## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY

**abiotic** Non-living processes in contrast to biotic or living processes. For example, the deposition of suspended sediments on a floodplain is an abiotic process.

**accretion** Vertical accumulation of inorganic or organic material.

**actinomycetes** A group of bacteria with characteristics resembling fungi (mycelial morphology); one of several classes of soil microbes.

**adjacent** "…bordering, contiguous, or neighboring" (33 CFR Part 328, Section 328.3 (a)(7)(c)).

**adsorption** The attraction and adhesion of ions from an aqueous solution to the solid mineral surface with which it is in contact.

**aeration** The process of promoting the exchange of soil gases with atmospheric gases.

**aerobic** Conditions in which free molecular oxygen is present. In contrast see anaerobic.

**aggrade** The active building up of a stream channel or floodplain due to the stream being supplied with more load than it is capable of transporting.

**A horizon** Mineral soil layers (or horizons) formed at the surface and are characterized by the accumulation of organic carbon.

**allochthonous** Material originating offsite that is subsequently transported onsite through the action of water, gravity, or other mechanisms. In contrast see autochthonous.

**alluvial** Refers to the transport of material by flowing water, usually rivers or streams.

**alluvial fan** Unconsolidated rocks or soil deposited by flowing water where upland valleys intersect lower gradient plains or broad valleys. These deposits are generally shaped like a segment of a cone or open fan and are usually gently sloping.

**alluvium** Sediments transported by flowing water, usually rivers or streams.

**ammonium** Inorganic, reduced form of nitrogen in a monovalent cation form ($NH_4^+$).

**anadromous** A life cycle in which a fish is born in fresh waters, migrates to open ocean salt waters and returns to fresh water to spawn.

**anaerobic** Conditions in which free molecular oxygen is absent. In contrast see aerobic.

**anion** A negatively charged element or compound.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **antecedent moisture** | The soil moisture present before a particular precipitation event. |
| **anthropogenic** | Relating to, or resulting from the influence of human beings on nature. |
| **aquic** | A moisture regime in a soil that is generally reducing and virtually free of dissolved oxygen due to soil water content and microbial activity. |
| **aquiclude** | A confining layer of low permeability that forms an upper or lower boundary to a ground water flow system. |
| **aquifer transmissivity** | A measure of the amount of water that can be transmitted horizontally by the full saturated thickness of the aquifer under a hydraulic gradient of 1. |
| **aquifer, artesian** | See artesian aquifer. |
| **aquifer, confined** | See confined aquifer. |
| **aquifer, perched** | See perched aquifer. |
| **aquifer, semi-confined** | See semi-confined aquifer. |
| **aquifer, unconfined** | See unconfined aquifer. |
| **aquifer** | A rock or sediment formation, group of formations, or part of a formation, which is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs. |
| **aquitard** | A low permeability body of rock or material that retards, but does not prevent, the flow of water from one aquifer or soil layer to another. |
| **artesian aquifer** | An aquifer that is under hydrostatic pressure which is significantly greater than atmospheric pressure. The upper limit of the aquifer is defined by a confining bed that limits upward movement of water. |
| **artesian well** | A well that penetrates a confined aquifer in which the potentiometric surface is above the surface of the ground. |
| **artesian** | See artesian aquifer. |
| **assessment area (AA)** | The area in or adjacent to waters/wetlands, which will be assessed with HGM models. |
| **assessment model** | A simple model that defines the relationship between ecosystem and landscape scale variables and functional capacity of a wetland. The model is developed and calibrated using Reference Wetlands from a Reference Domain. |
| **assessment objective** | The reason why an assessment of wetland functions is being conducted. Assessment objectives normally fall into one of three categories. These include: documenting existing conditions, comparing different wetlands at the same point in time *(e.g.,* alternatives analysis, and comparing the same wetland at different points in time (*e.g.,* impact analysis or mitigation success). |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**assessment team (A - team)** An interdisciplinary group of regional and local scientists responsible for classification of wetlands within a region, identification of Reference Wetlands, construction of assessment models, definition of reference standards, and calibration of assessment models.

**assessment** The objective task of identifying actions, taking measurements of baseline condition, and predicting changes to the baseline conditions as a result of the actions that occur.

**assimilative capacity** The incorporation or retention of inorganic and/or organic elements/compounds and/or energy by soil mineral and/or organic components.

**autochthonous** Material originating on-site. In contrast to allochthonous (originating off-site)

**autogenic** Occurring within a given ecosystem; produced by the activities of living organisms within an ecosystem and acting upon it.

**available water capacity / moisture capacity** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

| | |
|---|---|
| Very Low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | 9 to 12 |
| Very High | more than 12 |

**backswamp** Topographically low areas, associate with floodplain environments, which usually occur between the natural stream levee and the adjacent upland. These areas are frequently flooded and receive water from overbank flooding and/or discharge from adjacent uplands.

**bank storage** The temporary increase in groundwater levels near stream channels during a period of flooding. As stage decreases the groundwater levels return to pre-flood levels.

**bank** Steep ascending slope of land of any height raised above the adjacent shore that can experience undercutting if in contact with water.

**base runoff** See baseflow.

**baseflow** The component of stream discharge derived from ground water seeping into a stream.

**bed forms** Any deviation from a flat bed, generated by the flow on the bed of an alluvial channel; bed configuration

**bed material** The materials of which the streambed is composed.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **bedload** | The component of the total load carried by a stream that moves on or directly above the streambed. Generally, larger and/or heavier particles such as sand, gravel, cobbles, etc. |
| **bedrock confined channel** | A stream channel that has as its bottom the bedrock, which is normally undergoing erosive downcutting. |
| **best professional judgment** | The process of making decisions based on personal experience and knowl edge when better information is not available. Best professional judgment is often used in day-to-day management decisions related to wetlands. |
| **bidirectional flow** | Horizontal flow occurring in opposite directions as a result of tides or seiche. |
| **bifurcation** | To divide or fork; the point at which forking occurs, as in river systems |
| **biochemical oxygen demand (bod)** | The measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms such as bacteria. |
| **biodiversity** | The numbers of different species of plants and animals within a specific area or region. |
| **biogenic** | Derived or originating from living material (*i.e.*, peat). |
| **biogeochemical** | The interaction and integration of biological and geochemical cycles and processes. |
| **biogeochemistry** | Of or relating to the partitioning and cycling of chemical elements and compounds between the living and nonliving parts of an ecosystem |
| **biogeographic** | Refers to the distribution of species on the surface of Earth. |
| **biomass** | The amount of living matter present at a specified time and expressed as the mass per unit area or volume. |
| **biota** | The flora and fauna of a region |
| **biotic** | Relating to life; *especially* caused or produced by living beings |
| **bog, ombrotrophic** | See ombrotrophic bog. |
| **bog** | A peat land where the primary source of water is direct precipitation, and consequently is nutrient poor. |
| **bottomland hardwood** | A general term referring to forested wetlands occurring on seasonally inundated floodplains of the Lower Mississippi River Valley and Coastal Plain of the United States. |
| **bottomland** | General term that refers to floodplains. |
| **boulders** | USDA classification of rocks larger than 600mm (> 23.6 inches). |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**bounding** To define the boundary of an assessment area

**brackish** See mixohaline.

**buffer** A zone of a defined width that borders waters/wetlands and that is designed to protect the waters/wetlands from impacts

**buffered water** Water that is resistant to changes in pH. See alkalinity and hardness.

**burial** The transfer of material, usually organic matter, from the surface of an ecosystem to a position within the litter and/or soil. Burial can be a completely physical process (*e.g.*, sediment falls on top of material) or it can be an active process in which material is moved downward by the action of animals.

**c4 plants** Vascular spermatophytes morphologically and physiologically adapted to high light intensities, high temperature, and dryness through the efficient use of $CO_2$ and minimized loss of water.

**capacity** See functional capacity.

**capillary forces** The forces acting on soil moisture in the unsaturated zone attributable to molecular attraction between soil particles and water.

**capillary fringe** The zone immediately above the water table, where capillary forces draw up water.

**carbonates** A salt or ester of carbonic acid

**catadromous** A life cycle in which a fish is born in salt waters, migrates to fresh waters for a period of its life and returns to salt waters to spawn.

**catchment** A term primarily from the European literature similar to watershed except that watersheds normally do not include large lakes. Catchments include all of the land upstream to a divide which potentially directs precipitation to the point of outflow from the catchment.

**cation** A positively charged element or compound.

**cation exchange capacity (CEC)** The ability of some soil and organic particles to adsorb metals and cations, such as iron, ammonium, calcium, etc., and sometimes negatively charged particles such as bacteria, enzymes and anions.

**cellulose** A polysaccharide $(C_6H_{10}O_5)_x$ of glucose units that constitutes the chief part of the cell walls of plants

**centroid** The point in character space the coordinates of which are the mean values of each character over a given cluster of OTUs (operational taxonomic unit).

**channel** An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**channel bank** Ascending sloping land at the edge of a channel. The bank has a steeper slope than the channel bottom, and is usually steeper than the floodplain.

**channel capacity** The maximum discharge a channel can transmit without overflowing its banks.

**channel cross-section geometry** The dimensions and morphology of a section of stream channel, taken perpendicular to the linear centerline of the stream from the top of the bank on one side, to the top of the bank on the opposite side.

**channel related** Referring to processes associated with a stream or river. Physically, it is associated with streambed and the bank-full cross sectional area of a stream or river.

