

DEFINITIONS

Note: The following terms are provided for reference and use with this manual. They shall be superseded by any other definitions for these terms adopted by ordinance.

Acceptable discharge point means an enclosed drainage system (i.e., pipe system, culvert, or tightline) or open drainage feature (e.g., ditch, channel, swale, stream, river, pond, lake, or wetland) where concentrated runoff can be discharged without creating a significant adverse impact.

Adjustment means a department-approved variation in the application of the requirements of K.C.C. 9.04.050 and the *Surface Water Design Manual* to a particular project in accordance with K.C.C. 9.04.050C.

Agricultural project means any project located on, and proposing improvements consistent with, the permitted uses of land zoned for Agriculture (A zoned lands) as defined in KCC 21A.08

Alkalinity means a measure of the acid neutralizing capacity of water; the ability of a solution to resist changes in pH by neutralizing acidic input.

Alluvial soil means a soil found in valley bottoms that is generally fine-grained and often has a high seasonal water table.

Anadromous fish means fish that live as adults in saltwater and migrate up freshwater streams and rivers for spawning.

Applicant means a property owner or a public agency or public or private utility that owns a right-of-way or other easement or has been adjudicated the right to such an easement under RCW 8.12.090, or any person or entity designated or named in writing by the property or easement owner to be the applicant, in an application for a development proposal, permit, or approval.

Appurtenances means machinery, appliances, or auxiliary structures attached to a main structure, but not considered an integral part thereof, for the purpose of enabling it to function.

Aquatic area means any non-wetland water feature including all shorelines of the state, rivers, streams, marine waters, inland bodies of open water including lakes and ponds, reservoirs and conveyance systems and impoundments of these features if any portion of the feature is formed from a stream or wetland and if any stream or wetland contributing flows is not created solely as a consequence of stormwater pond construction. Aquatic area does not include water features that are entirely artificially collected or conveyed storm or wastewater systems or entirely artificial channels, ponds, pools or other similar constructed water features.

Aquifer means a geologic stratum containing groundwater that can be withdrawn and used for human purposes.

Area-specific flow control facility requirement means the requirement of an onsite flow control facility or facilities designed in accordance with the performance criteria, target surfaces, and exceptions specified for the mapped flow control area in which a proposed project is located.

Area-specific water quality facility requirement means the requirement of an onsite water quality facility or facilities designed in accordance with the treatment menu, target surfaces, and exceptions specified for the mapped water quality treatment area in which a proposed project is located.

Arterial – A road or street primarily for through traffic. The term generally includes roads or streets considered collectors. It does not include local access roads which are generally limited to providing access to abutting property.

As-built drawings means engineering plans which have been revised to reflect all changes to the plans which occurred during construction.

Back-up system means a retention/detention facility where inflows are routed through the control structure before entering the facility; they are "backed up" into the facility by the flow restrictor.

Backwater means water upstream from an obstruction that is deeper than it would normally be without the obstruction.

Bacteria problem means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Waterbody due to exceedance or concern for exceedance of the state's numeric water quality standard for fecal coliform bacteria as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers¹ of these waterbodies, or (2) is currently designated by the County as a bacteria problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for fecal coliform as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page².

Baffle means a device, usually a flow-directing or impeding panel, used to deflect, check or regulate flow.

Base flood means a flood having a one percent chance of being equaled or exceeded in any given year; also referred to as the 100-year flood. The base flood is determined for existing conditions, unless a basin plan including projected flows under future developed conditions has been completed and adopted by King County, in which case these future flow projections shall be used. In areas where the Flood Insurance Study includes detailed base flood calculations, those calculations may be used until projections of future flows are completed and approved by King County.

Base flood elevation means the water surface elevation of the base flood. It shall be referenced to either the North American Vertical Datum of 1988 (NAVD88) or the National Geodetic Vertical Datum of 1929 (NGVD), depending on the datum used in the relative FEMA flood insurance rate map (FIRM)³.

Basin means a geographic area that contains and drains to a stream or river named and noted on common maps, such as the Cedar River, Sammamish River, Green River, Snoqualmie River, Skykomish River, or White River, or a geographic area that drains to a non-flowing water body named and noted on common maps, such as Lake Washington or Puget Sound.

Basin plan means a plan and all implementing regulations and procedures including, but not limited to, capital projects, public education activities, land use management adopted by ordinance for managing surface and storm water within the basin.

Berm means a constructed mound of earth or other material used to confine, control, spread, or filter water.

Best management practice (BMP) means any schedule of activities, prohibition of practices, maintenance procedure, or structural and/or managerial practice approved by King County that, when used singly or in combination, prevents or reduces the release of pollutants and other adverse impacts to surface water, stormwater and groundwater.

Bioswale means a long, gently sloped, vegetated ditch designed to remove pollutants from stormwater. Grass is the most common vegetation, but wetland vegetation can be used if the soil is saturated.

Bioretention – A stormwater best management practice consisting of a shallow landscaped depression designed to temporarily store and promote infiltration of stormwater runoff. Standards for bioretention design, including soil mix, plants, storage volume and feasibility criteria, are specified in Appendix C of the King County Surface Water Design Manual.

¹ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>

The Map Tool is at <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024>

² <http://www.kingcounty.gov/environment/waterandland/stormwater/documents/surface-water-design-manual.aspx>

³ See <http://www.fema.gov/media-library-data/e0431351fd0536694a66cef26268a694/440+NGVD-NAVD+5-09+508OK.pdf> for discussion of the datum conversion from NGVD29 to NAVD88.

- Blanket adjustment** means an adjustment established by the County that can be applied routinely or globally to all projects where appropriate. Blanket adjustments are usually based on a previously approved adjustment and can be used to effect minor changes or corrections to the design requirements of this manual, or to add new designs and methodologies to this manual.
- Blind, blinding** means to severely reduce the ability of a normally infiltrative media to pass water, usually by plugging with sediment or debris.
- BMP** means best management practice.
- Bollard** means a post used to prevent vehicular access. A bollard may or may not be removable.
- BSBL** means building setback line.
- Buffer** means a designated area contiguous to a steep slope or landslide hazard area intended to protect slope stability, attenuation of surface water flows, and landslide hazards, or a designated area contiguous to and intended to protect and be an integral part of an aquatic area or wetland
- Building setback line** means a line measured parallel to a property, easement, drainage facility, or buffer boundary that delineates the area (defined by the distance of separation) where buildings or other obstructions are prohibited (including decks, patios, outbuildings, or overhangs beyond 18 inches). Wooden or chain link fences and landscaping are allowable within a building setback line. In this manual the minimum building setback line shall be 5 feet.
- CAO** means the Critical Areas Ordinance, which amends KCC 21A.24 to establish and regulate critical areas. Most types of critical areas were previously regulated as "sensitive areas" in KCC 21A.24 prior to adoption of the CAO (see "critical area").
- Catch basin insert** means a device installed underneath a catch basin inlet that uses gravity, filtration, or various sorbent materials to remove pollutants from stormwater. When used with sorbent material, catch basin inserts are primarily for oil removal.
- Catch line** means the point where a severe slope intercepts a different, gentler slope.
- Cation exchange** means "The interchange between a cation in solution and another cation on the surface of any surface-active material such as clay or organic matter." (Buckman & Brady, 1969)
- Cation exchange capacity (CEC)** means the quantity of ammonium cations in a dry mass saturated with ammonium acetate that can be displaced by a strong solution of NaCl, measured in milliequivalents per gram or 100 grams. The test is usually performed at neutral pH (Freeze & Cherry, *Groundwater*, 1979).
- Certified Erosion and Sediment Control Lead (CESCL)** - means an individual who has current certification through an approved erosion and sediment control training program that meets the minimum training standards established by the Washington Department of Ecology Department (Ecology). A CESCL is knowledgeable in the principles and practices of erosion and sediment control. The CESCL must have the skills to assess *site* conditions and construction activities that could impact the quality of stormwater and, the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. Certification is obtained through an Ecology approved erosion and sediment control course.
- Channel** means a long, narrow excavation or surface feature that conveys surface water and is open to the air.
- Channel, constructed** means a channel or ditch constructed to convey surface water; also includes reconstructed natural channels.
- Channel, natural** means a channel that has occurred naturally due to the flow of surface waters or a channel that, although originally constructed by human activity, has taken on the appearance of a natural channel including a stable route and biological community.

Civil engineer means a person licensed by the State of Washington as a professional engineer in civil engineering.

Clearing means the conversion of native vegetated surface to a non-native surface.

Closed depression means an area greater than 5,000 square feet at overflow elevation that is low-lying and that has no or such a limited surface water outlet that the area acts as a stormwater retention facility. The primary loss of water volume from a closed depression is through evapotranspiration and discharge into the ground rather than surface flow.

Commercial or industrial site, for the purposes of defining a high-use site, means that portion of a site's developed area associated with an individual commercial or industrial business (e.g., the area occupied by the business's buildings and required parking).

Commercial project (or land use) means any project or land use that requires a commercial building permit or is on or at a site where a such a permit would be required for construction of a building, excluding *industrial projects/land uses* (see definition of industrial project/land use) and *multifamily projects/land uses* (see definition of multifamily project/land use). Agricultural projects are included only if they require a commercial building permit. Single family residential projects are not included.

Common plan of development or sale means a site where multiple separate and distinct construction activities may take place at different times or on different schedules, but still under a single plan. Examples include: 1) phased projects and projects with multiple filings or lots, even if the separate phases or filings/lots will be constructed under separate contract or by separate owners (e.g. a development where lots are sold to separate builders); 2) a development plan that may be phased over multiple years, but is still under a consistent plan for long-term development; and 3) projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility.

Compensatory storage means new excavated storage volume equivalent to the flood storage capacity eliminated by filling or grading within the flood fringe. Equivalent shall mean that the storage removed shall be replaced by equal volume between corresponding one foot contour intervals that are hydraulically connected to the floodway through their entire depth.

Compost is a product that is used as a soil amendment, mulch, or as filter media either alone or with other media, e.g. sand. Compost is the result of the biological degradation and transformation of biological organic source materials under controlled conditions designed to promote aerobic decomposition. As applied in this manual, compost must be stable with regard to oxygen consumption and carbon dioxide generation. Compost must be mature with regard to its suitability for serving as a *soil amendment*, for *erosion control* BMP applications, for *facility media*, and for *flow control BMPs*⁴. Compost varies in chemical and biological content, and physical gradation (screen size). See Reference 11-C for compost specifications depending on application.

Construct or modify means to install a new drainage pipe or ditch or make improvements to an existing drainage pipe or ditch, for purposes other than maintenance, that either serves to concentrate previously unconcentrated surface water or stormwater runoff or serves to increase, decrease or redirect the conveyance of surface water or stormwater runoff. "Construct or modify" does not include installation or maintenance of a driveway culvert installed as part of a single-family residential building permit.

Construction stormwater pollution prevention BMP means a control or measure that prevents or reduces the discharge of pollutants and sediments resulting from construction activities.

