



# Glossary of Terms related to EEP Watershed Planning

- **Assessment Contracts** – services contracted by EEP, usually with private-sector firms (i.e., environmental consultants), for office- and field-based watershed assessment work and the production of associated reports, memos, maps and GIS coverages; such contracts are usually executed as a phased sequence of tasks as part of the development of Local Watershed Plans in high-priority Cataloging Units (CUs). [see also **Watershed Assessment**.]; the contracting process is subject to the procedures and oversight/approval of the State Building Commission
- **Aquatic Habitat** – the wetlands, streams, lakes, ponds, estuaries, and streamside (riparian) environments where aquatic organisms (e.g., fish, benthic macroinvertebrates) live and reproduce; includes the water, soils, vegetation, and other physical substrate (rocks, sediment) upon and within which the organisms occur
- **Basin** – the largest watershed management unit for planning, consisting of a group of subbasins; typically range in size from 500 to 10,000 square miles; there are 17 major river basins in NC, the largest being the Cape Fear and the Yadkin-Pee Dee, and the smallest the Savannah and the Watauga
- **Basinwide Water Quality Plans** – produced by DWQ on a 5-year cycle for all 17 river basins in North Carolina (N.C.), these plans present information on the use support status of classified and monitored streams, identifying supporting versus impaired stream reaches, and recommending water-quality management solutions for degraded or impaired streams in each river basin; impaired streams are proposed biannually for inclusion on the USEPA's 303(d) list – a subset of such waters are required to have TMDLs developed for them, under requirements of the federal Clean Water Act; plans are available for downloading at the following website: <http://h2o.enr.state.nc.us/basinwide/index.html>
- **Benthic macroinvertebrates** – organisms living in or on the bottom substrate of aquatic habitats; include insect larvae, worms, snails, crayfish and mussels; can be used as indicators of stream water quality and stream habitat condition
- **BMPs (best management practices)** – any land or stormwater management practice or structure used to mitigate flooding, reduce erosion & sedimentation, or otherwise control water pollution from runoff; includes urban stormwater management BMPs and agriculture/forestry BMPs
- **Buffer** – an area adjacent to a stream, wetland, or shoreline where development activities (e.g., buildings, logging) are typically restricted or prohibited; may be managed as streamside (riparian) zones where undisturbed vegetation and soils act as filters of pollutants in stormwater runoff; buffer zone widths vary depending on state and local rules, but are typically a minimum of 25 to 50 feet on each side of perennial streams; in N.C., buffer rules have been established for all (or portions) of the upper Cape Fear, lower Catawba, Neuse and Tar-Pamlico river basins

## Glossary of Terms related to EEP Watershed Planning

- **Build-out** – the maximum total percentage of development in a watershed; typically determined assuming current zoning holds indefinitely into the future
- **Cataloging Unit (CU)** – USGS-designated 8-digit Hydrologic Units (HUs), typically comprised of multiple smaller 14-digit HUs; total area of CUs ranges from about 300 to 2,000 square miles; there are 52 individual CUs in NC; they can be considered regional subbasins within the larger river basins; they represent the watershed unit within which permitted impacts to waters & wetlands, and compensatory mitigation credits, are accounted for
- **Catchment** – the smallest watershed management unit; defined as the area of a development site to its most downstream intersection (usually as a pipe or open channel outfall) with a stream; typically less than one square mile in area (640 acres)
- **Conservation Easement** – a voluntary legal agreement between a landowner and a conservation organization (e.g., land trust) or public agency (e.g., EEP) that limits some portion of the land's uses; conservation easements are intended to preserve certain parcels/tracts in an undeveloped condition so as to provide a local or regional environmental benefit, such as water quality and habitat protection; landowners voluntarily agree to give up certain development rights on the land area in question while still retaining ownership of the land; certain tax benefits may accrue to landowners who sign conservation easements with qualified conservation organizations/agencies
- **Compensatory Mitigation** – any mitigation action taken to compensate for stream and/or wetland impacts associated with a 401/404-permitted project; includes Restoration, Enhancement, Creation and Preservation, with varying degrees of mitigation credit granted by the U.S. Army Corps of Engineers and the DWQ; compensatory mitigation is the basic regulatory tool by which “unavoidable” impacts to streams, riparian buffers and wetlands are intended to be minimized (or compensated for) in order to meet the nationwide goal of “no net loss” of wetlands
- **Cluster (or Open Space) Development** – the use of designs which incorporate open space into a development site; in cluster patterns, the layout of buildings, roads, etc. is arranged on a compact portion of the site so as to reserve areas of common open space or greenways; these areas can be used for recreation and/or preserved as naturally vegetated land
- **CWP**– Center for Watershed Protection, a non-profit corporation that provides local governments and watershed organizations around the country with the technical tools for protecting streams, lakes and rivers; the CWP's multi-disciplinary strategy for watershed protection includes watershed planning, watershed restoration, stormwater management, watershed research, better site design, education & outreach, and watershed training
- **DENR** – N.C. Department of Environment & Natural Resources
- **DWQ** – N.C. Division of Water Quality, an agency of DENR

