usually in an erodible, alluvial valley A reverse or S-shaped curve or series of curves formed by erosion of the concave bank, especially at the downstream end, characterized by curved flow and alternating shoals and bank erosions Meandering is a stage in the migratory movement of the channel, as a whole, down the valley.
Meander Plug (Clay Plug)	Deposits of cohesive materials in old channel bend-ways These plugs are sufficiently resistant to erosion to serve as essentially semi-permanent geological controls to advancing channel migrations.
Meander Scroll	Evidence of historical meander patterns in the form of lines visible on the inside of meander bends (particularly on aerial photographs) that resemble a spiral or convoluted form in ornamental design These lines are concentric and regular forms in high sinuosity channels and are largely absent in poorly developed braided channels.
Mesh	Woven wire or other filaments used alone as revetment, or as retainer or container of masses of gravel or cobble.
Mud Flow	A well-mixed mass of water and alluvium that, because of its high viscosity, and low fluidity as compared with water, moves at a much slower rate, usually piling up and spreading out like a sheet of wet mortar or concrete.
Mulch	A natural or artificial layer of plant residue or other material that covers the land surface and conserves moisture, holds soil in place, aids in establishing vegetation, and reduces temperature fluctuations.
"n" Value	The roughness coefficient in the Manning formula for determination of the discharge coefficient in the Chezy formula $V = C(RS)^{1/2}$, where $C = (1/n)R^{1/6}$

- National Pollutant Discharge Elimination System (NPDES)** EPA's program to control the discharge of pollutants to waters of the United States. NPDES is a part of the federal CWA, which requires point and non-point source dischargers to obtain permits. These permits are referred to as NPDES permits.
- Natural and Beneficial Floodplain Values** Includes but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.
- Negative Projecting Conduits** A structure installed in a trench with the top below the top of trench, then covered with backfill and embankment. See Positive Projecting Conduit.
- Nonactive Construction Area** Any area not considered to be an active construction area. Typically, active construction areas become nonactive construction areas whenever construction activities are expected to be discontinued for a period of 20 or more days during the winter season.
- Non-Point Sources (NPS)**. Diffuse sources from which contaminants originate to accumulate in surface water or groundwater. These sources can add to a cumulative problem with serious health or environmental consequences.
- Nonuniform Flow** A flow in which the velocities vary from point to point along the stream or conduit, due to variations in cross section, slope, etc.
- Normal Depth** The depth at which flow is steady and hydraulic characteristics are uniform.
- Normal Water Surface (Natural Water Surface)** The free surface associated with flow in natural streams
- Notice of Intent (NOI)** A formal notice to the EPA or a state agency having delegated NPDES authority that a construction project seeking coverage under a General Permit is about to begin. The NOI provides information on the owner, location, and type of project, and certifies that the permittee will comply with conditions of the construction General Permit. The NOI is not a permit application and no approval is required. Some local permits may require submittal of a Notice of New Construction (NONC) in lieu of filing a NOI with the state or EPA.
- Notice of Termination (NOT)** A formal notice to the EPA or delegated state agency for General Permit site terminating coverage under the permit.
- Nourishment** The process of replenishing a beach. It may be brought about naturally, by accretion due to the longshore transport, or artificially, by the deposition of dredged materials.
- Off-Site Drainage** Flow of water that originates outside the property.
- On-Site Drainage** Flow of water that originates inside the property.
- Open Channel** Any conveyance in which water flows with a free surface.
- Ordinary High Water Mark** The line on the shore established by the fluctuation of water and physically indicated on the bank (1.5 + years return period)
- Outfall** Discharge or point of discharge of a culvert or other closed conduit.
- Outwash** Debris transported from a restricted channel to an unrestricted area where it is deposited to form an alluvial or debris cone or fan.
- Overflow** Discharge of a stream outside its banks; the parallel channels carrying such discharge.
- Overtopping Flood** The flood described by the probability of exceedance and water surface elevation at which flow occurs over a hydraulic structure, highway, watershed divide, or through structure(s) provided for emergency relief.