**channel roughness** The degree and arrangement of coarse materials within the stream channel.

**chelate** A reversible complex of an organic molecule with a metal.

**chelation** The process by which organic chemicals with two or more functional groups bind with metals.

**chemical oxygen demand (cod)** A measure of the chemically oxidizable material in the water. COD is a reasonable indication of the amount of organic material present.

**circumneutral** Term applied to water, or soil, with a pH between 5.5 and 7.4.

**clasts** An individual constituent, grain, or fragment of a sediment or rock, produced by the mechanical weathering (disintegration) of a larger rock mass.

**clay** As a soil constituent, the mineral soil particles less than 0.002 mm in diameter. As a soil textural class, soil material that is 40% or more clay, less than 45% sand, and less than 40% silt.

**clean water act of 1977 (33 u.s. c.1344)** Section 404 of this law that directs the Secretary of the Army, acting through the Chief of Engineers to issue permits, after notice and opportunity for public hearing, for the discharge of dredge or fill material into waters of the United States at specified locations. The object of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 U.S. C.1344, Section 101(a).

**coarse textured soil** Loamy fine sand to coarse sand.

**coastal wetland** Fringe wetlands that occur within the intertidal zone. They can be associated with oceans or large lakes that have seiches that result in bi-directional flow of water.

**coefficient of permeability** See hydraulic conductivity.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**collector channels** The small channels that collect overland flow and carry it to larger channels.

**colloidal material** Sediments held in suspension in water as a result of molecular motion (defined in chemistry as a particle <0.00024 mm in size).

**colluvial** A process by which materials (soil/rock) are moved by gravity.

**colluvium** Loose and incoherent deposits, usually at the foot of a slope or a cliff and brought there chiefly by gravity. Talus and cliff debris are included in such deposits.

**compaction** Increasing the bulk density of soils through compression, trampling, machinery, etc. Results in altered hydrology and aeration of the soil.

**competence** The ability of water to move and transport particles in terms of their size, rather than amounts, and measured as the diameter of the largest particles transported; small fast moving streams may have more competence than large slow moving systems.

**condensation** The process that occurs when an air mass is saturated and water droplets form around nuclei or on surfaces.

**conductivity** See specific conductance and hydraulic conductivity.

**confined ground water** The water contained in a confined aquifer. Pore-water pressure is greater than atmospheric at the top of the confined aquifer.

**confining bed** A body of material of low hydraulic conductivity that is stratigraphically above, below or adjacent to one or more aquifers.

**confining layer, leaky** A relatively impermeable layer of material stratigraphically adjacent to one or more aquifers. Permeability of leaky confining layers, as measured by hydraulic conductivity are significantly lower than that of the adjacent aquifer. Often used synonymously with the terms aquitard or aquiclude.

**confining layer** See confining bed.

**connectivity** The degree of connection between two entities or areas. In an HGM context, it is a measure of physical connection within wetlands and between wetland and nearby ecosystems.

**CRP** Conservation Reserve Program

**conservation tillage** An agricultural practice designed to minimize soil and associated nutrients and agri-chemical losses. Focus is on zero or reduced tillage to maintain a soil cover of crop residue. The term is not tied to an implement or tillage tool, but to surface crop residue.

**contiguity** With reference to habitat or patch size, the relationship of being contiguous, in actual contact, or in close proximity

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**contingency** Allowances or measures set aside to respond to events or occurrences that are liable to occur, but not determinable at the present time.

**continuity** Continuous effective contact between all components of a wetland system to give it high conductance by providing low resistance (*i.e.*, the flow of water, the movement of organisms.

**control section** The smallest integral unit within a wetland that controls the flow of water from the wetland to adjacent streams. In the context of soils, the control section refers to a portion of the soil profile that is used to determine and define certain soil characteristics (*i.e.*, soil moisture, temperature regime, particle size class, etc.).

**control structure** An artificial feature in a stream that is used to regulate the flow or stage of the stream.

**conversion** Causing a total loss of functional capacity by transforming one kind of ecosystem into another kind of ecosystem. For example, converting a bottomland hardwood forest to a soybean field.

**coteau** A word used in the U.S. for a variety of features, *e.g.* hills or uplands, an elevated rough plain, a low ridge within a swampy area, or especially a prominent dissected escarpment forming the edge of a plateau.

**creation** Designing and developing an ecosystem in a location where it did not previously exist.

**cubic feet per second (cfs; ft3s-1)** The rate of discharge representing a volume of 1 cubic foot of water, or 7.5 gallons, passing a given point during 1 second.

**cumulative effects** The sum of all environmental effects resulting from cumulative impacts.

**cumulative impact** 1) The impact on the environment, which results from the incremental impact of an action when added to the other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person, undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 2) The sum of all individual impacts occurring over time and space, including those of the foreseeable future.

**cumulative impacts** The sum of all direct and indirect impacts that have occurred spatially and temporally in a given landscape.

**cumulative rise in water table** The sum of increases in the water table over a specified period of time, normally as a consequence of influxes of water due to precipitation and lateral surface transport.

**cut-bank** The concave bend of a stream channel undergoing erosion due to lateral migration of the stream channel.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**cyclic** The occurrences of natural phenomenon that repeat on some predictable interval can be called cyclic in nature. Fire cycles are an example of a cyclic phenomenon in nature.

**D84, D50** Refers to the distribution of pebble sizes (diameter) in the bedload of a stream. The D50 is the average pebble diameter. Eighty four percent of the pebbles in the streambed will be smaller than the D84 measurement.

**decision rule** A standard or set of standards that are used to make a decision.

**decomposition** The alteration (breakdown) of a molecule into simpler molecules or atoms. In wetlands, organic matter is broken down by physical, biological, and chemical process.

**degradation** Causing a partial loss of functional capability in an ecosystem. See conversion.

**DEM** Digital Elevation Model

**denitrification** The microbially mediated heterotrophic process of converting (reducing) nitrate or nitrite to either nitrous oxide or dinitrogen gas.

**depression spring** A spring formed when the water table reaches the land surface because of a change in topography.

**depression storage** The storage of rainfall on the surface of the soil and in small depressions after infiltration capacity of the soil has been exceeded. When depression storage capacity is exceeded water begins to run downslope in an irregular sheet of overland flow.

**depressional wetland** A wetland geomorphic setting, which occurs in depressions, but usually at the headwaters of a local drainage. Consequently, surface flows are restricted.

**detention storage** A reservoir that detains water for a given period of time and from which discharges are controlled.

**detrital pool** Organic matter produced on site as a result of photosynthesis.

**detritus** Organic matter undergoing decomposition, with the attendant protists, fungi, and other organisms that serve as food for detritus feeders.

**dew point** The temperature of a given air mass at which condensation begins.

**diameter at breast height (DBH)** The average stem diameter, 4.5 feet above the ground.

**dichotomous** A key used to arrive at an endpoint where the user is presented with a series of either/or choices. Each level in a dichotomous key has two choices

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**direct impact** Project impacts that result from direct physical alteration of a wetland such as the placement of dredge or fill material.

**direct measure** A quantitative measure of an assessment model variable.

**direct precipitation** Water that falls directly into a lake or stream without passing through any land phase portion of the runoff cycle.

**discharge area** An area in which there are upward components of hydraulic head in the aquifer. Groundwater is flowing toward the surface in a discharge area and may escape as a spring, seep, or baseflow, or by evaporation and transpiration.

**discharge wetlands** Wetlands that receive groundwater that is discharged into the wetland basin.

**discharge, mean** The arithmetic mean of individual daily mean discharges during a specified period.

**discharge** 1) The volume of water flowing in a stream or through an aquifer past a specific point in a given period of time. 2) The volume of water (or more broadly, a volume of liquid plus suspended sediment) passing a given point within a given period of time.

**dissolved organic carbon (doc)** The fraction of total organic carbon that passes through a 0.45 micron pore diameter filter.

**dissolved** The material in a water sample that will pass through a 0.45 um (micron) filter.

**dominant** a. For plant species in a community type: species with the highest canopy coverage that either alone or, added in sequence, comprise > 50% of the total canopy coverage for the community type. In addition, any species which, after identification of the leading dominant species as described above, comprise >20% of the total canopy cover for the community type. (see US Army Corps Of Engineers 1987 delineation manual)

b. For land uses, etc.: the land use that is > 50% areal coverage

**drainage** The process of removing water from a wetland. The creation of structures that remove surface and/or subsurface water at a more rapid rate than occurs under natural conditions.

**drainage area** The area above a specified point on a stream, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream.

**drainage basin** The land area from which surface and subsurface flow drains into a stream system.

**drainage density** The length of stream channel per unit area.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**drainage divide** A boundary line along a topographically high area that separates two adjacent drainage basins.

**duff** An organic surface layer consisting of undecomposed and/or slightly decomposed organic material such as needles, leaves, twigs, etc.

**ecotone** A zone of transition between two ecosystem normally characterized by organisms that occur in the two adjacent ecosystems, or alternatively, a zone between two ecosystems where processes occur at a rate higher than in the adjacent ecosystems.

**edaphic (control)** The control of the distribution or function of plant species as a result of soil conditions in contrast to atmospheric conditions.

**efflorescent salt crusts** The accumulation of precipitated salts within the wetland. Usually associated with discharge wetlands. Gypsum is a common evaporate.

**effluent stream** See gaining stream.

**eigenvalue** Estimate of degree of association of sample point in a multivariate data array.

**elevation head** The energy of water at a specific elevation (due to gravity) with respect to a reference elevation.

**emergent hydrophyte** Erect, rooted, herbaceous vegetation that may be temporarily to permanently flooded at the base, but does not tolerate prolonged inundation of the entire plant.