## Glossary of Terms related to EEP Watershed Planning

- **Drainage Divide** – the topographic boundary (dividing line) between two watersheds or basins; precipitation falling on one side of the divide will flow into one watershed (or drainage basin), and that falling on the opposite site will flow into another. In high-relief (hilly or mountainous) terrain, coincides with ridge lines and hilltops
- **EEP** – the N.C. **Ecosystem Enhancement Program**, an agency of DENR designed to provide compensatory mitigation of the highest quality to offset development, performing in a manner that supports both the vitality of North Carolina's natural resources and responsible growth in the state; the initiative works to restore, enhance and protect the state's ecosystems, as well as maintain the state's quality of life, continue its economic expansion, and help ensure the health and well-being of its citizens; operating procedures established by joint agreement of DENR, the N.C. Department of Transportation (DOT) and the U.S. Army Corps of Engineers on July 22, 2003; its foundation absorbed the operations of the former N.C. Wetlands Restoration Program, which had been established within DENR by statute in 1996, as well as certain activities under DOT to offset unavoidable environmental impacts from transportation-infrastructure improvements; for more info, go to [www.nceep.net](http://www.nceep.net)
- **Enhancement** – wetlands enhancement refers to actions taken to increase or enhance wetland functions through the manipulation of either vegetation or hydrology, but not both; an example would be the filling in of ditches in a previously drained wetland area; this type of compensatory mitigation does not receive as much credit as does *Restoration*
- **Facilitation Contracts** – services contracted from appropriate entities (e.g., NCSU, Cape Fear River Assembly, councils of government, environmental consulting firms) to convene, facilitate and coordinate stakeholder groups/teams for Local Watershed Plan development; usually accomplished through sole-source contracting executed through DENR
- **Fecal Coliform** – type of bacteria used as indicator of contamination by human or animal waste (and possible disease-causing pathogens)
- **Floodplain** – area of land on each side of a stream channel that is inundated periodically by flood waters; important zone for dissipating the energy of peak storm flow discharges and for storing waters that otherwise might damage in-stream habitat and/or cause downstream flood damage; typically includes high-quality riparian habitat (if undisturbed); waters flowing in incised (down-cut) streams may not be able to access the adjacent floodplain area to dissipate the volume and energy of higher storm flow events
- **In Lieu Fee** – a payment made by a 401/404 permittee to EEP in lieu of having to site and construct compensatory mitigation project(s) to offset permitted impacts; in such cases, EEP becomes the party responsible for instituting the required amount and type of compensatory mitigation (e.g., so many thousands of restored stream feet, so many acres of restored wetlands). The required fee is based on a statutory schedule of fees, on a per stream foot or per wetlands acre basis