- Peak Flow** Maximum momentary stage or discharge of a stream in flood. Design Discharge.
- Pebble** Stone 10 to 75 mm in diameter, including coarse gravel and small cobble.

- Perched Water** Ground water located above the level of the water table and separated from it by a zone of impermeable material.
- Percolating Waters** Waters that have infiltrated the surface of the land and move slowly downward and outward through devious channels (aquifers) unrelated to stream waters, until they reach an underground lake or regain and spring from the land surface at a lower point.
- Permeability** The property of soils that permits the passage of any fluid Permeability depends on grain size, void ratio, shape and arrangement of pores.
- Permeable** Open to the passage of fluids, as for (1) pervious soils and (2) bank-protection structures.
- Permit.** An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of an environmental regulation.
- Physiographic Region** A geographic area whose pattern of landforms differ significantly from that of adjacent regions.
- Pier** Vertical support of a structure standing in a stream or other body of water. Used in a general sense to include bents and abutments.
- Pile** A long, heavy timber or section of concrete or metal that is driven or jetted into the earth or bottom of a water body to serve as a structural support or protection.
- Piping** The action of water passing through or under an embankment and carrying some of the finer material with it to the surface at the downstream face.
- Plunge** Flow with a strong downward component, as in outfall drops, overbank falls, and surf attack on a beach.
- Point of Concentration** That point at which the water flowing from a given drainage area concentrates
- Point Sources.** A source of pollutants from a single point of conveyance such as a pipe. For example, the discharge pipe from a sewage treatment plant or factory is a point source.
- Poised Stream** A term used by river engineers applying to a stream that over a period of time is neither degrading nor aggrading its channel, and is nearly in equilibrium as to sediment transport and supply.
- Positive Projecting Conduit** A structure installed in shallow trench with the top of the conduit projecting above the top of the trench and then covered with embankment. See Negative Projecting Conduit.
- Potamology** The hydrology of streams.
- Practicable** Capable of being done within reasonable natural, social, and economic constraints.
- Precipitation** Discharge of atmospheric moisture as rain, snow or hail, measured in depth of fall or in terms of intensity of fall in unit time.
- Prescriptive Rights** The operation of the law whereby rights may be established by long exercise of their corresponding powers or extinguished by prolonged failure to exercise such powers.
- Preserve** To avoid modification to the functions of the natural floodplain environment or to maintain it, as closely as practicable, in its natural state.
- Probability** The chance of occurrence or recurrence of a specified event within a unit of time, commonly expressed in 3 ways. Thus a 10-year flood has a chance of 0.1 per year and is also called a 10%-chance flood.
- Probability of Exceedance** The statistical probability, expressed as a percentage, of a hydrologic event occurring or being exceeded in any given year. The probability (p) of a storm or flood is the reciprocal of the average recurrence interval (N).

Probable Maximum Flood	The flood discharge that may be expected from the most severe combination of critical meteorological and hydrological conditions that are reasonably possible in the region.
Pumping Plant	A complete pumping installation including a storage box, pump or pumps, standby pumps, connecting pipes, electrical equipment, pumphouse and outlet chamber.
Rack	An open upright structure, such as a debris rack.
Rainfall	Point Precipitation: That which registers at a single gauge Area Precipitation: Adjusted point rainfall for area size.
Rainwash	The creep of soil lubricated by rain.
Range	Difference between extremes, as for stream or tide stage.
Rapidly Varied Flow	In this type of flow, changes in depth and velocity take place over short distances, acceleration forces dominate, and energy loss due to friction is minor.
Rapids	Swift turbulent flow in a rough steep reach.
Ravine	A valley larger than a gulch, smaller than a canyon, and less bold in relief than a gulch or arroyo.
Reach	The length of a channel uniform with respect to discharge, depth, area, and slope More generally, any length of a river or drainage course.
Recession	Retreat of shore or bank by progressive erosion.
Reef	Generally, any solid projection from the bed of a stream or other body of water.