Construction stormwater pollution prevention plan (CSWPPP) means the plan and supporting documentation for implementing construction site ESC measures, pollution prevention BMPs, and spill control. The CSWPPP is a component of the engineering plans required for drainage review and

⁴ Adapted from WSDOT, 2014. Standard Specifications for Road, Bridge, and Municipal Construction. M 41-10. Washington State Department of Transportation. Section 9-14.4(8) Compost

- has two component plans, the ESC plan and stormwater pollution prevention and spill (SWPPS) plan.
- Conveyance** means a mechanism for transporting water from one point to another, including pipes, ditches, and channels.
- Conveyance system** means the drainage facilities and features, both natural and constructed, that provide for the collection and transport of surface water or stormwater runoff. The natural elements of the conveyance system include swales and small drainage courses, streams, rivers, lakes and wetlands. The constructed elements of the conveyance system include gutters, ditches, pipes, catch basins, channels and most flow control and water quality facilities.
- Conveyance system nuisance problem** means a flooding or erosion problem that does not constitute a "severe flooding problem" or "severe erosion problem" and that results from the overflow of a constructed conveyance system for runoff events less than or equal to a 10-year event. Examples include inundation of a shoulder or lane of a roadway, overflows collecting in yards or pastures, shallow flows across driveways, minor flooding of crawl spaces or unheated garages/outbuildings, and minor erosion. See "severe flooding problem" and "severe erosion problem".
- Criteria exception** means a department-approved exception to the criteria for granting an adjustment from the requirements of K.C.C. 9.05.050 and the *Surface Water Design Manual* based on demonstration that meeting the criteria will deny reasonable use of the applicant's property and the applicant will implement the best practicable alternative to meeting the criteria. Criteria exceptions require approval by the director of DPER or DNRP (depending on which department is approving the adjustment), legal public notice, and a written finding of fact.
- Critical area** means any area that is subject to natural hazards or a land feature that supports unique, fragile or valuable natural resources including fish, wildlife or other organisms or their habitats or such resources that carry, hold or purify water in their natural state. "Critical area" includes the following areas: aquatic areas; coal mine hazard areas; critical aquifer recharge areas; erosion hazard areas; flood hazard areas; landslide hazard areas; seismic hazard areas; steep slope hazard areas; volcanic hazard areas; wetlands; wildlife habitat conservation areas; and wildlife habitat networks.
- Critical area report** means the report that evaluates all probable impacts of a development proposal on critical areas as specified in KCC 21A.24.110. The report is required for any development proposal that is subject to a critical area review by DPER under KCC 21A.24.100.
- Critical aquifer recharge area** means an area designated on the critical aquifer recharge area map adopted by KCC 20.70.020 as recodified and amended by the CAO that has a high susceptibility to ground water contamination that is located within a sole source aquifer or within an area approved in accordance with Chapter 246-290 WAC as a wellhead protection area for a municipal or district drinking water system. Susceptibility to ground water contamination occurs where there is a combination of permeable soils, permeable subsurface geology, and/or ground water close to the ground surface.
- Critical depth** means the depth that minimizes the specific energy E of the flow.
- Critical Drainage Area** means an area where the Department of Natural Resources and Parks (DNRP) has determined that additional drainage controls (beyond those in this manual) are needed to address a severe flooding, drainage, and/or erosion condition that poses an imminent likelihood of harm to the welfare and safety of the surrounding community. Critical Drainage Areas (CDAs) are formally adopted by administrative rule under the procedures specified in KCC 2.98. When CDAs are adopted, they are inserted in Reference Section 3 of this manual and their requirements are implemented through Special Requirement #1 (see Section 1.3.1).
- Critical flow** means flow at the critical depth and velocity.
- Culvert** means pipe or concrete box structure that drains an open channel, swale, or ditch under a roadway or embankment, typically with no catch basins or manholes along its length.

- Cut slope** means a slope formed by excavating overlying material to connect the original ground surface with a lower ground surface created by the excavation. A cut slope is opposed to a bermed slope, which is constructed by importing soil to create the slope.
- Dead storage** means the volume available in a depression in the ground below any conveyance system, or surface drainage pathway, or outlet invert elevation that could allow the discharge of surface and storm water runoff.
- Dedication of land** means setting aside and assigning ownership for a portion of a property for a specific use or function.
- Depression storage** means the amount of precipitation that is trapped in depressions on the surface of the ground.
- Design engineer** means the civil engineer who prepares the analysis, design, and engineering plans for an applicant's permit or approval submittal (see "civil engineer").
- Detention** means release of surface and storm water runoff from the site at a slower rate than it is collected by the drainage facility system, the difference being held in temporary storage.
- Detention facility** means a facility that collects water from developed areas and releases it at a slower rate than it enters the collection system. The excess of inflow over outflow is temporarily stored in a pond or a vault and is typically released over a few hours or a few days.
- Determination of Non-Significance (DNS)** means the written decision by the responsible official of the lead agency that a proposal is not likely to have a significant adverse environmental impact per the SEPA process, and therefore an EIS is not required.
- Development** means any activity that requires a permit or approval, including, but not limited to, a building permit, grading permit, shoreline substantial development permit, conditional use permit, special use permit, zoning variance or reclassification, subdivision, short subdivision, urban planned development, binding site plan, site development permit, or right-of-way use permit. "Development" does not include a Class I, II, III, or IV-S forest practice conducted in accordance with Chapter 76.09 RCW and Title 222 WAC or a class IV-G nonconversion forest practice, as defined in KCC 21A.06, conducted in accordance with Chapter 76.09 RCW and Title 222 WAC and a county approved forest management plan.
- Development review engineer** –The Department of Permitting and Environmental Review (DPER) employee responsible for the conditioning, review, inspection, and approval of right-of-way use permits, and road and drainage improvements constructed as part of development permits administered by the department of permitting and environmental services.
- Direct discharge** means undetained discharge from a proposed project to a "major receiving water."
- Directed drainage review** means the drainage review for a proposed single-family residential project or agricultural project that is not subject to simplified or large project drainage review
- Discharge** means runoff, excluding offsite flows, leaving the proposed development through overland flow, built conveyance systems, or infiltration facilities.
- Dissolved oxygen (DO) problem** means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Waterbody due to exceedance or concern for exceedance of the state's numeric water quality standard for dissolved oxygen as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers⁵ of these waterbodies, or (2) is currently designated by the County as a DO problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for dissolved oxygen as documented in the latest

⁵ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>
The Map Tool is at <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024>

published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page⁶.

Dispersed discharge means release of surface and storm water runoff from a drainage facility system such that the flow spreads over a wide area and is located so as not to allow flow to concentrate anywhere upstream of a drainage channel with erodible underlying granular soils or the potential to flood downstream properties.

Ditch means a constructed channel with its top width less than 10 feet at design flow.

Diversion means a change in the natural discharge location or runoff flows onto or away from an adjacent downstream property. See Core Requirement #1.

DNS means Determination of Non-Significance.

DNRP means Department of Natural Resources and Parks.

DOE means the state Department of Ecology.

DPER means the Department of Permitting and Environmental Review, which is the King County department responsible for *drainage review* of proposed projects, except those projects reviewed by the Water and Land Resources Division (WLRD) as specified in KCC 9.04.070.

Drainage means the collection, conveyance, containment, or discharge, or any combination thereof, of storm water runoff or surface water.

Drainage area means an area draining to a point of interest.

Drainage basin means an area draining to a point of interest.

Drainage channel means a drainage pathway with well-defined bed and banks indicating frequent conveyance of surface and storm water runoff.

Drainage course means a pathway for watershed drainage often characterized by wet soil vegetation and often intermittent in flow.

Drainage easement means a legal encumbrance that is placed against a property's title to reserve specified privileges for the users and beneficiaries of the drainage facilities contained within the boundaries of the easement.

Drainage facility means a constructed or engineered feature that collects, conveys, stores, treats, or otherwise manages stormwater runoff or surface water. "Drainage facility" includes, but is not limited to, a constructed or engineered stream, lake, wetland, or closed depression, or a pipe, channel, ditch, gutter, flow control facility, flow control BMP, water quality facility, erosion and sediment control facility, and any other structure and appurtenance that provides for drainage.

Drainage pathway means the route that surface or storm water runoff follows downslope as it leaves any part of the site.

Drainage plan means a plan that depicts the drainage improvements and mitigation measures proposed for a particular project and includes any documentation/technical information necessary for construction and determination of compliance with drainage requirements. The drainage plan can be an "engineering plan" or "limited scope" engineering plan prepared for drainage review purposes as described in Chapter 2 of the *Surface Water Design Manual (SWDM)*, or it can be a "simplified project drainage plan" as described in Appendix C of the *SWDM*.

Drainage review means an evaluation by King County staff of a proposed project's compliance with the drainage requirements in the *Surface Water Design Manual*. The types of drainage review include: Simplified Drainage Review, Targeted Drainage Review, Directed Drainage Review, Full Drainage Review, and Large Project Drainage Review.

⁶ <http://www.kingcounty.gov/environment/waterandland/stormwater/documents/surface-water-design-manual.aspx>

Dry Season means May 1 to September 30.

Easement means the legal right to use a parcel of land for a particular purpose. It does not include fee ownership, but it may restrict the owner's use of the land.

Effective impervious fraction means the fraction of actual total impervious area connected to a drainage system. These figures should be used in the absence of detailed surveys or physical inspection (e.g., via pipe, channel, or short sheet flow path).

Effective Impervious surface – Those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. Impervious surfaces are considered ineffective if: 1) the runoff is fully dispersed as described in Appendix C of this manual; 2) residential roof runoff is infiltrated in accordance with the full infiltration BMP described in Appendix C of this manual; or 3) approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated.

EIS means Environmental Impact Statement.

Embankment means a structure of earth, gravel, or similar material raised to form a pond bank or foundation for a road.

Energy dissipater means any means by which the total energy of flowing water is reduced. In stormwater design, it is usually a mechanism that reduces velocity prior to, or at, discharge from an outfall in order to prevent erosion. Energy dissipaters include rock splash pads, drop manholes, concrete stilling basins or baffles, and check dams.

Energy gradient means the slope of the specific energy line (i.e., the sum of the potential and velocity heads).

Engineering geologist means a person licensed by the State of Washington as a geologist specializing in evaluating geologic site characteristics to determine the responses of geologic processes and materials to development activities, such as removal of vegetation; construction activities such as earthwork; applying loads in foundations and embankments; use of earth materials in construction; and modifying ground water flow.

Engineering plan means a plan prepared and stamped by a licensed civil engineer that depicts improvements and mitigation measures proposed for a particular site and includes supporting documentation and technical information. For drainage review purposes, an engineering plan includes a Technical Information Report (TIR), Site Improvement Plans, and a Construction Stormwater Pollution Prevention Plan (CSWPPP), which are described in detail in Chapter 2 of the *Surface Water Design Manual*.

Engineering review means an evaluation by the Department of Development and Environmental Services (or its successor agency) of a proposed project's compliance with the drainage requirements in the *Surface Water Design Manual* and with other King County requirements.

Enhancement means an increase in ecological functions and value, desirability, or attractiveness of an environmental feature.

Environmental Impact Statement (EIS) means a document that discusses the likely significant adverse impacts of a proposal, ways to lessen the impacts, and alternatives to the proposal. It is required by the national and state environmental policy acts when projects are determined to have the potential for significant environmental impact.

Equivalent area means the area tributary to the receiving water body equal to or less than the shortest, straight-line distance from the receiving water body (or regional facility) to the farthest point of the proposed project.

Erodible or leachable materials, wastes, or chemicals are those materials or substances that, when exposed to rainfall, measurably alter the physical or chemical characteristics of the rainfall runoff (Examples include but are not limited to erodible soil, uncovered process wastes, manure, fertilizers, pesticides, oily substances, ashes, kiln dust, garbage dumpster leakage, commercial-scale vehicle and

animal wash waste, galvanized structural, architectural, cabinet, and utility steel, architectural copper, bronze, brass, and lead, treated lumber, etc.).

Erodible granular soils means soil materials that are easily eroded and transported by running water, typically fine or medium grained sand with minor gravel, silt, or clay content. Such soils are commonly described as Everett or Indianola series soil types in the SCS classification. Also included are any soils showing examples of existing severe stream channel incision as indicated by unvegetated streambanks standing over two feet high above the base of the channel.