## Glossary of Terms related to EEP Watershed Planning

- **Local Watershed Planning** – process whereby local stakeholders (and/or a specific group of local resource agency professionals) are brought together to help EEP assess local watershed conditions, identify causes/sources of watershed impairment, identify high-priority sub-watersheds and mitigation project sites, develop solutions to watershed problems, and implement watershed management strategies for the long-term protection of important watershed functions/components (streams, wetlands, riparian buffers); developed by EEP for specific Targeted Local Watersheds within 8-digit Cataloging Units (CUs) where significant N.C. DOT impacts are projected to occur
- **Memorandums of Understanding (MOUs)** – signed, written agreements between parties (e.g., government agencies, land trusts, etc.) that can be used to define roles & responsibilities; in the context of local watershed planning, MOUs are often used to help ensure cooperation among local stakeholders in exploring solutions/alternatives in water quality management issues and in the creation of committees or task forces for the implementation of those solutions; sometimes called Memorandums of Agreement (MOAs)
- **Mitigation** – see *Compensatory Mitigation*
- **Modeling** – use of conceptual and/or computer models to simulate the response (e.g., pollutant loading to streams) of a natural system (e.g., watershed) to various management scenarios (e.g., adding stormwater retention ponds in critical sub-watersheds); useful in assessing which types of watershed protection techniques will yield the greatest benefit to water quality, habitat, or flooding conditions, and in determining which locations within the watershed are optimal for such practices or project sites
- **Needs Assessment** – a GIS-based screening assessment of 8-digit Cataloging Units as described by the Watershed Needs Assessment team (2003 report), based on watershed problems/needs and watershed assets data, used to determine the most appropriate locations for EEP Local Watershed Planning efforts. This needs assessment will likely be integrated into the development of CU-specific strategic plans, to be produced annually by the EEP Strategic Planning group as updated projected impact numbers are received from N.C. DOT
- **N.C. DOT** – North Carolina Department of Transportation, one of the signatories to the 2003 MOA which established EEP's operating procedures (**see EEP**)
- **NPDES** – a permit issued for point source (end of pipe) dischargers under the “National Pollutant Discharge Elimination System” [per Section 402 of the Clean Water Act]; also used to regulate stormwater discharges from certain urban areas and developing counties
- **Non-point Source** – pollution that enters water bodies from a variety of disperse sources and land- use types (generally not end-of-pipe discharges), primarily via overland runoff during and after precipitation events

## Glossary of Terms related to EEP Watershed Planning

- **Non-supporting stream** – *CWP* stream classification for a sub-watershed with more than 25% total impervious cover (generally within urban or suburban settings); typically characterized by fair to poor water quality and poor aquatic habitat; such streams essentially become a conduit for stormwater flows and can no longer support a diverse stream community.  
  
[Note: *DWQ* considers a stream to be “not supporting” (or *impaired*) when available sampling data (physical, chemical, biological) indicate that a given stream or stream reach does not support its designated uses (e.g., class C = aquatic life propagation); see also *Impairment* and *Use Support*]
- **Point Source** – water pollution that can be traced to a single point or a discrete source, such as a wastewater discharge pipe; such sources are much more readily controllable than non-point sources, and are generally regulated via NPDES permits
- **Preservation** – the long-term protection of an area with high habitat and/or water quality protection value (e.g., wetland, riparian buffer), generally effected through the purchase or donation of a conservation easement by/to a government agency or non-profit group (e.g., land trust); such areas are generally left in their natural state, with minimal human disturbance or land-management activities
- **Reference Reach (or Condition)** – ideally, a pristine or relatively undisturbed stream reach (or area of wetlands or riparian buffer) whose physical & biological conditions can serve as a baseline to judge the success of nearby restoration projects and other watershed management efforts
- **Resource Professionals** – staff of state, federal, regional or local (city, county) natural resource agencies – including planners, water resources and storm water engineers, parks & recreation departments, water quality programs, regional councils of government, local/regional land trusts or other non-profit groups with knowledge/expertise and/or interest in local watershed issues and initiatives
- **Restoration** – the re-establishment of wetlands or stream hydrology and wetlands vegetation into an area where wetland conditions (or stable streambank and stream channel conditions) have been lost; examples include: stream restoration using natural channel design methods coupled with re-vegetation of the riparian buffer; riparian wetlands restoration through the plugging of ditches, re-connection of adjacent stream channel to the floodplain, and planting of native wetland species; this type of compensatory mitigation project receives the greatest mitigation credit under the 401/404 regulatory framework
- **Riparian** – relating to the strip of land adjacent to streams and rivers, including streambanks and adjoining floodplain area; see also *Buffer*; important streamside zones of natural vegetation that, when disturbed or removed, can have serious negative consequences for water quality in streams & rivers
- **Rosgen stream classification system** – a stream classification system developed by Dave Rosgen that groups stream types based on certain geomorphological characteristics (e.g., channel slope, shape, and materials); useful in predicting a stream’s hydraulic and sediment transport behavior under various conditions and in the application of natural channel design methods in stream restoration work; more information at: <http://wildlandhydrology.com/index.htm>