Regime	The system or order characteristic of a stream; its behavior with respect to velocity and volume, form of and changes in channel, capacity to transport sediment, amount of material supplied for transportation, etc.
Regimen	The characteristic behavior of a stream during ordinary cycles of flow.
Regulatory Framework	A particular set of laws, rules, procedures, and agencies designed to govern a particular type of activity or solve a particular program.
Reliction	Pertaining to being left behind For example: that area of land is left behind by reliction when the water surface of a lake is lowered.
Repose	The stable slope of a bank or embankment, expressed as an angle or the ratio of horizontal to vertical projection.
Restore	To reestablish a setting or environment in which the functions of the natural and beneficial floodplain values adversely impacted by a development can continue to operate.
Restriction	Artificial or natural control against widening of a channel, with or without construction.
Retard	Bank-protection structure designed to check the riparian velocity and induce silting or accretion.
Retarding Basin	Either a natural or man made basin with the specific function of delaying the flow of water from one point to another This tends to increase the time that it takes all the water falling on the extremities of the drainage basin to reach a common point, resulting in a reduced peak flow at that point.
Retention.	The holding of runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.
Retention Storage	Water that accumulates and ponds in natural or excavated depressions in the soil surface with no possibility for escape as runoff (See Detention Storage)
Retrogression	Reversal of stream grading; i.e., aggradation after degradation, or vice versa.
Revegetation	Planting of indigenous plants to replace natural vegetation that is damaged or removed as a result of construction projects or permit requirements.
Revetment	Bank protection to prevent erosion.

Rill Erosion.	The formation of numerous, closely spaced streamlets due to uneven detachment of surface soils by runoff on slopes.
Riparian	Pertaining to the banks of a stream.
Ripple	(1) The light fretting or ruffling of a water caused by a breeze (2) Undulating ridges and furrows, or crests and troughs formed by action of the flow.
Riprap	A layer, facing, or protective mound of broken concrete, sacked concrete, rock, rubble, or stones randomly placed to prevent erosion, scour, or sloughing of a structure or embankment; also, the stone used for this purpose.
Riser	In mountainous terrain where much debris is encountered, the entrance to a culvert sometimes becomes easily clogged Therefore, a corrugated metal pipe or a structure made of timber or concrete with small perforations, called a riser, is installed vertically to permit entry of water and prohibit the entry of mud and debris The riser may be increased in height as the need occurs.
Risk	The consequences associated with the probability of flooding attributable to an encroachment It includes the potential for property loss and hazard to life during the service life of the structure or project.
Risk Analysis	An economic comparison of design alternatives using expected total costs (construction costs plus risk costs) to determine the alternative with the least expected cost to the public.
River	A large stream, usually active when any streams are flowing in the region.
Rock	(1) Cobble, boulder or quarry stone as a construction material(2) Hard, natural mineral in formation, as in piles of talus.
Rounded Inlet	The edges of a culvert entrance that are rounded for smooth transition that reduces turbulence and increases capacity.
RSP Fabric	(See Filter Fabric).
Rubble	Rough, irregular fragments of rock or concrete.
Runoff	(1) The surface waters that exceed the soil's infiltration rate and depression storage(2) The portion of precipitation that appears as flow in streams Drainage or flood discharge that leaves an area as surface flow or a pipeline flow, having reached a channel or pipeline by either surface or subsurface routes.
Runup	The rush of water up a beach or structure, associated with the breaking of a wave. The amount of runup is measured according to the vertical height above still water level that the rush of water reaches.
Sag Culvert (or Sag Pipe)	A pipeline with a dip in its grade line crossing over a depression or under a highway, railroad, canal, etc The term inverted siphon is common but inappropriate as no siphonic action is involved The term "sag pipe" is suggested as a substitute.
Sand	Granular soil coarser than silt and finer than gravel, ranging in diameter from 0.05 to 5 mm.
Scour	The result of erosive action of running water, primarily in streams, excavating and carrying away material from the bed and banks Wearing away by abrasive action.
Scour, General	The removal of material from the bed and banks across all or most of the width of a channel, as a result of a flow contraction that causes increased velocities and bed shear stress.