Erosion means detachment and transport of soil or rock fragments by water, wind, ice, etc.

Erosion and sediment control (ESC) means any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave the site or enter into wetlands or aquatic areas.

Erosion Hazard Area means an area underlain by soils that are subject to severe erosion when disturbed. These soils include, but are not limited to:

- Those classified as having a severe to very severe erosion hazard according to the USDA Soil Conservation Service, the 1990 Snoqualmie Pass Area Soil Survey, the 1973 King County Soils Survey (or any subsequent revisions or addition by or to these sources) such as any occurrence of River Wash (Rh) or Coastal Beaches (Cb) and any of the following when they occur on slopes inclined at 15% or more: Alderwood gravelly sandy loam (AgD), Alderwood-Kitsap (AkF), Beausite gravelly sandy loam (BeD and BeF), Kitsap silt loam, (KpD), Ovall gravelly sandy loam (OvP and OvF), Ragnar fine sandy loam (Rad), and Ragnar-Indianola Association (RdE); and
- Those that represent significant risk to sensitive downstream receiving water due to proximity to those receiving waters and the size of the disturbed area.

ESC plan means the plan and supporting documentation for implementing erosion and sediment control measures on the project site. This plan is a component of the construction stormwater pollution prevention plan (CSWPPP), which is submitted with the engineering plans required for drainage review.

ESC Standards means the requirements and specifications for design, maintenance, and implementation of erosion and sediment control measures specified in Appendix D of the King County *Surface Water Design Manual*.

Eutrophic means a condition of a water body in which excess nutrients, particularly phosphorous, stimulates the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen. Thus, less dissolved oxygen is available to other aquatic life.

Eutrophication means the process where excess nutrients in water lead to excessive growth of aquatic plants.

Evapotranspiration is the collective term for the processes of evaporation and plant transpiration by which water is returned to the atmosphere as a vapor.

Exceedance probability means the probability that the flow will be equaled or exceeded in any given year.

Existing conditions means the conditions of drainage, vegetation, and impervious cover at the time of analysis.

Existing offsite conditions means the conditions of drainage, vegetation, and impervious cover offsite, including any problems recorded or observed in the study area (except on the proposed project site), at the time of analysis (see "existing site conditions").

Existing site conditions means the conditions of drainage, vegetation, and impervious cover onsite at present or some time in the past depending on what, if any, land conversion activity has occurred on the site since May 1979 when King County first required flow control on developments adding more than 5,000 square feet of new impervious surface. If a drainage plan has been approved by the County since May 1979 for any land conversion activity which includes the addition of more than 5,000 square feet of new impervious surface, then "existing site conditions" are those created by the site improvements and drainage facilities constructed per the approved engineering plans. Otherwise, "existing site conditions" are those that existed prior to May 1979 as determined from aerial photographs and, if necessary, on knowledge of individuals familiar with the area. The intent is to mitigate unaddressed impacts created by site alterations/improvements, such as clearing, which have occurred since May 1979 (see Core Requirement #3). *Note: Air photos flown in 1979 are available for viewing at the map counter of the King County Department of Transportation and at DPER.*

Experimental design adjustment means an adjustment used for proposing new designs or methods which are different from those in this manual, which are not uniquely site specific, and for which data sufficient to establish functional equivalence do not exist.

Exposed means subject to direct or blown-in precipitation and/or direct or blown in runoff. Not *fully covered*.

Exposed area or **exposed material** means not covered sufficiently to shield from rainfall and stormwater runoff. At a minimum, full coverage to not be considered *exposed* requires a roof with enough overhang in conjunction with walls of sufficient height to prevent rainfall blow-in; and the walls must extend into the ground or to a berm or footing to prevent runoff from being blown in or from running onto the covered area..

FEMA means Federal Emergency Management Agency

FEMA floodway means a distinct floodway definition that describes the limit to which encroachment into the natural conveyance channel can cause one foot or less rise in water surface elevation.

Fertilizer means any material or mixture used to supply one or more of the essential plant nutrient elements.

Filter strip means a grassy area with gentle slopes which treats stormwater runoff from adjacent areas before it concentrates into a discrete channel.

Financial guarantee means a form of financial security posted to do one or more of the following: ensure timely and proper completion of improvements; ensure compliance with the King County Code; or provide secured warranty of materials, workmanship of improvements and design. "Financial guarantees" include assignments of funds, cash deposit, surety bonds, or other forms of financial security acceptable to the Director of the Department of Development and Environmental Services. "Performance guarantee," "maintenance guarantee," and "defect guarantee" are considered subcategories of financial guarantee.

FIRM means Flood Insurance Rate Map.

Flood fringe means that portion of the floodplain outside of the floodway which is covered by floodwaters during the base flood; it is generally associated with standing water rather than rapidly flowing water.

Flood Hazard Area means any area subject to inundation by the base flood or risk from channel migration including, but not limited to, an aquatic area (e.g., streams, lakes, etc.), wetland, or closed depression. A flood hazard area may consist of the following components: 100-year floodplain, zero-rise flood fringe, zero-rise floodway, FEMA floodway, and channel migration zones.

Flood hazard management plan means a plan and all implementing programs, regulations, and procedures including, but not limited to, capital projects, public education activities and enforcement programs for reduction of flood hazards and prepared in accordance with RCW 86.12.200.

Flood Insurance Rate Map (FIRM) means the official map on which the Federal Insurance Administration has delineated flood hazard areas, floodways, and risk premium zones.

- Flood Insurance Study** means the official report provided by the Federal Insurance Administration that includes flood profiles and the FIRM.
- Floodplain** means the total area subject to inundation by the base flood including the flood fringe and floodway.
- Flood-proofing** means adaptations to ensure that a structure is substantially impermeable to the passage of water below the flood protection elevation, and that it resists hydrostatic and hydrodynamic loads and effects of buoyancy.
- Flood protection elevation** means an elevation that is one foot above the base flood elevation.
- Flood protection facility** means any levee, berm, wall, enclosure, raised bank, revetment, constructed bank stabilization, or armoring that is commonly recognized by the community as providing significant protection to a property from inundation by floodwaters.
- Flood routing** means an analytical technique used to compute the effects of system storage and system dynamics on the shape and movement of flow; represented by a hydrograph.
- Floodway** means the channel of the river or stream and those portions of the adjoining floodplain which are reasonably required to carry and discharge the base flood flow (see "zero-rise floodway").
- Flow control area** means a geographic area of the County within which proposed projects must comply with the flow control facility requirements adopted for that area as part of this manual. There are three such areas that comprise unincorporated King County: the Basic Flow Control Area, the Conservation Flow Control Area, and the Flood Problem Flow Control Area. These areas are mapped on the Flow Control Applications Map adopted with this manual and found online at <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx> or viewed via King County's iMap Interactive Mapping Tool at <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>.
- Flow control BMP** means a small scale drainage facility or feature that is part of a development site strategy to use processes such as infiltration, dispersion, storage, evaporation, transpiration, forest retention, and reduced impervious surface footprint to mimic pre-developed hydrology and minimize stormwater runoff.
- Flow control BMP design and maintenance details** means the diagrams/figures, design specifications, and maintenance instructions for each flow control BMP proposed on an individual site/lot that does not contain a flow control or water quality facility. These details are intended to be recordable to facilitate attachment to the declaration of covenant and grant of easement required for implementation of flow control BMPs on individual sites/lots. DPER may waive all or a portion of this component if they determine there is no need to specify design details or maintenance instructions for certain proposed BMPs.
- Flow control BMP site plan (FCBMP site plan)** means a scale drawing of an individual site/lot used to show how required flow control BMPs will be applied to the target surfaces of an individual site/lot that does not contain a flow control or water quality facility. The FCBMP site plan is intended to be a recordable document (or reducible to a recordable document) that can be attached to the declaration of covenant and grant of easement required for implementation of flow control BMPs on individual sites/lots. DPER may allow a written version of this plan if they determine there is no need to illustrate the size and location of proposed flow control BMPs.
- Flow control facility** means a drainage facility designed to mitigate the impacts of increased storm water runoff generated by site development in accordance with the drainage requirements in KCC Chapter 9.04. Flow control facilities are designed either, to hold water for a considerable length of time and then release it by evaporation, plant transpiration, or infiltration into the ground, or to hold runoff for a short period of time and then release it to the conveyance system.
- Flow duration** means the aggregate time that peak flows are at or above a particular flow rate (e.g., the amount of time over the last 50 years that peak flows were at or above the 2-year flow rate).

- Flow frequency** means the inverse of the probability that the flow will be equaled or exceeded in any given year (the *exceedance probability*). For example, if the exceedance probability is 0.01, or 1 in 100, that flow is referred to as the 100-year flow.
- Flowpath** means the route that surface and storm water runoff follows between two points of interest.
- Flow-through system** means a retention/detention facility where inflows are routed through the storage facility before discharge through the flow restrictor.
- Freeboard** means the vertical distance between the design water surface elevation and the elevation of the structure or facility which contains the water.
- Full build-out conditions** means the tributary area is developed to its full zoning potential except where there are existing sensitive areas, open space tracts, and/or native growth protection easements/covenants.
- Full Drainage Review** means the evaluation required by KCC 9.04.030 of a proposed project's compliance with the full range of core and special requirements in Chapter 1 of this manual. Full Drainage Review is required for any proposed project, unless the project is subject to simplified drainage review, targeted drainage review, directed drainage review, or large project drainage review, that (1) would result in two thousand square feet or more of new plus replaced impervious surface; or (2) would result in 7,000 square feet or more of land disturbing activity.
- Fully covered** means covered sufficiently to shield from rainfall and stormwater runoff. At a minimum, full coverage requires a roof with enough overhang in conjunction with walls of sufficient height to prevent rainfall blow-in; and the walls must extend into the ground or to a berm or footing to prevent runoff from being blown in or from running onto the covered area. Not *exposed*.
- Fully dispersed** means the runoff from an impervious surface or non-native pervious surface has dispersed per the criteria for fully dispersed surface in Section 1.2.3.2.
- Geologist** means a person who has earned a degree in geology from an accredited college or university or who has equivalent educational training, and who has at least five years of experience as a practicing geologist or four years of experience and at least two years post-graduate study, research, or teaching. The practical experience shall include at least three years work in applied geology and landslide evaluation, in close association with qualified practicing geologists or geotechnical professional/civil engineers.
- Geomorphically significant flow** means a flow capable of moving sediment.
- Geotechnical engineer** means a civil engineer, licensed by the State of Washington, who has at least four years of professional employment as a geotechnical engineer in responsible charge, including experience with landslide evaluation. Geotechnical engineers specialize in the design and construction aspects of earth materials.
- Groundwater** means all water found in the soil and stratum beneath the land surface or beneath the bed of any surface water. Wells tap the groundwater for water supply uses.
- Groundwater protection areas** include *critical aquifer recharge areas* as defined in KCC 21A, sole source aquifer areas as designated by the federal Environmental Protection Agency, and wellhead protection areas as mapped by the Washington State Department of Health.
- Gully** means a channel caused by the concentrated flow of surface and stormwater runoff over unprotected erodible land.
- Habitable building** means any residential, commercial, or industrial building that is equipped with a permanent heating or cooling system and an electrical system.
- Habitat** means the specific area or environment in which a particular type of plant or animal lives and grows.
- Hardpan** means a cemented or compacted and often clay-like layer of soil that is impenetrable by roots.

Harmful pollutant means a substance that has adverse effects to an organism including death, chronic poisoning, impaired reproduction, cancer, or other effects.

High infiltration rates means those in excess of 9 inches per hour as measured by the EPA method or the double ring infiltrometer method (ASTM D 3385). These will typically be course sand or gravel soil with low silt content.