## Glossary of Terms related to EEP Watershed Planning

- **Sedimentation** – process whereby eroded soils are deposited in streams, rivers, lakes; accelerated by any activity that disturbs the land surface or removes vegetation (e.g., road construction, agriculture/forestry, urban development); sediment source areas include upland sites, intermediate slopes, riparian zones, and streambanks and channel scour areas
- **Stakeholder** – any agency, organization, or individual involved in or affected by the decisions made in the development of a watershed plan; typically includes: *primary stakeholders* such as watershed residents, farmers, developers, local government or resource agency staff with a direct say in the planning process; and *secondary stakeholders* such as state or regional resource agency staff who can serve as technical resources/advisors to the local planning process
- **Stormwater** – water that flows overland as a result of precipitation onto saturated or impermeable surfaces; can flow as diffuse sheet flow over impervious surfaces (e.g., parking lots) and/or can be concentrated into ditches, gullies & swales or manmade conveyances such as storm pipes, culverts, or lined channels; in urban areas or other disturbed landscapes, stormwater can convey sediment, nutrients, fecal coliform and other pollutants directly into receiving waters
- **Strategic planning**-- the forecasting & analysis of projected impacts to streams, wetlands and riparian buffers and the determination of related N.C. DOT mitigation needs over a six- to seven-year period; and the development of CU-specific strategies for addressing identified impacts (e.g., use of EEP-sponsored Local Watershed Planning in critical HUs; CU-wide needs assessment, GIS-based screening analyses)
- **Subbasin**-- as defined by DWQ 6-digit codes, these are components of larger river basins; subbasins generally range in area from about 100 to 1,000 square miles, and are in turn typically composed of several 14-digit *Hydrologic Units* considered to be “local watersheds”
- **Subwatershed** -- a component drainage area within a local watershed (14-digit NRCS hydrologic unit); typically about one to 10 square miles in area, these areas are considered the most appropriate and effective geographic scale for local watershed planning & management (e.g., for detailed watershed characterizations, urban stream classification and watershed-based zoning); they are sometimes delineated as the land area draining to a point where two second-order streams combine to form a third-order stream, and they may be delineated based also on the dominant land use(s) and/or zoning classifications they encompass
- **Targeted Local Watershed (TLW)** -- 14-digit hydrologic units [HUs], per the NRCS classification system, that are “targeted” by EEP planners (and so designated within our Watershed Restoration Plans) as having a significant need and/or opportunity for EEP restoration, enhancement or preservation projects; typically range in area from 10 to 100 square miles and often encompass a range of land use types (e.g., urban, agricultural, rapidly developing) and associated watershed stressors; various factors used to prioritize and select TLWs are spelled out in the basinwide Watershed Restoration Plans and online plan summaries