**embeddedness** The degree to which large class channel bed material is buried in finer sediment. Specifically, embeddedness is the percent burial of the D84 or larger channel bed material by material less than D84.

**endosaturation** Saturation in all soil layers to 200cm (80in) or bedrock.

**energy dissipation** A decrease in the velocity of movement of water within a stream corridor or over the surface of a wetland. A decrease in velocity occurs when water from a confined area spreads out over a larger surface area and/or when flowing water meets obstruction to flow *(e.g.,* tree stems, fallen logs).

**enhancement** Increasing the number of different functions performed by a wetland, or increasing the ability of an existing wetland to perform specific functions.

**entrenchment** The process whereby a stream erodes downward so as to form a trench or to develop an entrenched meander; the result of such a process.

**Environmentally sensitive habitat area (ESH)** Any area in which plant or animal life or their habitats are either rare or especially vulnerable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Coastal and inland plans for Santa Barbara County).

**eolian processes** The atmospheric deposition of solids - usually finer grained mineral soil material (*e.g.*, silt) after transport by wind.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **ephemeral** | Overland flow/surface water is present for hours to days after a precipitation event. See intermittently flooded as defined by Cowardin *et al.* 1979. |
| **epibenthic algae** | Algae that live on the bottom or benthos of an aquatic or wetland ecosystem. |
| **epipedon** | A soil layer that forms at the surface. |
| **episaturation** | Saturated layers that overly unsaturated layers in the upper 200cm (80in) of the soil profile. |
| **equipotential line** | A line in a two-dimensional groundwater flow field such that the total hydraulic head is the same for all points along the line. |
| **equipotential surface** | A surface in a three dimensional ground water flow field such that the total hydraulic head is the same everywhere on the surface. |
| **estero** | Spanish word for a marshy estuary or inlet. Land adjoining an estuary inundated by tides. |
| **estuarine fringe** | Estuarine fringe wetlands are located in estuaries which maintain the high water table. They typically receive their source of water by twice daily flooding, at least at the lower elevations of the wetland. Salt marches and mangroves are abundant examples. |
| **ETM** | Enhanced Thematic Mapper |
| **eutrophication** | The process of accelerated aging of a surface water body caused by excess nutrients and sediments being carried to the water body. |
| **evaluation** | The subjective application of human values to determine the significance of the effects of actions on the affected parties. |
| **evaporation** | The process by which water passes from the liquid to the vapor state. |
| **evaporative discharge** | Upward capillary flow of water from a near-surface water table in response to hydraulic gradients set up by higher evapo-transpiration rates at the soil surface. |
| **evapotranspiration** | The loss of water from vegetation as a result of evaporation and transpiration expressed in the same units as precipitation, or the sum of evaporation and transpiration. |
| **excessively drained** | Rapid loss of water from soils. The presence of internal water is very rare and/or very deep. |
| **extensive peatlands** | Peat accumulation creates “biogenic” landscape elements These areas, if they did not have accumulations of peat, would be considered depressional if they were quite small, or flats if they were mostly mineral soil. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**fall and run reach** A term that describes a channel longitudinal geometry that exhibits distinct changes in elevation in very short distances (falls) above extended channel reaches that have gradual changes in elevation over longer distance (runs).

**fault spring** A spring created by the movement of two rock units on a fault.

**faunal habitat** An environment that supports animal species by providing shelter, food, and protection.

**federal water pollution control act of 1972** The law that preceded the Clean Water Act.

**fibric soil material (peat)** The least decomposed of all organic soil material. Peat contains a large amount of well-preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

**field capacity** The maximum amount of water that the unsaturated zone of a soil can hold against the pull of gravity. Field capacity is dependent on the length of time the soil has been undergoing gravity drainage. Usually considered to be the water content of a soil at 1/3-bar suction or negative pressure.

**field indicator** An attribute or condition of a physical or biological component of an ecosystem that alone, or in combination with other field indicators, is used to estimate a variable index score.

**fine texture soil** A broad range of textures consisting of or containing large quantities of silt and/or clay particles.

**flats** Flats are broad areas of mineral soils that have seasonally high water tables. Pine savannas of the Southeast are common examples. (Some argue that flats are slope wetlands with zero gradient).

**flood hazard zone** An area that will flood with given probability and frequency high enough to damage property.

**floodplain** The land adjacent to a stream that is inundated when stream discharge exceeds channel capacity.

**flow duration** The amount of time that streamflow equals or exceeds a specific stream discharge value.

**flow net** The set of intersecting equipotential lines and flowlines representing two dimensional steady flow through porous media.

**flow reversal** A change in the direction of groundwater flow, common in Prairie Pothole Region. For example a change from groundwater discharge or recharge or the reversal. They occur with changes in the hydraulic gradient.

**flow, channel** Surface water flow occurring between the banks of a stream.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **flow, floodplain** | Flow of water on floodplain that occurs when stream discharge exceeds bankfull and water flows across the floodplain. |
| **flow, near surface** | Lateral flow that occurs just below the surface of a wetland in a layer that is often more permeable than the more consolidated sediments just below. Synonymous with subsurface flow, and interflow. |
| **flow, non-channelized** | See overland flow. |
| **flow, overland** | The irregular, downslope flow of surface water that occurs after the infiltration capacity of the soil and depression storage capacity of the land surface has been exceeded. |
| **flow, subsurface** | See interflow. |
| **flow, surface** | Non-channelized flow occurring above the land surface. Synonymous with overland flow. |
| **flowthrough wetlands** | Wetlands that recharge the groundwater system and receive groundwater as discharge. |
| **flux** | Water movement through hydrologic systems |
| **fragmentation** | The breakup of an extensive ecosystem into a number of smaller patches. |
| **fresh** | Term applied to water with less than 0.5 ppt dissolved salts. |
| **fringe wetland** | 1) A wetland adjacent to a large body of water (*i.e.*, the ocean or a large lake) in which frequent and regular bidirectional exchanges of water occur as a result of astronomic tides or seiche. 2) Fringe wetlands occur at the margins of large bodies of water, and thus have a virtual unlimited source of water. They are flooded from the larger body of water at a frequency that is dictated by astronomic tides in marine coastal areas and by seiches in lacustrine settings. Examples are tidal salt marshes and lakeside marshes in the Great Lakes. |
| **fulvic acids** | The pigmented organic material that remains in solution after the removal of humic acid. An organic acid commonly found in soil. |
| **function (ecosystem)** | Processes which are necessary for the self-maintenance of an ecosystem such as primary production, nutrient cycling, decomposition, etc. The term is used primarily as a distinction from values. The term 'values' is associated with society's perception of ecosystem functions. Functions occur in ecosystems regardless of whether or not they have values. |
| **function context area (fca)** | The area that influences, or is influenced by, a wetland function. The Func tion Context Area can include aquatic and upland systems adjacent to the wetland. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **functional assessment** | The process by which the capacity of a wetland to perform a function is measured. This approach measures capacity using an assessment model to determine a functional capacity index. |
| **functional capacity index (FCI)** | An index of the capacity of wetland to perform a function relative to other wetlands from a regional wetland subclass in a reference domain. Functional capacity indices are by definition scaled from 0.0 to 1.0. An index of 1.0 indicates that the wetland performs a function at the highest sustainable functional capacity, the level equivalent to a wetland under reference standard conditions in a reference domain. An index of 0.0 indicates the wetland does not perform the function at a measurable level, and will not recover the capacity to perform the function through natural processes. |
| **functional capacity unit (fcu)** | The value derived by multiplying the functional capacity index for a wetland area by the size of the wetland area. |
| **functional capacity** | The rate or magnitude at which a wetland ecosystem performs a function. Functional capacity is dictated by characteristics of the wetland ecosystem and the surrounding landscape, and interaction between the two. |
| **functional profile** | 1) Qualitative and quantitative descriptive depictions of wetlands that, in the case of the hydrogeomorphic classification, emphasizes the physical characteristics such as geomorphic setting, water source, and hydrodynamics. Profiles also may include the biotic components. 2) Narrative or quantitative description of significant factors such as water source, hydrodynamics, vegetation, and soils that affect how a wetland functions. |
| **gaining stream** | A stream, or reach of stream, the flow of which is being increased by the inflow of ground water. |
| **geographic domain** | A defined geographic region that includes the study reference domain and the subclass(es) of interest. |
| **geomorphic setting** | The location of a landscape with respect to landforms, such as stream headwater locations, valley bottom depression, and coastal position. |
| **geomorphic** | A term that refers to the shape of the land surface. |
| **geomorphology** | The study of the classification, description, origin, nature, and development of landforms and their relationship to underlying structures and geologic history. |
| **GIS** | Geographical Information System |
| **GPS** | Global Positioning System |
| **graminoid** | Grasses, sedges, or rushes. |
| **gravity flow** | Flow of water controlled strictly by gravity instead of piezometric head differences. |
| **ground water aquifer** | See aquifer. |
| **ground water discharge** | The movement of groundwater from an aquifer to the surface of the earth. |

**HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued**

| | |
|---|---|
| **ground water flow** | The movement of water through voids in sediment and rock in the zone of saturation. Flow of water in a porous medium, under saturated conditions, below the surface of the land. |
| **ground water perched** | See perched ground water. |
| **ground water recharge** | The movement of water from the surface of the earth to an aquifer. |
| **ground water, confined** | See confined ground water. |
| **ground water, unconfined** | See unconfined ground water. |
| **ground water** | Water occurring in the subsurface voids, pore spaces, or fissures of the earth, as opposed to water occurring above the surface of the earth in streams, ponds, lakes, and in the ocean. The water contained in the interconnected pores located below the water table in an unconfined aquifer or located in a confined aquifer. |
| **haline** | Term applied to water containing greater than 0.5 ppt ocean derived salts. |
| **halophyte** | Plants adapted to grow and reproduce where the salt concentration in water or soil is high. |
| **hardening** | A term that refers to the stabilization of a soil or stream bank by the use of materials that will not move or erode (e.g., concrete, rip-rap, revetments, etc.). |
| **hardness** | 1) A measure of the amount of calcium, magnesium, and iron dissolved in the water. 2) A property of water that is roughly proportional to the ion concentration. Alternative: The sum of equivalents of polyvalent cations expressed as the equivalent concentration of calcium carbonate ($CaCO_3$). |
| **head, total** | The sum of the elevation head, the pressure head, and the velocity head for water at a given reference point. |
| **headwaters** | Streams with average annual discharge less than 5 cfs (US Army Corps of Engineers 404 Regulatory Program definition). The upper most reaches of stream networks. |
| **herb** | Forbs, ferns, fern allies, and graminoids. |
| **herbaceous** | Vegetation layer consisting of herbs |
| **heterotrophs** | Organisms that are able to derive carbon and energy for cell synthesis by utilizing organic compounds. |
| **high gradient subclass** | That portion of the reference domain that has creek longitudinal gradients of greater than six percent. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**high water table (seasonal)** The highest level of a saturated zone in the soil in most years. Location based mainly on evidence of a saturated zone; gleyed colors (redoximorphic depletions) in the soil.

**highest sustainable functional capacity** The level of functional capacity achieved across the suite of functions by a wetland under reference standard conditions in a reference domain. This approach assumes that the highest sustainable functional capacity is achieved when a wetland ecosystem and the surrounding landscape are undisturbed.

**hilltop** A topographically high area lower in elevation than a mountain. Areas usually less than 300 meters in elevation.

**histosol** Organic soils — *i.e.*, soils that contain specific amounts of organic materials (12-20% organic carbon by weight) to specific depth and thickness requirements.

**histic epipedon** A soil horizon formed at the surface and dominated by organic material (12-20% organic carbon by weight) and is 20-40cm (8-16in) thick.

**homogeneous** Of the same or a similar kind or nature, with uniform structure or composition throughout.

**horizon, soil** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the master diagnostic horizons. Lower case subscripts represent subordinate designations *(i.e.*, additional definition or subdivision of the master horizons).

**hortonian overland flow** See overland flow.

**humic acids** The dark colored organic matter that can be extracted from soil with dilute alkali. An organic acid commonly found in soil.

**humin** The fraction of the soil organic matter that cannot be extracted from soil with dilute alkali.

**humus** The total of the organic compounds in soil excluding undecayed plant and animal tissue. This term is frequently used synonymously with soil organic matter.

**"hungry" (fluvial)** A stream that is not in equilibrium with its sediment load (*i.e.* the sediment load is small relative to the energy of the stream. The stream will erode its banks to increase its sediment load, minimize its energy, and attain equilibrium.

**hydraulic conductivity** A coefficient of proportionality describing the rate at which water can move through a permeable medium. The density and kinematic viscosity of the water must be considered in determining hydraulic conductivity.

**hydraulic diffusivity** A property of an aquifer or confining bed defined as the ratio of the transmissivity to the storativity.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **hydraulic gradient** | The change in total head over a change in distance in a specified direction. |
| **hydraulic head** | See total head. |
| **hydric soil** | Soil that is wet long enough to periodically produce an anaerobic condition, thereby influencing the growth and reproduction of plants. |
| **hydrodynamics** | The capacity of water to do work such as transport sediments, erode soils, and flush pore waters in sediments as a result of its vertical, or unidirectional and horizontal, or bidirectional and horizontal motion. Vertical motion results from evapotranspiration and precipitation, bidirectional flows result from tides and seiches, and unidirectional flows result from the pull of gravity on surface water in streams and on the surface of the earth. |
| **hydrogeologic unit** | A portion of the landscape that has a distinct surface and ground water composition. |
| **hydrogeology** | The study of the interrelationships of geologic materials and processes with water, particularly ground water . |
| **hydrogeomorphic class** | A class of wetlands in the classification scheme developed for use with HGM procedures. Each class has similar hydrogeomorphic characteristics. |
| **hydrogeomorphic unit** | Hydrogeomarphic units are areas within a wetland assessment area that are relatively homogenous with respect to ecosystem scale characteristics such as microtopography, soil type, vegetative communities, or other factors that influence function. Hydrogeomorphic units may be the result of natural or anthropogenic processes. See Partial Wetland Assessment Area. |
| **hydrogeomorphic wetland class** | The highest level in the hydrogeomorphic wetland classification. There are five basic hydrogeomorphic wetland classes including depression, fringe, slope, riverine, and flat. |
| **hydrogeomorphic wetland type** | Wetlands with a similar geomorphic setting, source of water, and hydrodynamics. |
| **hydrograph** | 1) A graphic description of hydrologic stage discharge or storage over time. 2) A graph that shows some property of ground water or surface water as a function of time. |
| **hydrologic unit** | A distinct hydrologic feature delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps. Each hydrological unit is identified by a unique eight digit number. |
| **hydrology** | The study of the occurrence, distribution, and movement of all waters of the earth. |
| **hydroperiod** | The depth, duration, seasonality, and frequency of flooding. In its simplest form, it refers to the time period of inundation of the land surface. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **hydrophilic** | Relating to, or having a strong affinity for water. |
| **hydrophyte** | 1) A plant adapted to grow and reproduce in standing water or on saturated soils characterized by a periodic oxygen deficit as a result of excessive water. 2) A type of plant that grows with the root system submerged in standing water. |
| **hydroscopic water** | Water that clings to the surface of mineral particles in equilibrium with the atmosphere. |
| **hydrostatic head** | See potentiometric surface. |
| **hygroscopic water** | See hydroscopic water. |
| **hyperhaline** | The term used to describe water with a salinity greater than 40 ppt due to ocean derived salts. |
| **hypersaline** | The term used to describe water with a salinity greater than 40 ppt due to land derived salts. |
| **hyporheaic flow** | Flow from stream bank areas/riparian areas that temporarily store water. |
| **hyporheaic zone** | Riparian or stream bank areas that can temporarily store water. |
| **igneous rock** | Rock formed from the cooling and solidification of magma, and that has not changed appreciably by weathering since its formation. |
| **immobile roughness elements** | Organic or mineral components within the channel that are incapable of movement except at the highest flows. |
| **impact assessment** | The determination or assessment of activities on the functioning of a particular system. |
| **impact, direct** | See direct impact. |
| **impact, indirect** | See indirect impact. |
| **impact** | A human action that either by design or oversight alters the characteristics of an ecosystem. |
| **impervious** | The condition of a rock, sediment, soil, or other surface that renders it incapable of transmitting fluids under pressure |
| **indicator** | Indicators are observable characteristics that correspond to identifiable variable conditions in a wetland or the surrounding landscape. |
| **indicator species** | A species of interest because its very presence indicates or reflects a condition or set of conditions about the landscape or habitat. |
| **indigenous** | Plant or animal species that are native to the region |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**indirect impact** Impacts resulting from project activities that indirectly affect the physical, chemical, or biological integrity of a wetland. Indirect impacts typically occur in association with direct impacts, but are usually separated from them in time and space. An example would be the impacts of increased human activity on wildlife habitat in a wetland proximate to the activity.

**infiltration capacity** The maximum rate at which infiltration can occur under specific conditions of soil moisture. For a given soil, the infiltration capacity is a function of the water content, texture, and structure.

**infiltration** The movement of water from the surface into the soil. Infiltrated water permeates vertically through the unsaturated zone, or moves horizontally as throughflow.

**influent stream** See losing stream.

**in-kind mitigation** Mitigation in which lost functional capacity is replaced in a wetland of the same regional wetland subclass.

**interception** The interception of precipitation by vegetation before it reaches the ground surface. The process by which precipitation is captured on the surface of vegetation before it reaches the ground surface.

**interflow** The later movement of water in the unsaturated zone during or immediately after a precipitation event. The water moving as interflow discharges directly into a stream or lake. See throughflow.

**interfluve** The relatively undissected upland or ridge between adjacent streams flowing in the same general direction.

**intermediate zone** That part of the unsaturated zone between the capillary fringe and soil water.

**intermittent or "intermittently flooded"** "The substrate is usually exposed, but surface water is present for variable periods without detectable seasonal periodicity. Weeks, months, or even years may intervene between periods of inundation. The dominant plant communities under this regime may change as soil moisture conditions change. Some areas exhibiting this regime do not fall within our [the] definition of wetland because they do not have hydric soils or support hydrophytes" (Cowardin *et al.,* 1979).