High-use site means that area within a commercial or industrial *site* that typically generates or is subject to runoff containing high concentrations of oil due to high traffic turnover, on-site vehicle or heavy or stationary equipment use, or the frequent transfer of liquid petroleum or coal derivative products. High-use sites include:

1. the area of a commercial or industrial site that:
 - a. has an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area; or
 - b. is subject to petroleum storage or transfer in excess of 1,500 gallons per year, not including heating oil storage or transfer at the end-user point of delivery; or
 - c. is subject to use, storage, or maintenance of a fleet of 25 or more diesel or jet fuel vehicles that are over 10 tons net weight (trucks, buses, trains, airplanes, tugs, mobile and fuel-driven or hydraulic stationary heavy equipment, etc.); or
2. The interior of any road intersection and that portion of lanes leading into the intersection subject to braking, turning, or stopping, with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway. Projects proposing primarily pedestrian or bicycle use improvements are excluded.

Historic site conditions mean those which existed on the site prior to any development in the Puget Sound region. For lands not currently submerged (i.e., outside the ordinary high water mark of a lake, wetland, or stream), "historic site conditions" shall be assumed to be forest cover unless reasonable, historic, site-specific information is provided to demonstrate a different vegetation cover. In some stream basins, as allowed per Exception 1 of the Conservation Flow Control Areas facility requirement, historic site conditions for lands not currently submerged may be assumed to be 75% forest, 15% grass, and 10% impervious surface.

Horton overland flow means a runoff process whereby the rainfall rate exceeds the infiltration rate, and the excess precipitation flows downhill over the soil surface.

Hydraulically connected means connected through surface flow or water features such as wetlands or lakes.

Hydraulic gradient means slope of the potential head relative to a fixed datum.

Hydrogeologist means a person licensed by the State of Washington as a geologist specializing in the study and analysis of ground water and other fluids as they move within the geologic environment. This includes ground water well design, construction supervision, and testing; remediation of soil and ground water at contaminated sites; and impact analysis of proposed man made structures on the environment as they may relate to water.

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

Hydrologic cycle means the circuit of water movement from the atmosphere to the earth and return to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transpiration.

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

Impact means an adverse effect or harm, or the act of adversely affecting or harming.

Impaired waterbody or impaired receiving water means where the receiving waterbody is either (1) listed as impaired for metals or organic pollutants according to Ecology's Water Quality Assessment categories 2, 4, or 5 - water or sediment, (2) is currently designated by the County as a metals or organic pollutant problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for turbidity as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx> , and/or (3) where subject to any other local, state, or federal cleanup plan.

Impervious surface means a hard surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions before development; or that causes water to run off the surface in greater quantities or at an increased rate of flow compared to the flow present under natural conditions prior to development (see also "new impervious surface"). Common impervious surfaces include, but are not limited to, roof, walkways, patios, driveways, parking lots, or storage areas, areas that are paved, graveled or made of packed or oiled earthen materials or other surfaces that similarly impede the natural infiltration of surface water or stormwater. For the purposes of applying the impervious surface thresholds and exemptions contained in this manual, permeable pavement, vegetated roofs, and pervious surfaces with underdrains designed to collect stormwater runoff are considered impervious surface while an open uncovered flow control or water quality facility is not . However, for the purposes of computing runoff, uncovered flow control or water quality facilities shall be modeled as impervious surfaces as specified in Chapter 3.

Impoundment means a natural or man-made containment for surface water.

Improvement means a permanent, man-made, physical change to land or real property including, but not limited to, buildings, streets, driveways, sidewalks, crosswalks, parking lots, water mains, sanitary and storm sewers, drainage facilities, and landscaping.

Industrial project (or land use) means any project or land use that requires or would require a commercial building permit or commercial site development permit and is on an industrial-zoned site or is otherwise conducting *industrial activities*. *Industrial activities* means material handling, transportation, or storage; manufacturing; maintenance; treatment; or disposal. Areas with industrial activities include plant yards, access roads and rail lines used by carriers of raw materials, manufactured products, waste material, or by-products; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater.

Infiltration facility means a drainage facility designed to use the hydrologic process of water soaking into the ground (commonly referred to as percolation) to dispose of surface and storm water runoff.

Ingress/egress means the points of access to and from a property.

Inlet means a form of connection between the surface of the ground and a channel or pipe for the admission of surface and stormwater runoff.

Inlet control means a flow condition where the flow is governed by the culvert's inlet geometry.

Interflow means near-surface groundwater that moves laterally through the soil horizon following the hydraulic gradient of underlying relatively impermeable soils. When interflow is expressed on the surface, it is called a spring or seepage.

KCAS means King County Aerial Survey.

KCRDCS means *King County Road Design and Construction Standards*.

Lake means an area permanently inundated by water in excess of two meters (7 ft) deep and greater than twenty acres in size as measured at the ordinary high water mark.

Lake management plan means a plan describing the lake management recommendations and requirements adopted by public rule for managing water quality within individual lake basins.

Land disturbing activity means any activity that results in a change in the existing soil cover (both vegetative and non-vegetative and/or the existing soil topography). Land disturbing activities include, but are not limited to demolition, construction, clearing, grading, filling, excavation, and compaction. Land disturbing activity does not include tilling conducted as part of agricultural practices, landscape maintenance, or gardening.

Landscape management plan means a King County approved plan for defining the layout and long-term maintenance of landscaping features to minimize the use of pesticides and fertilizers, and to reduce the discharge of suspended_solids and other pollutants.

Landslide means episodic downslope movement of a mass of soil or rock; includes but is not limited to rockfalls, slumps, mudflows, and earthflows.

Landslide Hazard Area means an area subject to a severe risk of landslide such as:

1. Any area with a combination of:
 - Slopes steeper than 15%;
 - Impermeable soils, such as silt and clay, frequently interbedded with granular soils, such as sand and gravel; and
 - Springs or groundwater seepage;
2. Any area which has shown movement during the Holocene epoch, 10,000 years ago to the present, or which is underlain by mass wastage debris from that epoch;
3. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action;
4. Any area which shows evidence of, or is at risk from, snow avalanches, or
5. Any area located on an alluvial fan, presently or potentially subject to inundation by debris flows or deposition of stream-transported sediments.

Landslide Hazard Drainage Area means a specially mapped area where the County has determined that overland flows from new projects will pose a significant threat to health and safety because of their close proximity to a landslide hazard area that is on a slope steeper than 15% (a delineation of the known landslide hazard areas can be found in King County's *Sensitive Areas Map Folio*). Such areas are delineated on the Landslide Hazard Drainage Areas map adopted with this manual and found online at <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx> or viewed via King County's iMap Interactive Mapping Tool at <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>.

Land surveyor means a person licensed by the State of Washington as a professional land surveyor.

Large Project Drainage Review means the evaluation required by KCC 9.04.030 for development proposals that are large and/or involve resources or problems of special sensitivity or complexity. Large Project Drainage Review is required of any project that (1) has an urban plan development land use designation in the King County Comprehensive Plan land use map, as defined in K.C.C. 21A.06.1340; (2) would, at full buildout of the project site, result in fifty acres or more of new impervious surface within a drainage subbasin or a number of subbasins hydraulically connected across subbasin boundaries; or (3) has a project site of fifty acres or more within a critical aquifer recharge area, as defined in the K.C.C. Title 21A. Large Project Drainage Review entails preparation of a master drainage plan (MDP) or limited scope MDP which is reviewed and approved by DPER.

Leaf compost filter means a treatment device that uses a specially prepared and potentially patented leaf compost product to remove pollutants from stormwater.

Level pool routing means the basic technique of storage routing used in King County for sizing and analyzing detention storage and determining water levels for ponding water bodies. The level pool routing technique is based on the continuity equation: $\text{Inflow} - \text{Outflow} = \text{Change in storage}$.

Local drainage system means any natural or constructed drainage feature that collects and concentrates runoff from the site and discharges it downstream.

Low Impact Development (LID) – A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

LID Best Management Practices – Distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs are referred to as flow control BMPs in this manual and include, but are not limited to, bioretention, permeable pavements, roof downspout controls, dispersion, soil quality and depth, and minimal excavation foundations.

LID Principles – Land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

Lowest floor means the lowest enclosed area (including basement) of a structure. An area other than a basement area that is used solely for parking of vehicles, building access, or storage is not considered a building's lowest floor, provided that the enclosed area meets all of the structural requirements of the flood hazard standards.

Maintenance means those usual activities taken to prevent a decline, lapse, or cessation in the use of currently serviceable structures, facilities, BMPs, equipment, or systems if there is no expansion of any of these, and there are no significant hydrologic impacts. Maintenance includes the repair or replacement of non-functional facilities and BMPs, and the replacement of existing structures with different types of structures, if the repair or replacement is required to meet current engineering standards or is required by one or more environmental permits and the functioning characteristics of the original facility or structure are not changed. For the purposes of applying this definition to the thresholds and requirements of this manual, DPER will determine whether the functioning characteristics of the original facility, structure, or BMP will remain sufficiently unchanged to consider replacement as maintenance. Drainage review is not required for projects proposing only maintenance.

Note: The following pavement maintenance practices are not categorically exempt from drainage review: removing and replacing a paved surface to base course or lower (ie. "replaced impervious surfaces"), extending the edge of pavement or paving graveled shoulders, or resurfacing that meets the definition of "new impervious surface" in this manual.

Major receiving water means a large receiving water that has been determined by King County to be safe for the direct discharge of increased runoff from a proposed project without a flow control facility, subject to the restrictions on such discharges set forth in Core Requirement #3, Section 1.2.3. A list of major receiving waters is provided in Section 1.2.3.1. Major receiving waters are also considered safe for application of Basic WQ treatment in place of otherwise required Enhanced Basic WQ treatment (see Section 1.2.8.1), except where the **receiving water** is either (1) listed as impaired for metals or organic pollutants according to Ecology's Water Quality Assessment categories 2, 4, or 5 - water or sediment, (2) is currently designated by the County as a metals or organic pollutant problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for turbidity as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at:

<http://www.kingcounty.gov/environment/waterandland/stormwater/documents/surface-water-designmanual.aspx>, and/or (3) where subject to any other local, state, or federal cleanup plan. In any

of these cases, the major receiving water exception for Enhanced Basic treatment is superseded by

1.2.2.3 Water Quality Problem Impact Mitigation for Metals (Type 4) and/or Organic Pollutants (Type 8).

Mass wasting means the movement of large volumes of earth material downslope.

Master Drainage Plan (MDP) means a comprehensive drainage control plan required for projects subject to large project drainage review and intended to prevent significant adverse impacts to surface water and groundwater, both onsite and offsite.

Maximum extent practicable means the use of best management practices that are available and capable of being designed, constructed and implemented in a reliable and effective manner including, but not limited to, consideration of site conditions and cost.

MDNS means a Mitigated Determination of Non-Significance per SEPA (see "DNS" and "mitigation").

Mean annual storm means a statistically derived rainfall event derived by dividing the annual rainfall in an area by the number of storm events per year.

Metals as used in this manual generally refers to heavy metals⁷ such as copper, mercury, lead, nickel, zinc, cadmium, and arsenic; and alloys such as bronze, brass, and Galvalume®. Metals are of environmental concern because although some heavy metal elements are necessary micronutrients, they may also be toxic at very low levels to some organisms; are sometimes magnified in the food chain where they can be toxic to organisms at higher concentrations; and are not biodegradable.

Metals problem means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Waterbody due to exceedance or concern for exceedance of the state's numeric water or sediment quality standards for metals (e.g., copper, zinc, lead, mercury, etc.) as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers⁸ of these waterbodies, or (2) is currently designated by the County as a metals problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water or sediment quality standards for metals (e.g., copper, zinc, lead, mercury, etc.) as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page⁹.