## Glossary of Terms related to EEP Watershed Planning

- **TMDL (total maximum daily load)** – the maximum amount of a given pollutant that a water body can receive without exceeding water quality standards; the objective of a TMDL is to estimate, through modeling, allowable pollutant loads to be allocated to various point and nonpoint sources so that a given stream or stream reach may be restored to its classified best use(s)
- **Use Support** – refers to the DWQ system for classifying surface waters based on their designated best use(s); at present, the DWQ primary stream classifications include the following: class C [fishing/boating & aquatic life propagation]; class B [primary recreation/direct contact]; SA [shellfish harvesting]; and WSW [water supply]. Supplemental classifications include High Quality Waters (HQW), Outstanding Resource Waters (ORW), Nutrient Sensitive Waters (NSW), Trout Waters (Tr), and Swamp Waters (Sw). All waters must at least meet the standards for class C waters
- **Watershed** – all the land area which contributes runoff to a particular point along a stream or river; also known as a “drainage basin”, although the term *Basin* usually implies a very large drainage system, as of an entire river and its tributary streams
- **Watershed Assessment** – detailed analysis of a 14-digit hydrologic unit (local watershed) and/or component sub-watersheds; the process whereby existing watershed conditions are assessed and documented using various tools, including field sampling, data compilation, land use & land cover analysis, GIS mapping, and computer modeling; the primary goal of watershed assessment, within the context of Local Watershed Planning, is to identify and document existing issues and problems related to water quality, aquatic habitat, flooding, and any other concerns raised by local stakeholders; watershed conditions under various future land management & zoning scenarios can then be predicted using appropriate computer models and build-out scenarios; the overall watershed assessment process, within the framework of EEP contracts, typically consists of three distinct phases: I – initial characterization of historical & current watershed conditions; II – detailed field assessment of conditions in representative or high-priority sub-watersheds; III – identification of specific watershed projects and development of overall watershed management plan
- **Watershed Management Tools** – methods, techniques, structures, projects or overall management strategies that are designed to restore or protect important watershed components (e.g., riparian buffers) and functions (e.g., water quality); the CWP identifies several major watershed protection tools related to growth management, including: overlay zoning; watershed impervious limits; sensitive area protection ordinances; stream & wetland buffers; better site design (e.g., cluster development, narrow streets); sediment & erosion control; stormwater BMPs; and watershed education/outreach programs

## Glossary of Terms related to EEP Watershed Planning

- **Watershed Planning** – the development of basinwide Watershed Restoration Plans, CU-specific Strategic Plans and Local Watershed Plans by EEP’s Planning section; EEP planning typically includes (1) an assessment of watershed conditions and functional impacts at progressively smaller scales of study, and (2) the development of land use management strategies and optimal watershed restoration, enhancement and protection/preservation projects designed to address the identified watershed needs & opportunities; EEP planning usually has a strong stakeholder involvement component to it, at least within the context of Local Watershed Planning
- **Watershed Restoration Plan** – prepared and regularly updated by EEP, plans which identify “Targeted Local Watersheds” in each of the 17 major river basins in the state; such local watersheds (14-digit HUs) represent areas where the need and opportunity for stream, buffer, and wetlands restoration are well documented, and where local water quality and habitat restoration/protection projects can do the most good; these plans build upon and are complemented by DWQ’s **Basinwide Water Quality Plans**; beginning in 2004, these plans will likely be based on a CU-specific assessment (using GIS tools and best available data) of watershed needs (e.g., for water quality improvement) and assets (e.g., natural heritage areas) applied at the scale of both local watersheds (14-digit HUs) and delineated sub-watersheds; such CU Strategic Plans (“CUSPs”) can be grouped to produce basin-wide Watershed Restoration Plans, as well as used to identify optimal areas for EEP Local Watershed Planning and restoration/enhancement/preservation projects in high-priority Cus
- **Wetlands** – by definition, these are areas characterized by three key features: hydrophytic (water-adapted) plants, hydric soils, and specific indicators of periodic saturation/indundation by water (*hydrology indicators*, e.g., water marks or water-carried debris on trees); in our state, several different types of wetlands are recognized, including tidal marshes, estuarine fringe forests, wet flats, pocosins, freshwater marshes, bottomland hardwood forests, headwater forests, bogs, and seeps

**Primary sources of definitions:** Center for Watershed Protection, Ellicott City, MD; Stream Restoration Institute, NCSU, Raleigh, NC; NC Division of Water Quality (DWQ) and NC Ecosystem Enhancement Program (working definitions from rules, statutes, and policy/guidance documents).