**interstratified** Alternating layers of soil or rock with different character or materials.

**inundation** The condition where water is present above the surface (*i.e*., flooding).

**invert** The bottom of a channel, pipe, or culvert.

**ion exchange** A process by which an ion in a mineral lattice is replaced by another ion that was present in an aqueous solution.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **irregularly flooded tidal wetland** | Wetlands located in a tidal region, but too isolated to be inundated by astronomic tides. |
| **isohyetal line** | A line drawn on a map indicated in points which receive equal amounts of precipitation. |
| **isolated wetland** | A wetland isolated from the surrounding landscape with respect to the exchange of surface water. |
| **jurisdictional wetland** | Wetlands which meet the soil, vegetation, and hydrologic criteria defined in the 'Corps of Engineers Wetlands Delineation Manual', or its successor. |
| **karst** | A geologic terrain underlain by carbonate rocks where significant solution or rock has occurred due to flowing ground water. |
| **kinematic viscosity** | The ratio of dynamic viscosity to mass density. It is obtained by dividing dynamic viscosity by the fluid density. Units are square meters per second. |
| **kinetic energy** | Energy of mass in motion, in contrast to stored or potential energy. |
| **labile** | Readily or continually undergoing chemical, physical, or biological change or breakdown. |
| **lacustrine** | Related to lake or pond environments. |
| **lacustrine fringe** | Fringe wetlands occur at the margins of large bodies of water, and thus virtually have an unlimited source of water. Lake fluctuations, such as seiches, are normally the source of water in lacustrine fringe wetlands. Examples are unimpounded lakeside marshes of the Great Lakes. |
| **lagoon** | A shallow stretch of sea water that is adjacent to the sea, but partially or completely separated from it by a low, narrow strip of land such as a reef, or spit. |
| **lag (fluvial)** | Coarse grained material within a stream that is left behind after currents have winnowed or washed away the finer material. |
| **lag time** | The time from the center of mass of rainfall to the peak of a hydrograph. |
| **land dominated hydrograph** | The dominant influence on the timing, duration, and amount of water delivered to a channel or swale is the land use and/or condition of the watershed/ contributing area. |
| **landform** | Large-scale, distinctive landscape features, such as mountains, plains, and plateaus. |
| **landscape** | 1) A heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in a similar form through. 2) All distinct spatial units of an area, usually at the watershed level or larger. Its gross features of the land surface include, but are not limited to slope, aspect, topographic variation, and position relative to other landforms. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **lapse rate** | The rate at which some atmospheric property (usually temperature) decreases with height (the vertical gradient). |
| **liana** | Woody vine |
| **lichen** | A symbiotic association derived from members of two different kingdoms Algae (Kingdom Protista) and a fungus (most of which are Ascomycota). |
| **life form, plant** | The general morphologic category of plants, such as tree, shrub, herbaceous, etc. |
| **lignin** | An amorphous polymer related to cellulose that provides rigidity and together with cellulose forms the woody cell walls of plants and the cementing material between them |
| **line transect** | A straight line that bisects an area, or areas, of interest in the field. Generally, measurements are made, and/or samples are collected, at points along the line. |
| **lithology** | The description and science of rock. |
| **litter** | Recently fallen plant material which is only partially decomposed and in which the organs of the plant are still discernible; forming a surface layer on some soils. |
| **loading** | Process of adding excess amounts of material, nutrients, toxins, etc. to wetlands. Loading can result in the loss of, or significant reduction in, some ecological functions. |
| **loam** | Soil material that is 7 to 27% clay, 28 to 50% silt, and less than 52% sand. |
| **local relief** | Changes in elevation between the highest and lowest points of the ground surface within a specified area or distance. |
| **longitudinal gradient** | Referring to the change in elevation, or slope, of a channel bed in the downstream and/or upstream direction(s). |
| **losing stream** | A stream, or reach of stream that is losing water by seeping into the ground. |
| **low gradient subclass** | That portion of the reference domain that has creek longitudinal gradients of less than two percent. |
| **macrophytes** | A common term for wetland vascular plants. Includes submersed species, semi-aquatic (leaves beneath water with different morphology than aerial leaves) and emergent (rooted in soil but most aerial biomass above the water) species. |
| **maintenance** | The upkeep of functions and processes in wetlands. |
| **major stream** | A stream with a drainage area in excess of 500 acres (Source Article II - Coastal Zoning Ordinance, Santa Barbara County) |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **mangrove** | A term for a variety of halophytic, woody species that occur in coastal wetlands. Mangroves are restricted to climates with little or no frost. |
| **marsh** | A wetland normally characterized by the presence of shallow surface water, and dominated by emergent vegetation. |
| **matric potential** | The energy by which water is held within the soil voids or pore space. |
| **mean high tide** | The average elevation of all daily high tides over a specified period. |
| **mean high water** | The average elevation of the high water over a specified period. |
| **mean low tide** | The average elevation of all daily low tides over a specified period. |
| **mean low water** | The average elevation of low water over a specified period. |
| **mean sea level** | See *National Geodedtic Vertical Datum of 1929.* |
| **mean tide** | The elevation midway between mean high tide and mean low tide. |
| **meander swales** | Linear depressions that form on floodplains as a result of stream meandering. |
| **medium (or moderate) gradient subclass** | That portion of the reference domain that has creek longitudinal gradients between two and six percent. |
| **mesic** | conditions or environments with intermediate moisture regimes |
| **mesohaline** | The term used to describe water with a salinity of 5-18 ppt due to ocean derived salts. |
| **mesosaline** | The term used to describe water with a salinity of 5-18 ppt due to land derived salts. |
| **metabolic transformation** | Chemical changes associated with biological processes. |
| **metamorphic** | Any rock derived from preexisting rock by mineralogical, chemical, or structural changes in response to marked changes in temperature, pressure, shearing stress, and chemical environment. |
| **microtopographic variation** | Small scale variations in surface elevation/relief (*e.g.*, pit-and-mound or hummock-and-hollow topography, coarse woody debris, root masses etc.) that provide roughness (*i.e.*, friction or resistance to flow) which reduces or transforms the velocity/kinetic energy associated with flowing water. |
| **milligrams per liter (mg/l)** | A unit for expressing the concentration of chemical constituents in solution. It represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment is also expressed in mg/l, and is based on the mass of dry sediment per liter of water-sediment mixture. |
| **mineral soil flats** | Mineral soil flats occur on broad interfluves that have seasonally high water tables. Precipitation is the only water source. Pine flatwoods of the Southeast are common examples. |
| **mineral soil** | Soil with less than 12 to 20% organic matter depending on clay content. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**mineraltrophic wetlands** Fens with hydrophytic vegetation but with species that are calciphilous and specific for fens. The wetlands form in areas where groundwater carries dissolved constituents that precipitate in the soil zone.

**minimal effect exemption** A decision to allow an action to occur even through it would result in more than a minimal impact on a wetland.

**minor stream** A stream with a drainage area less than 500 acres (Source: Article II - Coastal Zoning Ordinance, Santa Barbara County).

**mitigation plan** A plan for replacing lost functional capacity resulting from project impacts.

**mitigation ratio** The ratio of the Functional Capacity Units (FCUs) lost in a Wetland Assessment Area (WAA) to the FCUs gained in a mitigation wetland.

**mitigation wetland** A restored or created wetland that serves to replace functional capacity lost as a result of project impacts.

**mitigation, in-kind** See in-kind mitigation.

**mitigation, out-of-kind** See out-of-kind mitigation.

**mitigation** Restoration or creation of a wetland to replace functional capacity that is lost as a result of project impacts.

**mixohaline** The term used to describe water with a salinity of .5-30 ppt due to ocean derived salts. Roughly synonymous with the term brackish.

**mixosaline** The term used to describe water with a salinity of 0.5-30 ppt due to land derived salts.

**modal soil profile** A soil profile that represents the average or general soil type that is typical for the area or system of interest.

**model calibration** The process of estimating a specific parameter based on known data.

**model variable** See assessment model.

**model verification** The process of comparing parameter estimates against a new set of data after model has been calibrated.

**mosaic** An assembly of plant communities, landscapes, land uses, etc. that are indistinguishable as separate entities at the scale in which they are being analyzed. A grouping of small individuals units

**moss** Non-vascular, non-flowering plant species that are members of the phyllum Bryophyta.

**mottling, soil** Outdated terminology that refers to irregular spots of different colors which vary in area and size within the soil profile. Mottling generally indicates alternating conditions of oxidation and reduction, poor aeration and impeded drainage, and is currently defined as redoximorphic features (*i.e.*, depletions and concentrations).