Scour, Local	Removal of material from the channel bed or banks that is restricted to a minor part of the width of a channel This scour occurs around piers and embankments and is caused by the actions of vortex systems induced by the obstruction to the flow.

Scour, Natural	Removal of material from the channel bed or banks that occurs in streams with the migration of bed forms, shifting of the thalweg and at bends and natural contractions.
Sea	Ocean or other body of water larger than a lake; state of agitation of any large body of water.
Seawall	A structure separating land and water areas, primarily designed to prevent erosion and other damage due to wave action. (See bulkhead).
Sediment	Fragmentary material that originates from weathering of rocks and is transported by, suspended in, or deposited by water.
Sedimentation	Gravitational deposit of transported material in flowing or standing water.
Seepage	Percolation of underground water through the banks and into a stream or other body of water.
Seiche	A standing wave oscillation of an enclosed waterbody that continues, pendulum fashion, after the cessation of the originating force, which may have been either seismic or atmospheric.
Seismic Wave	A gravity wave caused by an earthquake.
Semi-Arid Area	Area receiving between 10 and 20 inches of rainfall per year.
Sheet Erosion	Erosion of thin layers of soil by sheets of flowing water.
Sheet Flow	Any flow spread out and not confined; i.e., flow across a flat open field.
Sheet Pile	A pile with a generally slender, flat cross-section that is driven into ground or bottom of a water body and meshed or interlocked with like members to form a wall or bulkhead.
Shoal	A shallow region in flowing or standing water, especially if made shallow by deposition.
Shoaling	Deposition of alluvial material resulting in areas with relatively shallow depth.
Shore	The narrow strip of land in immediate contact with the water, including the zone between high and low water lines. See backshore, foreshore, onshore, offshore, longshore, and nearshore.
Silt	(1) Water-borne sediment. Detritus carried in suspension or deposited by flowing water, ranging in diameter from 0.005 to 0.05 mm. The term is generally confined to fine earth, sand, or mud, but is sometimes both suspended and bedload. (2) Deposits of water-borne material, as in a reservoir, on a delta, or on a floodplain.
Sinuosity	The ratio of the length of the river thalweg to the length of the valley proper.
Skew	When a drainage structure is not normal (perpendicular) to the longitudinal axis of the highway, it is said to be on a skew. The skew angle is the smallest angle between the perpendicular and the axis of the structure.
Slide	Gravitational movement of an unstable mass of earth from its natural position.
Slipout	Gravitational movement of an unstable mass of earth from its constructed position. Applied to embankments and other man-made earthworks.
Slope	(1) Gradient of a stream. (2) Inclination of the face of an embankment, expressed as the ratio of horizontal to vertical projection; or (3) The face of an inclined embankment or cut slope. In hydraulics it is expressed as percent or in decimal form.
Slough	(1) Pronounced SLU A side or overflow channel in which water is continually present. It is stagnant or slack; also a waterway in a tidal marsh. (2) Pronounced SLUFF Slide or slipout of a thin mantle of earth, especially in a series of small movements.
Slugflow	Flow in culvert or drainage structure that alternates between full and partly full. Pulsating flow -- mixed water and air.

Soffit	The bottom of the top -- (1) With reference to a bridge, the low point on the underside of the suspended portion of the structure. (2) In a culvert, the uppermost point on the inside of the structure.
Source Control BMP	An effort to prevent or limit the exposure of significant materials to storm water at the source.
Specific Energy	The energy contained in a stream of water, expressed in terms of head, referred to the bed of a stream. It is equal to the mean depth of water plus the velocity head of the mean velocity.
Spur Dike	A structure or embankment projecting a short distance into a stream from the bank and at an angle to deflect flowing water away from critical areas.
Stage	The elevation of a water surface above its minimum; also above or below an established "low water" plane; hence above or below any datum of reference; gage height.