Mitigation means an action taken to compensate for adverse impacts to the environment resulting from a development activity or alteration.

Modified site improvement plan means a limited or simplified "site improvement plan" used for some projects in Targeted Drainage Review and/or where major improvements are not proposed.

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

Monitoring means the collection and analysis of data by various methods for the purposes of understanding natural systems and features, evaluating the impacts of development proposals on the biological, hydrologic, and geologic elements of such systems, and assessing the performance of mitigation measures imposed as conditions of development.

Mulch is a layer of material applied to cover an area of soil. As used in this manual, the purpose of mulch is to provide temporary protection from erosion, to enhance plant establishment by conserving moisture, to hold fertilizer, seed, and topsoil in place, to moderate soil temperatures, and to inhibit weeds from sprouting between established vegetation. See Reference 11-C for on allowable mulch types and further specifications.

⁷ "a loosely defined subset of elements that exhibit metallic properties" (Wikipedia contributors, "Heavy metal (chemistry)," Wikipedia, The Free Encyclopedia, [http://en.wikipedia.org/w/index.php?title=Heavy_metal_\(chemistry\)&oldid=583203892](http://en.wikipedia.org/w/index.php?title=Heavy_metal_(chemistry)&oldid=583203892) (accessed November 27, 2013))

⁸ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>

The Map Tool is at <https://fortress.wa.gov/ecy/wgamapviewer/default.aspx?res=1280x1024>

⁹ <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx>.

Multifamily project (or land use) means any project or land use that requires or would require a commercial building permit or commercial site development permit for development of residential dwelling units that are not detached single family dwelling units.

National Pollutant Discharge Elimination System (NPDES) means the part of the federal Clean Water Act which requires point source discharges to obtain permits. These permits, referred to as NPDES permits, are administered by the Washington State Department of Ecology.

Native Growth Protection Easements (NGPE) means an easement granted to the County for the protection of native vegetation within a sensitive area or its associated buffer. This term was used prior to December 1990 when it was replaced with "sensitive area." As of January 2005, the term "sensitive" is replaced with "critical area;" thus, all references to critical areas in this manual also apply to sensitive areas and native growth protection easements.

Native growth retention area means the area of native vegetated surface set aside by a covenant, easement, or tract for purposes of implementing a flow control BMP.

Native vegetated surface means a surface in which the soil conditions, ground cover, and species of vegetation are like those of the original native condition for the site. More specifically, this means (1) the soil is either undisturbed or has been treated according to the "native vegetated landscape" specifications in Appendix C, Section C.2.1.8; (2) the ground is either naturally covered with vegetation litter or has been top-dressed between plants with 4 inches of mulch consistent with the native vegetated landscape specifications in Appendix C; and (3) the vegetation is either (a) comprised predominantly of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and that reasonably could have been expected to occur naturally on the site or (b) comprised of plant species specified for a native vegetated landscape in Appendix C. Examples of these plant species include trees such as Douglas fir, western hemlock, western red cedar, alder, big-leaf maple and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

Natural channel (see "channel, natural")

Natural discharge area means an onsite area tributary to a single natural discharge location (see "natural discharge location").

Natural discharge location means the location where surface and storm water runoff leaves (or would leave if not infiltrated or retained) the site or project site under existing site conditions.

Natural hazard means a condition in land or water, or both, that arises in whole or in part out of natural processes and that creates a threat of immediate and substantial harm. A natural hazard may include, but is not limited to, a beaver dam, a debris dam in a stream, severe erosion at the base of a steep slope, or a stream displaced from its original channel.

Natural onsite drainage feature means a natural swale, channel, stream, closed depression, wetland, or lake.

NAVD means North American Vertical Datum (see "base flood elevation").

New conveyance system elements means those that are proposed to be constructed where there are no existing constructed conveyance elements.

New impervious surface means the addition of a hard or compacted surface like roofs, pavement, gravel, or dirt; or the addition of a more compacted surface, like paving over pre-existing dirt or gravel. Permeable pavement and vegetated roofs are considered new impervious surface for purposes of determining whether the thresholds for application of minimum requirements are exceeded, as are lawns, landscaping, sports fields, golf courses, and other areas that have modified runoff characteristics resulting from the addition of underdrains designed to collect stormwater runoff. Open, uncovered retention/detention facilities shall not be considered impervious surfaces for purposes of determining whether the thresholds for application of minimum requirements are

- exceeded. Open, uncovered retention/detention facilities shall be considered impervious surfaces for purposes of runoff modeling.
- New pervious surface** means the conversion of a *native vegetated surface* or other native surface to a non-native pervious surface (e.g., conversion of forest or meadow to pasture land, grass land, cultivated land, lawn, landscaping, bare soil, etc.), or any alteration of existing non-native pervious surface that significantly increases stormwater runoff (e.g., conversion of pasture land, grass land, or cultivated land to lawn, landscaping, or bare soil; or alteration of soil characteristics).
- New PGIS** means *new impervious surface* that is *pollution-generating impervious surface* or any alteration of existing pollution-generating impervious surface that changes the type of pollutants or results in increased pollution loads and/or concentrations.
- New PGPS** means *new pervious surface* that is *pollution-generating pervious surface* or any alteration of existing pollution-generating pervious surface that changes the type of pollutants or results in increased pollution loads and/or concentrations.
- NGPE** means Native Growth Protection Easement.
- NGVD** means National Geodetic Vertical Datum (see "base flood elevation").
- Non-native pervious surface** means a pervious surface that does not meet the definition of a "native vegetated surface."
- Normal depth** means the depth of uniform flow. This is a unique depth of flow for any combination of channel characteristics and flow conditions. Normal depth is found from Manning's equation.
- NPDES** means National Pollutant Discharge Elimination System.
- NTU** means Nephelometric Turbidity Units, a measurement unit for *turbidity* in water.
- Nutrient** means one of the essential chemicals needed by plants or animals for growth. Excessive amounts of nutrients can lead to degradation of water quality and excessive algae growth. Some nutrients can be toxic at high concentrations.
- Offsite** means 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 (see "site").
- Offsite flows** means runoff conveyed to a proposed project from adjacent properties.
- Off-line systems** – restrict flows to treatment facilities and bypass the incremental portion of remaining higher flows around them.
- Oil/water separator** means a vault, usually underground designed to provide a quiescent environment to separate oil from water. Solid floatables (e.g., styrofoam) are also removed.
- One-year capture zone** means the surface area overlying the portion of the aquifer which contributes water to the well within a one year period.
- On-line systems** – Most treatment facilities can be designed as "On-line" systems with flows above the water quality design flow or volume simply passing through the facility with lesser or no pollutant removal efficiency. However, it is sometimes desirable to restrict flows to treatment facilities and bypass the incremental portion of remaining higher flows around them. These are called "Off-line". An example of an on-line system is a wetpool that maintains a permanent pool of water for runoff treatment purposes.
- Onsite** means on the site that includes the proposed development (see "site").
- Ordinary high water mark** means the mark that will be found by examining the bed and banks of a stream, lake, pond, or tidal water and ascertaining where the presence and action of waters are so common and usual, and so long maintained in all ordinary years as to mark upon the soil a vegetative character distinct from that of the abutting upland. In an area where the ordinary high water mark cannot be found, the line of mean high water in areas adjoining freshwater or mean higher high tide in

areas adjoining saltwater is the "ordinary high water mark." In an area where neither can be found, the top of the channel bank is the "ordinary high water mark." In braided channels and alluvial fans, the ordinary high water mark or line of mean high water include the entire water or stream feature.

Orifice means an opening with closed perimeter (usually sharp-edged) and of regular form in a plate, wall, or partition through which water may flow, generally used for the purpose of measurement or control of such water.

Outfall means a point where collected and concentrated surface and storm water runoff is discharged from a pipe system or culvert.

Outlet control means a flow condition where the flow is governed by a combination of inlet geometry, barrel characteristics, and tailwater elevation.

Outwash soil means a soil formed from highly permeable sands and gravels.

Overtopping means to flow over the limits of a containment or conveyance element.

Parcel redevelopment project means a redevelopment project on a site comprised of one or more parcels of land on which an assessed value of existing site improvements has been determined by the King County Assessors Office.

Permeable pavement – Pervious concrete, porous asphalt, permeable pavers or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.

Permeable soils means soil materials with a sufficiently rapid infiltration rate so as to greatly reduce or eliminate surface and storm water runoff.

Pervious surface – Any surface material that allows stormwater to infiltrate into the ground. Examples include lawn, landscape, pasture, and native vegetation areas. Note for purposes of threshold determination and runoff volume modeling for detention and treatment, vegetated roofs and permeable pavements are to be considered impervious surfaces along with lawns, landscaping, sports fields, golf courses, and other areas that have modified runoff characteristics resulting from the addition of underdrains.

Perviousness means related to the size and continuity of void spaces in soils; related to a soil's infiltration rate.

Pesticide means any substance (usually chemical) used to destroy or control organisms; includes herbicides, insecticides, algaecides, fungicides, and others. Many of these substances are manufactured and are not naturally found in the environment. Others, such as pyrethrum, are natural toxins which are extracted from plants and animals.

pH means a measure of the acidity or basicity of a substance found by measuring the concentration of hydrogen ions in the substance. pH is the negative \log_{10} of the hydrogen ion concentration, or $-\log_{10}([H^+])$. The pH scale ranges from 1 to 14 with 1 being highly acidic, 14 highly basic, and 7 neutral. Most natural waters in King County are slightly acidic having a pH of around 6.5. The pH range of precipitation in Western Washington is between 5.1 and 5.3¹⁰.

Phosphorus problem means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Waterbody due to exceedance or concern for exceedance of the state's numeric action standard for total phosphorus as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers¹¹ of these waterbodies, or (2) is currently designated by the County as a nutrient problem based on credible data indicating exceedance or concern for exceedance

¹⁰ USGS, 1997. What is acid rain? <http://pubs.usgs.gov/gip/acidrain/2.html>, maintained by John Watson, jmwatson@usgs.gov accessed 2013/11/27.

¹¹ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>
The Map Tool is at <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024>

of the state's numeric action standard for total phosphorus as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page¹².

Physiographic means characteristics of the natural physical environment (including hills).

Pipe system means a network of storm drain pipes, catch basins, manholes, inlets, and outfalls designed and constructed to convey surface water.

Plat means a map or representation of a subdivision showing the division of a tract or parcel of land into lots, blocks, streets, or other divisions and dedications.

Point discharge means the release of collected and/or concentrated surface and storm water runoff from a pipe, culvert, or channel.

Point of compliance means the location where detention performance standards are evaluated. In most cases, the point of compliance is the outlet of the proposed detention facility where, for example, 2- and 10-year discharges must match predevelopment 2- and 10-year peak flow rates.

Pollution-generating impervious surface (PGIS) means an impervious surface considered to be a significant source of pollutants in stormwater runoff. Such surfaces include those that are *subject to: vehicular use*, industrial activities, or storage of *erodible or leachable materials, wastes, or chemicals*; and that receive direct rainfall or the run-on or blow-in of rainfall. A covered parking area would be included if runoff from uphill could regularly run through it or if rainfall could regularly blow in and wet the pavement surface. PGIS includes metal roofs unless they are coated with an inert, non-leachable material (see Reference 11-E). PGIS includes roofs that are exposed to the venting of significant amounts of dusts, mists, or fumes from manufacturing, commercial, or other indoor activities. PGIS includes vegetated roofs exposed to pesticides, fertilizers, or loss of soil. Other roofing types that may pose risk but are not currently regulated are listed in Reference 11-E. Lawns, landscaping, sports fields, golf courses, and other areas that have modified runoff characteristics resulting from the addition of underdrains that have the pollution generating characteristics described under the "pollution-generating pervious surface" definition are also considered **PGIS**.