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **national geodetic vertical datum of 1929 (ngvd)** | NGVD is a geodetic datum derived from a general adjustment of the first order level nets of the United States and Canada. It was formerly know as "Sea Level Datum of 1929" or "*mean sea level".* The datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf, and Pacific Coasts. It does not necessarily represent local mean sea level at any particular place. |
| **national wetland inventory (nwi)** | A Fish and Wildlife Service program designed to map and inventory wetlands of the United States. |
| **natural levee** | Levees that form at the edge of stream channels as a result of sediment deposition that occurs as the velocity of floodwater is reduced after it leaves the stream channel. |
| **navigable waters** | See waters of the United States. |
| **nick point** | A place in the stream channel where resistant rock or other structural features maintain a stable elevation, and therefore define the upstream channel gradient. |
| **nitrate** | The most oxidized form of nitrogen which can be used as an alternate terminal electron acceptor in anaerobic respiration. |
| **nitrification** | The microbial transformation of ammonium to nitrite and from nitrite to nitrate. It is an energy-yielding aerobic process. |
| **non-planar** | In the context of microtopography, land surfaces that are convex, concave, jagged, or otherwise not flat and alone or in a complex with other non-planer features. Areas that are capable of ponding and/or impeding the flow of surface and shallow subsurface water. |
| **nonpoint source** | Nutrients or contaminants that enter wetland and aquatic ecosystems from diffuse, unconfined sources over a greater areal extent, in contrast to a point source from a defined, discrete location. Common non-point sources are agricultural and urban landscapes. |
| **nurseries, fin fish and shellfish** | Wetland and aquatic areas that provide habitat critical for the early life stages of fish and shellfish. |
| **nutrient uptake** | The incorporation, absorption, or adsorption of nutrients by vegetation, soil, and detritus. |
| **NWI** | National Wetland Inventory |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **off-site mitigation** | Mitigation that is done at a location physically separated from the site at which the original impacts occurred, possibly in another watershed. |
| **oligohaline** | The term used to describe water with a salinity of 0.5-5 ppt due to ocean derived salts. |
| **oligosaline** | The term used to describe water with a salinity of 0.5-5 ppt due to land derived salts. |
| **ombrotrophic bog** | A peatland that receives precipitation as the sole source of water. Generally peat has accumulated enough to isolate the plants from acquiring nutrients from the underlying mineral strata. |
| **ombrotrophic** | Term referring to low nutrient conditions which usually implies that the dominant source of water to the wetland is direct precipitation. |
| **open space** | Those areas that are not developed and are devoid of structures such as buildings and roads (e.g., parks, undisturbed natural areas, green spaces, gardens, etc.). |
| **ordinary high water mark (OHW)** | **". . .** that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR Part 328, Section 328.3 (a)(7)(e)). |
| **organic biomass** | The difference between ash biomass and dry biomass. |
| **organic soil flats** | Organic soil flats are similar to mineral soil flats except for organic matter accretion. They receive precipitation as the only source of water. Northern Minnesota peatlands are a common example. |
| **organic matter** | Plant and animal residue in the soil in various stages of decomposition. Undecayed plant and animal tissue is excluded. |
| **organic soil** | Soil that are 12 to 20% organic matter, depending on the amount of clay. |
| **orographic rainfall** | Rainfall as a result of condensation due to the mechanical lifting of moist air over mountains. |
| **osmotic potential** | The amount of work required to transport reversibly a quantity of water from a specified source to a specified destination. |
| **out-of-kind mitigation** | Mitigation in which lost function capacity is replaced in a wetland of a different regional wetland subclass. |
| **overbank flooding** | The movement of water onto the floodplain that occurs after stream discharge exceeds channel capacity. |
| **overfit (stream)** | A stream that is too large to have eroded the valley in which it flows, or whose floodplain is to small for the size of the stream. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**overbank transport** Movement of water from the stream channel onto the adjacent floodplain. Synonymous with overbank flooding.

**overland flow** The flow of water over a land surface due to direct precipitation. Overland flow generally occurs when the precipitation rate exceeds the infiltration capacity of the soil and depression storage is full.

**oxidation-reduction** See reduction-oxidation.

**paleochannels** Relict channel systems that no longer function to carry water, but, have obviously done so in the past.

**paleosols** A soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists.

**paludification** The landscape phenomenon in which increasing surface moisture augments the accumulation of organic matter and the formation of a Histosol (organic soil).

**palustrine** Non-tidal wetlands that are not part of the lacustrine or riverine systems in the U. S. Fish and Wildlife Service National wetland classification system.

**parent material** The unconsolidated mineral or organic material from which the soil is developed by pedogenic processes.

**assessment area (pwaa)** A portion of a WAA that is identified a priori, or while applying the assessment procedure, because it is relatively homogeneous, and different from the rest of the WAA with respect to one or more model variables. The difference may occur naturally, or as a result of anthropogenic disturbance. See hydrogeomorphic unit.

**particle size classification** Classification of particles into size classes according to the United States Department of Agriculture - Natural Resources Conservation Service.

| | |
|---|---|
| Clay | <0.002mm |
| Silt | 0.002 - 0.05mm |
| Sand | 0.05 - 2.0mm |
| Gravel | 2.0 - 75mm |
| Cobble | 75 - 250mm |
| Stones | 250 - 600mm |
| Boulders | >600mm |

**particle size** The diameter, in millimeters, of a particle determined by either sieve or sedimentation methods.

**particulate organic carbon (poc)** The fraction of total organic carbon that is retained by a 0.45 micron filter.

**parts per thousand (ppt)** Units used to express salinity or halinity. One part solute per one part solvent.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **passerine** | A member of one of the largest order of birds (Passeriformes); mostly altrical songbirds with perching habits; includes the migratory songbirds such as warblers, flycatchers, vireos, larks, wrens, gnatcatchers, sparrows, finches and thrushes. |
| **peat** | Organic soil material in which the plant parts are still recognizable (i.e., non decomposed to slightly decomposed) and generally accumulated under conditions of excess moisture. |
| **pedogenic** | Chemical, physical, and biological processes over time that result in soil genesis, or development. Changes to soils are usually color, structural, and/or textural changes. |
| **pedalogic** | Of or pertaining to soil characteristics |
| **pedology** | The study, examination, and classification of soils as they occur in their natural environment. |
| **pedon** | A three dimensional sample of soil large enough (1 to 10 sq. meters) that the horizons within the soil are adequately expressed. |
| **peds** | Unit of soil structure such as a block, column, granule, plate or prism formed by natural processes. |
| **peraquic** | A soil moisture regime in which ground water is always at or very close to the surface. |
| **perched** | Water that overlies an unsaturated, impermeable layer. |
| **perched aquifer** | A region in the unsaturated zone where soil may be locally saturated because it overlies a low permeability unit. |
| **perched ground water** | The water in an isolated, saturated zone located in the zone of aeration. It is the result of the presence of a layer of material of low hydraulic conductivity called a perching bed. Perched ground water will have a perched water table. |
| **perched water table** | Water standing above an unsaturated zone in the soil. |
| **percolation** | The vertical movement of water through the unsaturated zone subsequent to infiltration. |
| **perennial or "permanently flooded"** | "Water covers the land surface throughout the year in all years. Vegetation is composed of obligate hydrophytes" (Cowardin *et al.* 1979). |
| **permanent wetland** | Pond and lake that has a central open-water zone that is typically surrounded by deep marsh, shallow marsh, wet meadow and low prairie zones. These wetlands contain water year round except during extensive droughts. |
| **permeability** | The capacity of a porous medium to transmit fluids. |
| **persistence (duration)** | The length of time that something (*e.g.* water) is present, or the time period over which it occurs. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**pH** The negative logarithm of the hydrogen ion concentration. A different, more realistic definition is the negative logarithm of the hydronium ($H_3O^+$) ion concentration.

**phreatic water** Water in the saturated zone.

**phreatophyte** A plant capable of maintaining a high rate of transpiration by virtue of a taproot that extends to the water table.

**phreatophytic** Vegetation that exploits water in the vadose zone (that portion of the soil where all voids are saturated)

**physiognomy** The gross structure of a plant community resulting from the dominance of life forms such as trees, shrubs, or graminoids.

**phytoplankton** Plant forms of plankton *(e.g.,* algae) that exist in the water column in contrast to epiphytic or epibenthic algae, which are attached to substrate.

**piedmont** A steep, rolling physiographic province formed at the base of mountains. For example, the Piedmont west of the Atlantic coastal plain and to the east of the Appalachian Mountains.

**piezometer** A non-pumping well, generally of smaller diameter, which is used to observe and measure the elevation of the water table or potentiometric surface.

**pipe flow** Subsurface flow of groundwater that occurs through soil macropores often formed by decayed root channels or animal burrows.

**planar** In the context of microtopography, land surfaces that are flat and generally incapable of ponding or impeding the flow of surface and shallow subsurface water

**planned wetland** Any intended land alteration which results in a net gain of wetland function performance.

**plant community** An association of plant species in space and time.

**plant life form** The general morphologic category of plants, such as tree, shrub, herbaceous, etc.

**pluvial** Pertaining to, or resulting from, the action of rain or precipitation.

**point bar** The deposit formed by the accumulation of suspended and bed load sediments around and against the convex bank in a stream channel bend.

**polyhaline** The term used to describe water with a salinity of 18-30 ppt due to ocean derived salts.

**polysaline** The term used to describe water with a salinity of 18-30 ppt due to land derived salts.

**pore space** The portion of the total volume of rock or soil that is occupied by voids.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **pore water pressure** | The pressure (stress) transmitted by the fluid that fills the voids between particles of soil or rock. |
| **porewater** | Water within the voids and interstices of soil or rock. |
| **porosity** | The ratio of the volume of void spaces in a rock or soil to the total volume of the rock or soil. |
| **potential evapotranspiration (pet)** | The amount of water that would be lost by evapotranspiration by the natural vegetation of an area if water were never limiting during the year. |
| **potential evapotranspiration ratio (pet ratio)** | The ratio between the potential evapotranspiration and actual precipitation. Ratios greater than 1.0 indicate a water deficit. |
| **potentiometric map** | A contour map of the potentiometric surface of a particular hydrogeologic unit. |
| **potentiometric surface** | A surface that represents the level to which water will rise in a tightly cased well. The water table is a particular potentiometric surface for an unconfined aquifer. |
| **precipitation, direct** | Precipitation, throughfall, or stemflow that falls directly, or indirectly onto a specified portion of the landscape. |
| **precipitation** | Any form of water originating in atmosphere that falls onto the surface of the earth. |
| **predominant** | >50% of area, total number, etc. |
| **pressure head** | The pressure from a column of water above a specific reference point - usually in units of cm (water), bars, or Pascals. |
| **primary production** | The conversion of solar energy into chemical energy by plant photosynthesis. |
| **profile** | An exposed vertical section of the soil that allows it to be adequately described (*i.e.*, profile descriptions). |
| **project alternative(s)** | Different ways in which a given project can be done. Alternatives may vary in terms of project location, design, method of construction, amount of fill required, and other ways. |
| **project alternatives** | Different ways in which a given project can be done. Alternatives may vary in project location, method of construction, amount of fill required, and in other ways. |
| **project area** | The area that encompasses all activities related to an ongoing or proposed project. |
| **project assessment area (PAA)** | The riverine waters/wetland area and associated Santa Barbara County buffer zones within the overall project boundaries that will be or have been impacted by project activity (*e.g.,* filling, channelization, construction of weirs, etc.) |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**project standards** Performance criteria and/or specifications used to guide the restoration or creation activities towards the project target. Project standards should include and specify reasonable contingency measures if the project target is not being achieved.