Standing Wave	(1) The motion of swiftly flowing stream water, that resembles a wave, but is formed by decelerating or diverging flow that does not quite produce a hydraulic jump. (2) A term that when used to describe the upper flow regime in alluvial channels, means a vertical oscillation of the water surface between fixed nodes without appreciable progression in either an upstream or downstream direction. To maintain the fixed position, the wave must have a celerity (velocity) equal to the approach velocity in the channel, but in the opposite direction.
Steady Flow	A flow in which the flow rate or quantity of fluid passing a given point per unit of time remains constant.
Stone	Rock or rock-like material; a particle of such material, in any size from pebble to the largest quarried blocks.
Storage	Detention, or retention of water for future flow, naturally in channel and marginal soils or artificially in reservoirs.
Storage Basin	Space for detention or retention of water for future flow, naturally in channel and marginal soils, or artificially in reservoirs.
Storm	A disturbance of the ordinary, average conditions of the atmosphere that, unless specifically qualified, may include any or all meteorological disturbances, such as wind, rain, snow, hail, or thunder.
Storm Drain	That portion of a drainage system expressly for collecting and conveying former surface water in an enclosed conduit Often referred to as a "storm sewer", storm drains include inlet structures, conduit, junctions, manholes, outfalls and other appurtenances.
Storm Water	Storm water runoff, snow melt runoff, and surface runoff and drainage.
Storm Water Management	The recognition of adverse drainage resulting from altered runoff and the solutions resulting from the cooperative efforts of public agencies and the private sector to mitigate, abate, or reverse those adverse results.
Storm Water Pollution Prevention Plan (SWPPP)	A plan required by storm water regulations or permits that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the storm water, and a description of measures or practices to control these pollutants.
Strand	(1) To lodge on bars, banks, or overflow plain, as for drift. (2) Bar of sediment connecting two regions of higher ground.
Stream	Water flowing in a channel or conduit, ranging in size from small creeks to large rivers.

- Stream Power** An expression used in predicting bed forms and hence bed load transport in alluvial channels. It is the product of the mean velocity, the specific weight of the water-sediment mixture, the normal depth of flow and the slope.
- Stream Response** Changes in the dynamic equilibrium of a stream by any one, or combination of various causes.
- Stream Waters** Former surface waters that have entered and now flow in a well defined natural watercourse, together with other waters reaching the stream by direct precipitation or rising from springs in bed or banks of the watercourse. They continue as stream waters as long as they flow in the watercourse, including overflow and multiple channels as well as the ordinary or low-water channel.
- Strutting** Elongation of the vertical axis of pipe prior to installing in a trench After the backfill has been placed around the pipe and compacted, the wires or rods holding the pipe in its distorted shape are removed. Greater side support from the earth is developed when the pipe tends to return to its original shape. Generally used on pipes that, because of size or thinness of the metal, would tend to deform during construction operations. Arches are strutted diagonally per standard or special plan.
- Subcritical Flow** In this state, gravity forces are dominant, so that the flow has a low velocity and is often described as tranquil and streaming. Also defined as flow that has a Froude number less than one.
- Subdrain** A conduit for collecting and disposing of underground water. It generally consists of a pipe, with perforations in the bottom through which water can enter.
- Subsidence** A general lowering of the land surface by consolidation or removal of underlying soil.
- Substrate** The layer of earth or rock that lies immediately below the surface soil.
- Sump** In drainage, any low area that does not permit the escape of water by gravity flow.
- Supercritical Flow** In this state, inertia forces are dominant, so that flow has a high velocity and is usually described as rapid, shooting and torrential. Also defined as flow that has a Froude number greater than one.
- Support Base Floodplain Development** To encourage, allow, serve, or otherwise facilitate additional base floodplain development Direct support results from an encroachment, while indirect support results from an action out of the base floodplain.
- Surcharge** A condition where the hydraulic capacity of the storm drain system is temporarily exceeded (e.g., during a storm event), and the amount of water that enters the system exceeds the conveyance capacity.
- Surf** The breaking of waves and swells on the foreshore and offshore shoals.
- Surface Runoff** The movement of water on earth's surface, whether flow is over surface of ground or in channels.