Pollution-generating pervious surface (PGPS) means a non-impervious surface considered to be a significant source of pollutants in surface and stormwater runoff. Such surfaces include those that are *subject to vehicular use*, industrial activities, storage of *erodible or leachable materials, wastes, or chemicals*, and that receive direct rainfall or the run-on or blow-in of rainfall; or subject to use of pesticides and fertilizers, or loss of soil. Such surfaces include, but are not limited to, the lawn and landscaped areas of a residential, commercial, or industrial site or land use, golf courses, parks, sports fields (natural and artificial turf), cemeteries, and County-standard grassed modular grid pavement.

Porosity means the property of having pores (small openings) that allow the passage of water.

Preapplication means the meeting or form used by an applicant for a development permit to present initial project intentions to the Department of Development and Environmental Services. Preapplication does not mean application.

Preapplication adjustment means an adjustment that can be requested prior to permit application. It is useful for when an adjustment decision is needed to determine if a project is feasible, or when the approval conditions must be known to determine if a project is viable before funding a full application. The approval of preapplication adjustments is tied by condition to the project proposal presented at a preapplication meeting with DPER.

Project means any proposed action to alter or develop a site that may also requires drainage review.

Project site means that portion of a site and any offsite areas subject to proposed project activities, alterations, and improvements including those required by this manual (see "site").

R/D means retention/detention facility, another term for flow control facility.

¹² <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx>.

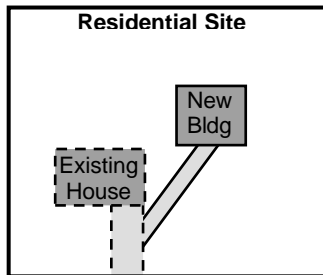
Reach means a length of channel with uniform characteristics.

Receiving waters means bodies of water, surface water systems, or groundwater receiving water from upstream man-made or natural systems.

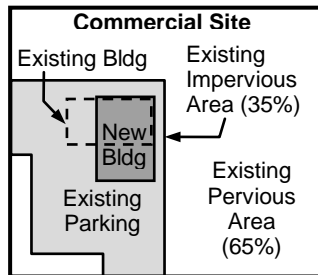
Recharge means the flow to groundwater from the infiltration of surface and storm water runoff.

Redevelopment project means a project that proposes to add, replace, or modify impervious surface (for purposes other than a residential subdivision or maintenance) on a site that is already substantially developed in a manner consistent with its current zoning or with a legal non-conforming use or has an existing impervious surface coverage of 35% or more. The following examples illustrate the application of this definition.

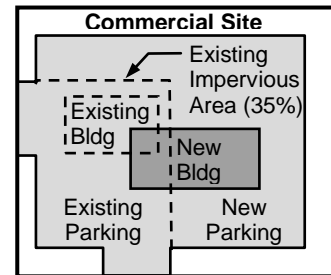
A Redevelopment Project that Adds New Impervious Surface



A Redevelopment Project that Replaces Impervious Surface



A Redev Project that Adds and Replaces Impervious Surface



Regional detention facility means a stormwater quantity control structure designed to prevent or correct the existing or future surface water runoff problems of a basin or subbasin as defined by the King County Department of Natural Resources and Parks (DNRP).

Regional scale factor means a geographically variable multiplier applied to the flow time series to account for the variations in rainfall amounts, and hence runoff, between the project site and the rainfall station (Landsburg or Sea-Tac).

Release rate means the computed peak rate of surface and storm water runoff from a site.

Replaced impervious surface means any existing impervious surface on the **project site** that is proposed to be removed and re-established as impervious surface, excluding impervious surface removed for the sole purpose of installing utilities or performing maintenance on underground infrastructure. For structures, *removed* means the removal of buildings down to the foundation. For other impervious surfaces, *removed* means the removal down to base course or bare soil. It does not include the removal of pavement material through grinding or other surface modification unless the entire layer of PCC or AC is removed. Replaced impervious surface also includes impervious surface that is moved from one location to another on the project site where the following two conditions are met: (A) the area from which the impervious surface is moved from will be restored to the same or better runoff discharge characteristics as the area being covered by the moved impervious surface, and (B) impervious surface at the new location is either designated as non-pollution generating or the pollution generating characteristics remain unchanged compared to that of the original location.

Replaced PGIS means **replaced impervious surface** that is **pollution-generating impervious surface**.

Retention means the process of collecting and holding surface and storm water runoff with no surface outflow.

Retention/detention facility (R/D) means a type of drainage facility designed either to hold water for a considerable length of time and then release it by evaporation, plant transpiration, and/or infiltration into the ground, or to hold surface and storm water runoff for a short period of time and then release it to the surface and storm water conveyance system.

Retrofitting means the renovation of an existing site, structure, or facility to meet changed conditions or to improve mitigation of stormwater flow and water quality impacts.

Riparian means pertaining to the banks of rivers and streams, and sometimes also wetlands, lakes, or tidewater.

Riprap means a facing layer or protective mound of stones placed to prevent erosion or sloughing of a structure or embankment due to the flow of surface and storm water runoff.

Runoff means that portion of water originating from rainfall and other precipitation that flows over the surface or just below the surface from where it fell and is found in drainage facilities, rivers, streams, springs, seeps, ponds, lakes, wetlands, and shallow groundwater as well as on ground surfaces.

Runoff files means a database of continuous flows pre-simulated by HSPF.

Runoff Files Method means a hydrologic modeling tool for western King County to produce results (design flows, detention pond sizing, etc.) comparable to those obtained with the U.S. Environmental Protection Agency's HSPF model but with significantly less effort. This is achieved by providing the user with a set of 15 minute and hourly time series files of unit area land surface runoff ("runoff files") pre-simulated with HSPF for a range of land cover conditions and soil types within King County.

Run-on or blow-in of rainfall means stormwater from uphill that could regularly run through an area, or rainfall that could regularly be blown in and wet the pavement surface.

Salmon conservation plan means a plan and all implementing regulations and procedures including, but not limited to, land use management adopted by ordinance, capital projects, public education activities and enforcement programs for conservation and recovery of salmon within a water resource inventory area designated by the state under WAC 173-500-040.

Salmonid means a member of the fish family Salmonidae. In King County salmonid species include Chinook, Coho, chum, sockeye, and pink salmon; cutthroat, rainbow, and brown trout and steelhead; Dolly Varden, brook trout, char, kokanee, and whitefish.

Sand filter means a depression, basin, or vault with the bottom made of a layer of sand. Stormwater is treated as it percolates through the sand layer and is discharged via a central collector pipe.

Scour means erosion of channel banks due to excessive velocity of the flow of surface and stormwater runoff.

SCS means Soil Conservation Service, U.S. Department of Agriculture.

SCS Method means a hydrologic analysis based on the Curve Number method (*National Engineering Handbook* - Section 4: Hydrology, August 1972).

Seasonal high groundwater level means the highest elevation attained by groundwater, as measured by piezometers or wells, during any calendar year.

Sediment means fragmented material which originates from weathering and erosion of rocks or unconsolidated deposits, and which is transported by, suspended in, or deposited by water.

Sedimentation means the depositing or formation of sediment.

Sensitive area means the area delineated on a site which contains wetlands, streams, steep slopes, hazard areas, landslide hazard areas, and their required buffers. Sensitive areas are recorded as tracts or sensitive area notice on titles. *Note, effective January 1, 2005, the term "sensitive area" is replaced with the term "critical area" in KCC 21A.24.*

Sensitive area setback area means the area delineated on a site which contains wetlands, streams, steep slopes, hazard areas, landslide hazard areas, and their required buffers. This term was used from November 1990 through December 1995. References to critical areas and their required buffers in this manual shall also apply to sensitive area setback areas.

Sensitive area tract means a separate tract that is created to protect a sensitive area and its buffer, and whose ownership was assigned as provided in KCC 21A.24 prior to January 1, 2005.

Sensitive lake means a designation applied by the County to lakes that are particularly prone to eutrophication from development-induced increases in phosphorus loading. Such lakes are identified on the Water Quality Applications Map adopted with this manual and found online at <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx> or viewed via King County's iMap Interactive Mapping Tool at <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>.

SEPA means State Environmental Policy Act.

Severe building flooding problem means there is flooding of the *finished floor area*¹³ of a *habitable building*,¹⁴ or the electrical/heating system of a habitable building for runoff events less than or equal to a 100-year event. Examples include flooding of finished floors of homes and commercial or industrial buildings, or flooding of electrical/heating system components in the crawl space or garage of a home.

Severe erosion problem means there is an open drainage feature with evidence of or potential for erosion/incision sufficient to pose a sedimentation hazard to downstream conveyance systems or pose a landslide hazard by undercutting adjacent slopes. Severe erosion problems do not include roadway shoulder rilling or minor ditch erosion.

Severe flooding problem means a **severe building flooding problem** or a **severe roadway flooding problem**.

Severe roadway flooding problem means there is flooding over all lanes of a *roadway*,¹⁵ or a *sole access driveway*¹⁶ is severely impacted, for runoff events less than or equal to the 100-year event. A severely impacted sole access driveway is one in which flooding overtops a culverted section of the driveway, posing a threat of washout or unsafe access conditions due to indiscernible driveway edges, or flooding is deeper than 6 inches on the driveway, posing a severe impediment to emergency access.

Shared facility means a drainage facility designed to meet one or more of the requirements of KCC 9.04.050 for two or more separate projects contained within a basin. Shared facilities usually include shared financial commitments for those drainage facilities.

Sheet erosion means the relatively uniform removal of soil from an area without the development of conspicuous water channels.

Sheet flow means relatively uniform flow over plane surfaces without the concentration of water into conspicuous channels.

Shoreline development means the proposed projects regulated by the Shoreline Management Act. Usually this includes the construction over water or within a shoreline zone (generally 200 feet landward of the water) of structures such as buildings, piers, bulkheads, and breakwaters, including environmental alterations such as dredging and filling, or any project which interferes with public navigational rights on the surface waters.

Shredded wood mulch means a mulch made from shredded tree trimmings, usually from trees cleared on site and stockpiled until needed. It must be free of garbage and weeds and may not contain excessive resin, tannin, or other material detrimental to plant growth.

¹³ *Finished floor area*, for the purposes of defining **severe building flooding problem**, means any enclosed area of a building that is designed to be served by the building's permanent heating or cooling system.

¹⁴ *Habitable building* means any residential, commercial, or industrial building that is equipped with a permanent heating or cooling system and an electrical system.

¹⁵ *Roadway*, for the purposes of this definition, means the traveled portion of any public or private road or street classified as such in the *King County Road Design and Construction Standards*.

¹⁶ *Sole access driveway* means there is no other unobstructed, flood-free route for emergency access to a habitable building.