**project target** The level of functioning identified or negotiated for a restoration or creation project. The targets must be based on reference standards and/or site potential and consistent with restoration or creation goals. They are used to evaluate whether a project is developing toward reference standards and/or site potential.

**propagule** Reproductive structures such as the seeds or vegetative cuttings from plants.

**raster based** Pictures or maps that are composed of individual pixels; as opposed to vector based pictures or maps that are derived from mathematical information.

**rating curve** A graph of the discharge of a river or stream at a particular point as a function of the elevation of the water surface.

**recharge area** An area in which there are components of hydraulic head that allow water to move downward into the deeper parts of a soil or aquifer.

**recharge wetland** Wetland that recharges groundwater within its basin (*e.g.* watershed).

**recharge** Water that infiltrates to an aquifer, usually by gravity.

**recycle** The movement of nutrients and/or water from biota to the physical environment and back to the biota.

**red flag features** Features of a wetland or the surrounding landscape to which special recognition or protection is assigned on the basis or objective criteria. The recognition or protection may occur at a federal, state, regional, or local level, and may be official or unofficial.

**redox** See reduction-oxidation.

**redox concentration** A segregation and concentration of iron (Fe) and/or manganese (Mn) into visible features within a soil horizon, denoting alternating conditions of oxidation and reduction.

**redox depletion** Visible features within the soil where clay and/or iron (Fe) and/or manganese (Mn) have been removed due to saturation and reducing conditions.

**redoximorphic features** Soil properties associated with wetness that results from the reduction and oxidation of iron and manganese compounds in the soil after saturation with water and desaturation, respectively.

**redoxi-sensitive** Metals that can change valence and mobility with different redox regimes.

**reduction-oxidation** A chemical process in which one chemical species is oxidized (i.e., loses one or more electrons) while another associated chemical species is reduced (i.e., gains one or more electrons).

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**reference domain** The area within a defined geographic region from which reference wetlands that belong to a single hydrogeomorphic subclass are sampled. The reference domain may coincide with the geographic region or be a subset of the region.

**reference standards** Conditions exhibited by a group of reference wetlands that correspond to the highest level of functioning (highest sustainable capacity) across the suite of functions of the subclass. By definition, highest levels of functioning are assigned an index of 1.0.

**reference wetlands** Wetland sites within the Reference Domain that encompass the known variation of the subclass. They are used to establish the ranges of functions.

**reference** The term reference in the context of functional assessment is used as a basis for comparing two or more wetlands of the same subclass. The principle of reference is useful because (1) everyone uses the same standard of comparison, and (2) relative rather than absolute measures allow better resolution, efficiency in time, and consistency in measurements.

**reference domain** All wetlands within a defined geographic region that belong to a single hydrogeomorphic subclass.

**reference standard** Conditions exhibited by a group of reference wetlands that correspond to the highest level of functioning (highest sustainable capacity) across the suite of functions of the subclass. By definition, reference standard functions are assigned an index of "1.0".

**reference wetland** Wetland sites within the reference domain that encompass the known variation of the subclass. They are used to establish the range of functioning within the subclass. Reference wetlands may include (1) former wetland sites for which restoration to wetland is possible, and (2) characteristics of sites derived from historic records or published data.

**refractory** Denoting woody debris in the channel or floodplain that is slow to decompose or be removed and remains in the system for a relatively long period of time.

**region** A geographic area that is relatively homogenous with respect to large scale factors such as climate and geology that may influence how wetlands function.

**regional wetland subclass** Wetlands within a region that are similar based on hydrogeomorphic classification factors. There may be more than one regional wetland subclass identified within each hydrogeomorphic wetland class depending on the diversity of wetlands in a region, and assessment objectives.

**regolith** The upper part of the earth's surface that has been altered by weathering processes. It includes both soil and weathered bedrock.

**removal mechanisms** Physical, chemical, and biological processes that place material *(e.g.,* nutrients) into a form that are not readily available.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **residence time** | The time it takes for a component to break down or otherwise be lost from the system (*i.e.* residence time in the soil). |
| **residual pool** | An area of quiescent water with discreet boundaries that is still present within the stream channel after flow within the channel has ceased. |
| **restoration** | 1) Returning a modified ecosystem to its pre-modified condition. For example, restoring a tidal connection to a saltmarsh isolated by road construction. 2) Taking a former wetland area that had performed wetland functions or is now performing diminished functions, and altering conditions such that the wetland now performs most of its natural (*i.e.* pre-disturbance) functions. |
| **return flow** | Refers to water that is not used by plants or stored in soils. This water usually returns to streams by overland and/or shallow subsurface flow. |
| **return interval** | Interval of time corresponding to the return of water to the wetland surface. |
| **return period** | The average time interval between hydrologic events of a certain magnitude or greater. Usually expressed in years (*e.g.,* 2-year flood event). |
| **revetment** | A facing, sheathing, or retaining wall that protects a volume of earth or stream bank from erosion or degradation. |
| **rhizomes** | A horizontal stem, usually underground, that often sends out roots and shoots. |
| **rhizosphere** | The zone of soil immediately adjacent to roots in which the kinds, numbers or activities of microorganisms differ from that of the bulk soil. |
| **ridge** | A linear elevation of the earths surface. It may or may not be associated with mountains. |
| **riparian transport** | Movement of water from uplands to floodplains by overland flow, or subsurface flow. |
| **rip-rap** | Stones used for making foundations or walls. In many areas they are used to harden stream banks. |
| **riparian vegetation** | Vegetation normally found along the banks and beds of streams, creeks, and rivers. (Source: Article II - Coastal Zoning Ordinance, Santa Barbara County) |
| **riparian zone** | Land adjacent to bodies of water that is at some time influenced by that water. Commonly, it represents streamside areas and the zone of influence of the stream on the upland boundary. It can be used to denote areas that are not influenced by the stream, but are important to the protection of the stream. |
| **river right** | The right side of a river or stream as one faces the down-steam direction. |
| **river left** | The left side of a river or stream as one faces the down-steam direction. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**riverine** 1. Of or pertaining to rivers; 2. HGM class - one of seven geomorphic classes identified in the HGM methodology. The others are lacustrine fringe, estuarine fringe, depressional,, organic flats, mineral flats, and slopes.

**riverine wetland** Riverine wetlands are long linear features that contain a river bed and bank, and functionally cover the area of the 100-year floodplain. One of several classes of wetlands defined by Cowardin et. al as systems that include all wetland and deepwater habitats contained within a channel with the exception that the system must not contain ocean derived salts in excess of 0.5ppt and all excludes wetlands dominated by trees shrubs, persistent emergents, emergent mosses, or lichens (palustrine wetlands).

**riverwash** Barren alluvial areas of unstabilized sand silt, or gravel reworked by frequent stream activity.

**root exudates** Elements and compounds that move from the root to the soil by physical or chemical exchange processes

**root zone** The zone from the land surface to the depth penetrated by plant roots.

**roughness** Macro/microtopographic features, vegetative characteristics (*i.e.,* stem densities, basal area, percent cover etc.), and soil/bedload attributes of the channel banks, channel bed, and floodplain surface which exert resistance or drag on flowing water. Mannings equation and the Chezy formula are engineering equations that attempt to express or quantify the resistance factor(s) encountered by flowing water.

**runoff** The amount of water that flows from an area of land after evapotranspiration, storage, and subsurface flow have been accounted for. This term is synonymous with overland flow.

**rural** Areas that lie outside the urban boundary

**saddle** Topographically low area between two hilltops.

**saline soil** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

**saline wetlands** Wetlands with soils that have a total dissolved soils or water column concentration of >0.5 ppt. Wetlands typically fall into five salinity classes (oligohaline, mesosaline, polysaline, eusaline, hypersaline.

**saline** Term applied to water containing greater than 0.5 ppt of land derived salts.

**salmonid** Any of the family Salmonidae (e.g., salmon, trout and char).

**saltation** The rolling or bouncing of mineral particles (e.g., sand, gravel, stones) along a streambed as a result of energy from flowing water.

**sand** Soil particles between 0.5 and 2.0mm.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**saturated soil** A soil that has all available pore space filled with water. Some clayey soils with numerous very small (micropores) pores may not have all pore space occupied with water, but can still be considered saturated.

**saturated zone** 1) The zone in which the voids in the rock or soil are filled with water at a pressure greater than atmospheric. The *water table* is the top of the saturated zone in an unconfined aquifer. 2) Regions below the land surface in which all pore space is filled with water.