- Surface Waters** Surface waters are those that have been precipitated on the land from the sky or forced to the surface in springs, and that have then spread over the surface of the ground without being collected into a definite body or channel They appear as puddles, sheet or overland flow, and rills, and continue to be surface waters until they disappear from the surface by infiltration or evaporation, or until by overland or vagrant flow they reach well-defined watercourses or standing bodies of water like lakes or seas.
- Surge** (1) A sudden swelling of discharge in unsteady flow. (2) A large mass of moving water, such as a wave or swell Also a heavy, violent swelling motion, such as a surge of water through a storm drain during a heavy rain.
- Suspended Load** Sediment that is supported by the upward components of turbulent currents in a stream and that stay in suspension for appreciable amount of time.

Suspended Solids	Organic or inorganic particles that are suspended in and carried by the water. The term includes sand, mud and clay particles as well as solids in wastewater.
Swale	A shallow, gentle depression in the earth's surface. This tends to collect the waters to some extent and is considered in a sense as a drainage course, although waters in a swale are not considered stream waters.
Swamp	An area of shallow ponding or saturated surface, the water being fresh or acidic and the area usually covered with rank vegetation.
Swell	Waves generated by a distant storm, usually regular and fully harmonic.
Talus	Loose rocks and debris disintegrated from a steep hill or cliff standing at repose along the toe.
Tapered Inlet	A transition to direct the flow of water into a channel or culvert. A smooth transition to increase hydraulic efficiency of an inlet structure.
Temporary Construction Site BMPs	BMPs that are required only temporarily to address a short-term storm water contamination threat. For example, silt fences are located near the base of newly graded slopes that have a substantial area of exposed soil. Then, during rainfall, the silt fences filter and collect sediment from runoff flowing off the slope.
Terrace	Berm or bench-like earth embankment, with a nearly level plain bounded by rising and falling slopes.
Tetrahedron	Bank protection element, basically composed of 6 steel or concrete struts joined like the edges of a triangular pyramid, together with subdividing struts and tie wires or cables.
Tetrapod	Bank protection element, precast of concrete, consisting of 4 legs joined at a central block, each leg making an angle of 109.5 degrees with the other three, like rays from the center of a tetrahedron to the center of each face.
Texture	The arrangement and interconnection of surface and near-surface particles of terrain or channel perimeter.
Thalweg	The line following the lowest part of a valley, whether under water or not. Usually the line following the deepest part of the bed or channel of a river.
Thread	The central element of a current, continuous along a stream.
Tide	The periodic rising and falling of the ocean and connecting bodies of water that results from gravitational attraction of the moon and sun acting on the rotating earth.
Time of Concentration	The time required for storm runoff to flow from the most remote point, in flow time, of a drainage area to the point under consideration. It is usually associated with the design storm.
Topography	The physical features of a surface area including relative elevations and the position of natural and man-made features.
Topping	The top layer on horizontal revetments or rock structures; also capping or cap stones.
Total Maximum Daily Load (TMDL)	A process established by the Clean Water Act to guide the application of state water quality standards to individual water bodies and watersheds by defining the amount of a particular pollutant that a water body can absorb on a daily basis without violating applicable water quality standards. Once this load is determined, the regulatory agency allocates a portion to each source of that pollutant within a particular watershed.
Total Suspended Solids (TSS)	The weight of particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of

	fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles.
Training	Control of direction of currents.
Transition	A relatively short reach or conduit leading from one waterway section to another of different width, shape, or slope.
Transport	To carry solid material in a stream in solution, suspension, saltation, or entrainment.
Trash Rack	A grid or screen across a stream designed to catch floating debris.
Tributary	A river or stream that flows into a larger river or stream.
Trough	Space between wave crests and the water surface below it.
Trunk (or Trunk Line)	In a drainage system, the main conduit for transporting the storm waters This main line is generally quite deep in the ground so that laterals coming from fairly long distances can drain by gravity into the trunk line.
Tsunami	A gravity wave caused by an underwater seismic disturbance (such as sudden faulting, landsliding or volcanic activity).