- Siltation** means the process by which a river, lake, or other water body becomes clogged with sediment. Silt can clog gravel beds and prevent successful survival of salmon eggs.
- Simplified drainage plan** means a simplified form of site improvement and erosion and sediment control plans (without a technical information report) which can be prepared by a non-engineer from a set of pre-engineered design details. Simplified drainage plans are allowed for projects in Simplified Drainage Review.
- Simplified Drainage Review** means the drainage review for a proposed single family residential project or agricultural project that: results in less than 5,000 square feet of new plus replaced pollution generating impervious surface, results in less than $\frac{3}{4}$ acre of pollution generating pervious surface, limits target impervious and pervious surface as specified in the Section 1.1.2.1, and meets the simplified drainage requirements specified in Appendix C of the *SWDM*, including flow control best management practices, erosion and sediment control measures, and drainage plan submittal requirements.
- Simplified site ESC plan** means a plan and supporting documentation for implementing erosion and sediment control measures that may be prepared by a person who is not a civil engineer for projects that are exempt from drainage review or that are subject to **Simplified Project Drainage Review** but disturb less than 3 acres of a site. The plan is a scale drawing of the site or project site that shows the limits of disturbance and how required ESC measures will be applied to prevent sediment from leaving the project site. The plan must include or be accompanied by any diagrams or figures necessary for installation of proposed ESC measures. DPER may allow a written version of this plan if they determine there is no need to illustrate the extent and location of proposed ESC measures.
- Single family residential project** means any project that (a) constructs or modifies a single family dwelling unit, (b) makes improvements (e.g., driveways, roads, outbuildings, play courts, etc.) or clears native vegetation on a lot that contains or will contain a single family dwelling unit, or (c) is a plat, short plat, or boundary line adjustment that creates or adjusts lots that will contain single family dwelling units.
- Site** means a single parcel, or either: two or more contiguous parcels that are under common ownership or documented legal control or a portion of a single parcel under documented legal control separate from the remaining parcel, used as a single parcel for a proposed project for purposes of applying for authority from King County to carry out a proposed project. For projects located primarily within dedicated rights-of-way, the length of the project site and the right-of-way boundaries define the site.
- Site improvement plan** means the plan that consists of all the plans, profiles, details, notes and specifications necessary to construct road, drainage structure and off-street parking improvements. See also "modified site improvement plan."
- Slope** means the gradient in feet (vertical) per feet (horizontal) or expressed as percent. Side slopes of drainage facilities are usually referred to with the horizontal dimension first (as in 3H:1V).
- Sloughing** means the sliding of overlying material. Sloughing has the same effect as caving, but it usually occurs when the bank or an underlying stratum is saturated or scoured.
- Soil bioengineering** means a method of soil or land stabilization that uses living plant material selected for the specific site situation as the major structural or engineering component of the stabilization.
- Soil permeability** means the ease with which gases, liquids, or plant roots penetrate or pass through a layer of soil.
- Soil scientist** means a person who has earned a degree in soil science, agronomy, or hydrogeology from an accredited college or university, or who has equivalent educational training and has at least five years of experience, or who has four years of experience and at least two years of post-graduate study. Two years of experience must be in the State of Washington with local soil types.
- Soil stabilization** means 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.

Sole access driveway means there is no other unobstructed, flood-free route for emergency access to a habitable building. *Severely impacting* means the flooding overtops a culverted section of the driveway, posing a threat of washout or unsafe access conditions due to indiscernible driveway edges, or the flooding is deeper than 6 inches on the driveway, posing a severe impediment to emergency access.

Sole access roadway means there is no other flood-free route for emergency access to one or more dwelling units.

Sole-source aquifer means an aquifer that is the only source of drinking water for a given community and that is so designated by the U.S. Environmental Protection Agency.

Specific energy means the total energy within any system with respect to the channel bottom; equal to the potential head plus velocity and pressure heads.

Sphagnum bog wetland means a unique wetland having a predominance of sphagnum moss creating a substrate upon which a distinctive community of plants is established. Some of these include *Ledum groenlandicum* (Labrador tea), *Kalmia occidentalis* (bog laurel), *Drosera rotundifolia* (sundew), and *Vaccinium oxycoccos* (cranberry). Stunted evergreen trees are also sometimes present. In addition to a distinctive plant community, the water chemistry of a sphagnum bog wetland is unique. It is characterized by acidic waters (pH 3 to 5.5), low nutrient content, low alkalinity, and a buffering system composed predominantly of organic acids. In the Puget Sound area, mature sphagnum bog wetlands are typically very old, often dating back thousands of years. There are several classification schemes for wetlands dominated by sphagnum moss, and a successional series from conventional wetlands to fens to sphagnum bog is recognized by most ecologists. Some biologists use water chemistry and plant community composition to determine where in this successional series a wetland should be placed. In these classification schemes, the sphagnum wetlands defined in this manual would be bogs. Others base the wetland type on the source of water, in which case most King County sphagnum wetlands would be fens. This manual has adopted the classification scheme based on water chemistry and plant communities and hence refers to these wetlands as bogs rather than fens. The size of a sphagnum bog wetland is defined by the boundaries of the sphagnum bog plant community.

Spill control device means a Tee section or down turned elbow designed to retain a limited volume of pollutant that floats on water, such as oil or antifreeze. Spill control devices are passive and must be followed by clean-up activity for the spilled pollutant to actually be removed.

State Environmental Policy Act (SEPA) means the Washington State law intended to minimize environmental damage. SEPA requires that state agencies and local governments consider environmental factors when making decisions on activities, such as development proposals over a certain size and comprehensive plans. As part of this process, environmental documents are prepared and opportunities for public comment are provided.

Steep slope hazard area means an area on a slope of 40% inclination or more within a vertical elevation change of at least ten feet. For the purpose of this definition, a slope is delineated by establishing its toe and top, and is measured by averaging the inclination over at least ten feet of vertical relief. Also, for the purpose of this definition:

- The *toe* of a slope means a distinct topographic break in slope that separates slopes inclined at less than 40% from slopes inclined at 40% or more. Where no distinct break exists, the toe of a steep slope is the lower most limit of the area where the ground surface drops ten feet or more vertically within a horizontal distance of 25 feet; AND
- The *top* of a slope is a distinct topographic break in slope that separates slopes inclined at less than 40% from slopes inclined at 40% or more. Where no distinct break exists, the top of a steep slope is the uppermost limit of the area where the ground surface drops ten feet or more vertically within a horizontal distance of 25 feet.

Storage routing means a method to account for the attenuation of peak flows passing through a detention facility or other storage feature.

- Storm drains** means the enclosed conduits that transport surface and storm water runoff toward points of discharge (sometimes called storm sewers).
- Storm drain system** means the system of gutters, pipes, streams, or ditches used to carry surface and storm water from surrounding lands to streams, lakes, or Puget Sound.
- Stormwater** means the water produced during precipitation or snowmelt, which runs off, soaks into the ground, or is dissipated through evapotranspiration. Stormwater that runs off or soaks into the ground ultimately becomes surface water or groundwater.
- Stormwater compliance plan** means a plan or study and all regulations and procedures that have been adopted by the county to implement the plan or study, including, but not limited to, capital projects, public education activities, and enforcement programs for managing stormwater quantity and quality discharged from the county's municipal separate storm sewer system in compliance with the National Pollutant Discharge Elimination System permit program under the Clean Water Act.
- Stormwater Pollution Prevention Manual** means the manual referenced in KCC 9.12, Water Quality, and adopted in accordance with KCC 2.98, including supporting documentation referenced or incorporated in the manual, describing best management practices and procedures for eliminating or reducing surface, storm, and ground water contamination from existing facilities and existing and new activities not covered by the *Surface Water Design Manual*.
- Stormwater pollution prevention and spill (SWPPS) plan** means the plan and supporting documentation for implementing pollution and spill prevention BMPs on the project site during construction as required by the *Stormwater Pollution Prevention Manual*. This plan is a component of the construction stormwater pollution prevention plan (CSWPPP), which is submitted with the engineering plans required for drainage review.
- Stormwater runoff** means stormwater that flows over, or just below, the surface where it fell or melted. Stormwater runoff contributes to and becomes surface water or groundwater.
- Stormwater wetland** means a wetland constructed, often in areas of upland soil, for the purpose of treating stormwater. When created in upland soils, stormwater wetlands are not considered waters of the State if they are regularly maintained. In King County, stormwater wetlands cannot currently be used to mitigate for impacts to an existing natural wetland.
- Stream** means an aquatic area where surface water produces a channel, not including a wholly artificial channel unless it is used by salmonids or used to convey a stream that occurred naturally before construction of the artificial channel. Those topographic features that resemble streams but have no defined channels (e.g., swales) shall be considered streams when hydrologic and hydraulic analyses done pursuant to a development proposal predict formation of a defined channel after development.
- Structural engineer** means a person licensed by the State of Washington as a professional civil engineer specializing in structural engineering.
- Structure** means a catch basin or manhole in reference to a storm drainage system or as defined in KCC zoning code 21A.
- Stub-out** means a length of pipe provided for future connection to the storm drainage system.
- Subbasin** means a geographic area that (1) drains to a stream or waterbody named and noted on common maps and (2) is contained within the basin of the stream or water body.
- Subcritical flow** means flow at depths greater than the critical depth.
- Subject to vehicular use** means the surface is regularly used by motor vehicles including but not limited to motorcycles, cars, trucks, busses, aircraft, tractors, and heavy equipment. The following surfaces are considered regularly used by motor vehicles: roads, un-vegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, unrestricted access fire lanes, vehicular equipment storage yards, and airport taxiways and runways. The following surfaces are not considered regularly used by motor vehicles: paved bicycle pathways separated from and not subject to drainage from roads

for motor vehicles, fenced or restricted access fire lanes, and maintenance access roads with a recurring use of no more than one routine vehicle access per week.

Supercritical flow means flow at depths less than the critical depth.

Surface and storm water management system means drainage facilities and any other natural features which collect, store, control, treat, and/or convey surface and storm water.

Surface flow means that which travels over land or in an open or piped conveyance system.

Surface water means the water that exists on land surfaces before, during, and after stormwater runoff occurs and includes, but is not limited to, the water found on ground surfaces and in drainage facilities, rivers, streams, springs, seeps, ponds, lakes, wetlands, and Puget Sound. It also includes shallow groundwater.

Surface Water Design Manual means the manual, and supporting documentation referenced or incorporated in the manual, describing surface and stormwater design and analysis requirements, procedures, and guidance that has been formally adopted by rule under the procedures in KCC 2.98. The *Surface Water Design Manual* is available from the King County Department of Development and Environmental Services or the Department of Natural Resources and Parks, Water and Land Resources Division, or their successor agencies.

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

SWDM means *Surface Water Design Manual*.

SWM means the former Surface Water Management Division of the King County Department of Natural Resources and Parks.

Targeted Drainage Review means an abbreviated evaluation required by KCC 9.04.030 for certain types of proposed projects that are not subject to full or large project drainage review. Targeted drainage review may be required for some projects in simplified drainage review.

Target impervious surface means that portion of a site's existing, new, and replaced impervious surface from which runoff impacts are required to be mitigated by a particular set of drainage requirements.

Target surface means a developed surface from which runoff impacts are required to be mitigated by a particular set of drainage requirements.

Target PGIS means a pollution-generating impervious surface from which runoff impacts to water quality are required to be mitigated by the area-specific water quality facility requirement (see "pollution-generating impervious surface").

Target PGPS means a pollution-generating pervious surface from which runoff impacts to water quality are required to be mitigated by the area-specific water quality facility requirement (see "pollution-generating pervious surface").

Temperature problem means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Water due to exceedance or concern for exceedance of the state's numeric water quality standard for temperature as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers¹⁷ of these waterbodies, or (2) is currently designated by the County as a temperature problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for temperature as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page¹⁸.

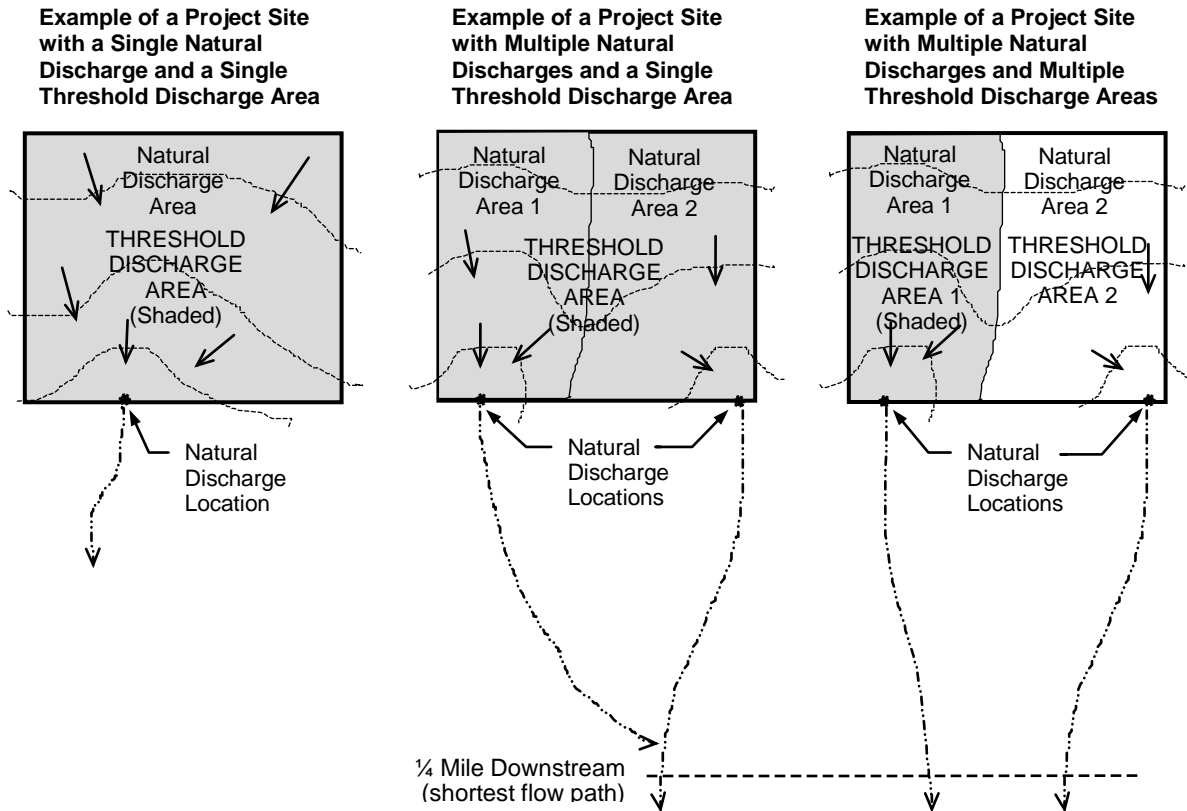
¹⁷ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>

The Map Tool is at <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024>

¹⁸ <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx>

Temporary Erosion and Sediment Control (ESC, or TESC) Measures means those erosion and sediment control measures implemented before final stabilization of the site to reduce erosion, control siltation and sedimentation, and prevent the discharge of sediment-laden water from the site.

Threshold discharge area means an onsite area draining to a single natural discharge location, or multiple natural discharge locations that combine within one-quarter-mile downstream (as determined by the shortest flowpath). The examples below illustrate this definition. This term is used to clarify how the thresholds, exemptions, and exceptions of this manual are applied to project sites with multiple discharge points.



Tightline means a continuous length of pipe that conveys water from one point to another (typically down a steep slope) with no inlets or collection points in between.

Tightline system means a continuous length of pipe used to convey flows down a steep or sensitive slope with appropriate energy dissipation at the discharge end.

Till means a layer of poorly sorted soil deposited by glacial action; in the King County area, till typically has a high silt content (see Section 3.2.2.1 for a description of soil groups).

Time of concentration means the time it takes runoff to travel overland (from the onset of precipitation) from the most hydraulically distant location in the drainage basin to the point of discharge.

Total phosphorous (TP) means a naturally occurring element essential for plant growth. Total phosphorous includes both dissolved and particulate phases of phosphorous. Excess phosphorous can cause excess algae growth in lakes and streams, resulting in aesthetic problems and threats to aquatic life.

Total suspended solids (TSS) means that portion of the solids carried by stormwater that can be caught on a standard glass filter. Additional pollutants such as metals and organics are often associated with the finer portion of the solids.

Toxic means poisonous, carcinogenic, or otherwise directly harmful to life.

Tract means a legally created parcel of property designated for special non-residential and non-commercial uses.

Transportation redevelopment project means a stand-alone transportation improvement project that proposes to add, replace, or modify impervious surface, for purposes other than maintenance, within a length of dedicated public or private road right-of-way that has an existing impervious surface coverage of thirty-five percent or more. Road right-of-way improvements required as part of a subdivision or commercial development project may not be defined as a separate transportation redevelopment project.

Travel time means the estimated time for surface water to flow between two points of interest.

Treatment train means a combination of two or more treatment facilities connected in series (i.e., the design water volume passes through each facility in turn).

Tributary means a drainage feature that collects water and conveys it to another drainage feature (e.g., a drainage channel is tributary to a stream into which it flows).

Tributary area means the geographical area (not constrained by property boundaries) that drains to the point of concern.

Turbidity means the dispersion or scattering of light in a liquid, caused by suspended solids and other factors: commonly used as a measure of suspended solids in a liquid.

Turbidity problem means a stream reach, lake, or other waterbody of the state that is either (1) currently designated by the state as a Category 5, 4, or 2 Waterbody due to exceedance or concern for exceedance of the state's numeric water quality standard for turbidity as documented in the state's latest Water Quality Assessment 303(d)/305(b) Integrated Report and as displayed in WA Ecology's electronic database and map viewers¹⁹ of these waterbodies, or (2) is currently designated by the County as a turbidity problem based on credible data indicating exceedance or concern for exceedance of the state's numeric water quality standard for turbidity as documented in the latest published list of King County-Identified WQ Problems (Reference Section 10) posted at King County's Surface Water Design Manual web page²⁰.

Undisturbed buffer means a zone where development activity, including logging and the construction of utility trenches, roads, and/or surface and storm water drainage facility systems, shall not occur.

Undisturbed low gradient uplands means forested land that is sufficiently large and flat to infiltrate surface and storm runoff without allowing the concentration of water on the surface of the ground.

Urban residential development means proposed plats or short plats in urban residential zoning per KCC 21.A12. These development proposals generally lie within the Urban Growth Area and create small (generally less than 10,000 square foot) lots.

Water quality facility means a drainage facility designed to mitigate the impacts of increased pollutants in stormwater runoff generated by site development. A water quality facility uses processes that include but are not limited to settling, filtration, adsorption, and absorption to decrease pollutant concentrations and loadings in stormwater runoff.

Water quality treatment area means a geographic area of the County within which proposed projects must comply with the water quality facility requirements adopted for that area as part of this manual. There are three such areas that comprise unincorporated King County: the Basic WQ Treatment Area, the Sensitive Lake WQ Treatment Area, and the Sphagnum Bog WQ Treatment Area. These areas are mapped on the Water Quality Applications Map adopted with this manual and found online at <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design->

¹⁹ The link to the Query Tool is <https://fortress.wa.gov/ecy/wats/ApprovedSearch.aspx>

The Map Tool is at <https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024>

²⁰ <http://www.kingcounty.gov/environment/water-and-land/stormwater/documents/surface-water-design-manual.aspx>.

[manual.aspx](#) or viewed via King County's iMap Interactive Mapping Tool at <http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>.

Watershed means the geographic region from which water drains toward a central collector such as a stream, river, lake, or salt water.

Wetpool means the volume of water more or less permanently contained in a pond or vault. The volume of water in a wetpool is normally lost only through natural processes such as evaporation, evapotranspiration, or slow infiltration into the ground.

Wetpond and **wetvault** mean drainage facilities for water quality treatment that contain a permanent pool of water. They are designed to optimize water quality by providing long retention times (on the order of a week or more) to settle out particles of fine sediment to which pollutants such as heavy metals may adsorb, and to allow biologic activity to occur that metabolizes nutrients and organic pollutants. For wetvaults, the permanent pool of water is covered by a lid which blocks sunlight from entering the facility, limiting light-dependent biologic activity.

Wetland means an area that is not an aquatic area and that is inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and under normal circumstances supports, a prevalence of vegetation typically adapted for life in saturated soil conditions. For purposes of this definition:

- Where the vegetation has been removed or substantially altered, wetland is determined by the presence or evidence of hydric soil, by other documentation such as aerial photographs of the previous existence of wetland vegetation or by any other manner authorized in the wetland delineation manual required by RCW 36.70A.175; and
- Except for artificial features intentionally made for purposes of mitigation, wetland does not include an artificial feature made from a non-wetland area, which may include, but is not limited to a surface water conveyance for drainage or irrigation; a grass-lined swale; a canal; a flow control facility; a wastewater treatment facility; a farm pond; a wetpond; landscape amenities; or a wetland created after July 1, 1990, that was unintentionally made as a result of construction of a road, street or highway.

Wetland edge means the line delineating the outer edge of a wetland, consistent with the wetland delineation manual required by RCW 36.70A.175.

Wet Season means October 1 to April 30.

WQ means water quality.

Zero-rise floodway means the channel of a stream and that portion of the adjoining floodplain that is necessary to contain and discharge the base flood flow without measurable increase in the base flood elevation. For the purpose of this definition, "measurable increase in base flood elevation" means a calculated upward rise in the base flood elevation, equal to or greater than 0.01 foot, resulting from a comparison of existing conditions and changed conditions directly attributable to alterations of the topography or any other flow obstructions in the floodplain. The "zero rise floodway" is broader than that of the FEMA floodway but always includes the FEMA floodway. The "zero-rise floodway" includes the entire floodplain unless a critical areas report demonstrates otherwise.

Zinc is one of several heavy metals of concern in the aquatic environment, and is used as one indicator of a whole range of metals found in urban runoff.

References

- APHA, AWWA, & WEF. (1992). *Standard Methods for the Examination of Water and Wastewater* (18th ed.): American Public Health Association.
- Buckman, & Brady. (1969). *The Nature and Properties of Soils*. Canada Ltd., Toronto, Ontario: . Collier-Macmillan.
- Chapman. (1965). Cation-exchange Capacity. In C. A. Black (Ed.), *Method of Soil Analysis, Part 2: Chemical and Microbiological Properties. Number 9 in the series Agronomy* (pp. 891-900). Madison, Wisconsin: American Society of Agronomy, Inc.
- Cornell. (2007a). Cation Exchange Capacity (CEC), *Agronomy Fact Sheet Series, Fact Sheet #22*: Cornell University Cooperative Extension, Department of Crop and Soil Sciences, College of Agriculture and Life Sciences.
- Cornell. (2007b). Estimating CEC from Cornell Soil Test Data, *Agronomy Fact Sheet Series, Fact Sheet #23*: Cornell University Cooperative Extension, Department of Crop and Soil Sciences, College of Agriculture and Life Sciences.
- Rounds. (2006). *Alkalinity and acid neutralizing capacity, in Techniques of Water-Resources Investigations (3 ed.)* (Vol. Book 9, Chapter A6, Section 6.6): U.S. Geological Survey.
- Stumm, & Morgan. (1981). *Aquatic chemistry--An introduction emphasizing chemical equilibria in natural waters (2 ed.)*: John Wiley and Sons, Inc, New York, New York.
- USGS. (2013a). Toxic Substances Hydrology Program, Alkalinity, Definitions. Retrieved November 6, 2013, from <http://toxics.usgs.gov/definitions/alkalinity.html>
- USGS. (2013b). The USGS Water Science School. Water science glossary of terms. Retrieved November 6, 2013, from <http://ga.water.usgs.gov/edu/dictionary.html>
- Wikipedia. (2013). Cation exchange capacity. Retrieved November 7, 2013, from https://en.wikipedia.org/wiki/Cation-exchange_capacity