Turbidity	A measure of the amount of material suspended in the water Increasing the turbidity of the water decreases the amount of light that penetrates the water column High levels of turbidity are harmful to aquatic life.
Turbulence	The state of flow wherein the water is agitated by cross-currents and eddies, as opposed to a condition of flow that is quiet and laminar.
Turbulent Flow	That type of flow in which any particle may move in any direction with respect to any other particle, and in which the head loss is approximately proportional to the square of the velocity.
Undercut	Erosion of the low part of a steep bank so as to compromise stability of the upper part.
Underflow	The downstream flow of water through the permeable deposits that underlie a stream (1) Movement of water through a pervious subsurface stratum, the flow of percolating water; or water under ice, or under a structure (2) The rate of flow or discharge of subsurface water.
Undertow	Current outward from a wave-swept shore carrying solid particles swept or scoured from the beach or foreshore.
Unsteady Flow	A flow in which the velocity changes with respect to space and time.
Updrift	The direction opposite that of the predominant movement of littoral materials.
Uplift	Upward hydrostatic pressure on the base of an impervious structure.
Urban Runoff	A substance, such as rain, that runs off of surfaces in a watershed in excess of the amount absorbed by the surfaces (usually the ground)Urban runoff can contain sediments and contaminants (non-point source pollution) that can add to water quality degradation in the watershed Increases in impervious surface usually result in increased urban runoff.
Velocity	The rate of motion of objects or particles, or of a stream of particles.
Velocity Head	A term used in hydraulics to represent the kinetic energy of flowing water This "head" is represented by a column of standing water equivalent in potential energy to the kinetic energy of the moving water, calculated as $(V^2 / 2g)$, where the "V" represents the velocity in meters per second and "g" represents the potential acceleration due to gravity, in meters per second per second.
Vernal Pools	Vernal pools are seasonally flooded landscape depressions that support distinctive (and many times rare) plant and animal species adapted to periodic or continuous inundation during the wet season, and the absence of either ponded water or wet soil during the dry season.
Wash	Flood plain or active channel of an ephemeral stream, usually in recent alluvium.

Water Table	The surface of the groundwater below which the void spaces are completely saturated.
Watercourse	A definite channel with bed and banks within which water flows, either continuously or in season. A watercourse is continuous in the direction of flow and may extend laterally beyond the definite banks to include overflow channels contiguous to the ordinary channel. The term does not include artificial channels such as canals and drains, except natural channels trained or restrained by the works of man. Neither does it include depressions or swales through which surface or errant waters pass.
Watershed	The area that contributes surface water runoff into a tributary system or water course.
Waterway	(1) That portion of a watercourse that is actually occupied by water (2) A navigable inland body of water.
Wave	(1) An oscillatory movement of water on or near the surface of standing water in which a succession of crests and troughs advance while particles of water follow cyclic paths without advancing. (2) Motion of water in a flowing stream so as to develop the surficial appearance of a wave.
Wave Height	The vertical distance between a wave crest and the preceding trough.
Wave Length	The horizontal distance between similar points on two successive waves (for example, crest to crest or trough to trough), measured in the direction of wave travel.
Wave Period	The time in which a wave crest travels a distance equal to one wave length Can be measured as the time for two successive wave crests to pass a fixed point.
Weephole	A hole in a wall, invert, apron, lining, or other solid structure to relieve the pressure of groundwater.
Weir	A low overflow dam or sill for measuring, diverting, or checking flow.
Well	(1) An artificial excavation for withdrawal of water from underground storage. (2) The upward component of velocity in a stream.
Wetland	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.
Wet Weather Flow	Rainfall (storm water) runoff.
Windbreak	(1) A barrier fence or line of trees to break or deflect the velocity of wind. (2) Any device designed to block wind flow and intended for protection against any ill effects of wind, particularly wind erosion.
Windwave	A wave generated and propelled by wind blowing along the water surface.
Young	Immature, said of a stream on a steep gradient actively scouring its bed toward a more stable grade.