**scrub-shrub** Wetland vegetation dominated by woody vegetation less than 6 meters tall (Cowardin et al., 1979).

**seasonal or "seasonally flooded"** "Surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface" (Cowardin *et al.* 1979).

**seasonal wetlands** Wetlands that flood in early spring and are dry by mid-summer.

**secretion** The act or process of producing a substance which is specialized to perform a specific function for an organism, and/or is excreted from the organism.

**sedge wetland** See fen; fen, poor; and fen, rich.

**sediment, suspended** Sediments held in suspension by fluid turbulence or Brownian (molecular) motion (colloidal material).

**sediment** The solid material transported by, suspended in, or deposited from water. It includes chemical and biochemical precipitates and decomposed organic material such as humus, or alternatively, an assemblage of individual mineral grains that were deposited by water, wind, ice, or gravity.

**seepage** A site where ground water discharges to the surface, as often happens at the toe of a slope.

**seiche** Harmonic oscillation of surface water in enclosed or semi-enclosed basins initiated by local changes in atmospheric pressure and aided by winds, tidal currents, etc.

**semi-confined aquifer** An aquifer confined by a low permeability layer that permits water to slowly flow through it.

**sequester** The retention of nutrients, sediments, etc., in compartmental surface features, and biomass within the wetland.

**set-back** A term usually applied to building or development activities near sensitive areas and requires that no activities or structures are within a specified minimum distance of the sensitive area.

**set-up** The increase in water surface elevation on the downwind side of a large body of water due to sustained winds.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**seven day low flow (7q10)** The discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days.

**shade intolerant** Normally refers to tree species that require full sunlight to survive the early stages of growth.

**shear strength** The internal resistance of a body to an applied tangential force (shear stress)

**sheetflow** See overland flow.

**shore** Vegetated and non-vegetated substrate at the water-terrestrial interface.

**shrub** Multi-stemmed woody species.

**silica** Silicon dioxide ($SiO_2$) occurring in crystalline, amorphous, and impure forms (as in quartz, opal, and sand respectively) a major constituent of most soils.

**silt** As a soil constituent, it is individual mineral particles that range in diameter from 0.002 mm to 0.05 mm, and is intermediate in size between clay and sand size fractions. As a soil textural class, soil that is 80% or more silt, less than 12% clay, and less than 20% sand.

**sink** A net retention of nutrients, sediments, or water by a wetland. Inputs are greater than outputs.

**sinuous, sinuosity** Ratio of the length of the channel or thalweg to the down valley distance. The degree of meandering of a stream.

**site potential** The highest level of functioning possible, given local constraints of disturbance history, land use, or other factors. Site potential may be equal to or less than levels of functioning established by Reference Standards.

**site specific** Refers to a location associated with a specific wetland function, structural attribute, etc.

**skeletal** A soil that contains at least 35% coarse fragments (*i.e.,* gravel, cobbles, stones, *etc.*)

**slope** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20% is a drop of 20 feet in 100 feet of horizontal distance.

**slope wetland** Slope wetlands grade into the flat below where the slope becomes negligible. Hillside seeps or springs are good examples of slope wetlands.

**small tree** Single-stem, woody vegetation >3 to <10 ft (0.9 to 3 m) tall.

**snag** A dead standing tree

**soil** Unconsolidated material at the earth's surface composed of mineral and organic solids, and voids (pore space), and can function as a substrate for plant growth.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**soil depth** The distance from the top of the soil to the underlying bedrock.

**soil horizon** A layer of soil that is distinguishable from adjacent layers by characteristic physical properties such as structure, color, or texture, or by chemical composition, including content of organic matter or degree of acidity or alkalinity. Master soil horizons are designated by a capital letter, subordinate soil horizons are denoted by lowercase letters (*e.g.*, Bg; Cfm).

**soil meso-fauna** Larger soil fauna greater than 100 micrometers but less 1-2 millimeters

**soil series** The basic unit of soil classification; it is a subdivision of the family level. It is a group of soils having soil horizons similar in differentiating characteristics and arrangement in the soil profile and developed from a particular type of parent material.

**soil structure** The arrangement and organization of primary soil particles into larger aggregates called peds. The degree and strength of this organization is important for plant growth, soil stability, and hydrology.

**soil tilth** The physical condition of soil as it relates to the ease of tillage, fitness of a seedbed, and its impedance to seedling emergence and root penetration.

**solifluction** The slow viscous downslope flow of waterlogged soil and other unsorted and saturated surficial material

**solute** Any substance dissolved in water.

**sorption** A general term to encompass processes of adsorption, absorption, desorption, ion exchange, ion exclusion, ion retardation, chemisorption, and dialysis.

**source** The place of origin of material such as water, sediment, nutrients, etc. In the context of wetlands, the wetland can be the source of materials to adjacent ecosystems and materials can move into the wetland from other areas (*i.e.*, sources).

**specific conductance** The ability of water to conduct an electrical current, and is related to the type and concentration of ions in solution. It can be used for approximating the dissolved-solids content of water because the concentration of dissolved solids (mg/l) is commonly about 65% of the specific conductance. Usually expressed in micromhos per centimeter or the SI unit equivalent microsiemens.

**specific weight** The weight of a substance per unit volume.

**specific yield** The ratio of the volume of water a rock or soil will yield by gravity drainage to the volume of the rock or soil.

**spring tide** The highest high and lowest low tides during the lunar month.

**stemflow** The portion of intercepted precipitation that runs down the stems and trunks of vegetation.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**stenatopic** Interior riparian forest habitat

**Step Pool Reach** A stream reach with distinct longitudinal breaks in slope resulting in a relatively flat pool followed by a drop or step.

**stochastic** A phenomenon that varies over time in a random or otherwise unpredictable pattern.

**stones** Rocks that are between 250mm and 600mm in diameter.

**storage coefficient** See storativity.

**storativity** The volume of water an aquifer released or stored per unit surface area of the aquifer per unit change in head. It is equal to the product of specific storage and aquifer thickness. In an unconfined aquifer, the storativity is equivalent to the specific yield.

**storm hydrograph** A graph of stream discharge over the period of time when, in addition to direct precipitation, overland flow, interflow, and return flow are adding to the flow of the stream.

**stormflow (yield from precipitation event)** The amount of water that enters a stream during a precipitation event. It consists of precipitation falling directly into the stream channel, overland flow into the stream from adjacent uplands and wetlands, and subsurface flow entering the stream from lateral sources.

**strahler stream order** A system of stream classification introduced by A. N. Strahler (1952) that divides a stream system or watershed into segments. The stream segments that lack measurable tributaries (which often depends on the scale of map(s) being used) are designated first-order streams. Where two first order streams join together, they form a second-order stream. Where a segment of a stream is joined by a lower-order segment (*e.g.*, a third-order stream being joined by a second order stream), the order does not increase. Only where two streams of equal order join together is the order number increased (Mount, 1995).

**strata** The distinct vertical layers of vegetation that can be identified in a given plant community or at a given site. Layers typically include: moss or Bryophyte; herbaceous or ground layer; shrub, sapling/tall shrub; and tree.

**stratigraphy** The vertical layering of sediments or other materials often as a consequence of the chronological sequence in which they were deposited.

**stream** Watercourses, including major and minor streams, drainageways and small lakes, ponds and marshy areas through which streams pass. (Coastal wetlands are not included). (Source: Article II - Coastal Zoning Ordinance, Santa Barbara County)

**stream discharge** The volume of water flowing in a stream per unit time, usually expressed in cubic feet per second (cfs).

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**stream power** The parameter used to express the ability of a stream to transport sediment. It consists of the simple product of water velocity, average depth, water surface slope, and the specific weight of water.

**stream, effluent** See gaining stream.

**stream, gaining** See gaining stream.

**stream, influent** See losing stream.

**stream, losing** See losing stream.

**stream** A body of running water moving under the influence of gravity down gradient in a narrow, clearly defined, natural channel.

**streamflow** A type of channel flow, applied to surface runoff moving in a stream. Units of measurement are volume over time interval.

**stress** 1) The condition of diverting potentially useful energy from an ecosystem or an organism, or alternatively, the response of an organism or community to abnormal conditions (*e.g.*, change in water supply, change in nutrient input, introduction of contaminants). 2) The immediate physical, chemical, and biological changes resulting from a disturbance. 3) Force applied to a material.

**stressor** The factor(s) responsible for stress.

**structure, soil** See soil structure.

**Subclass profile** The highest organizational element of an HGM reference system and is defined as a narrative and quantitative description of, at least, the subclass geomorphic setting, climate, hydrology, geology, soils, and biotic communities.

**subsoil** That part of the soil that is below the surface horizons, technically the B and C horizons.

**subsurface drainage** See subsurface flow. The movement of subsurface water can be natural or influenced by human activity (*i.e.*, drain tiles).

**subsurface flow** See throughflow and interflow.

**subsurface storage** The storage of water below the soil surface.

**succession, hydrarch** The sequence of biotic and abiotic changes that occur as an aquatic ecosystem fills with sediment and organic matter and eventually, through mostly extrinsic factors, develops into a terrestrial ecosystem.

**succession** The predictable and orderly change in biotic and abiotic characteristics of a community or ecosystem in a particular location over time.

**surface water** Water above the surface of the land.

**surficial aquifer** An unconfined aquifer near the surface of the land.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **swamp stream** | A swamp on a low order stream, containing a shallowly incised and intermittently braided channel. As a consequence of low channel capacity, increases in discharge tend to be dissipated across the entire floodplain. |
| **swamp, alluvial** | See alluvial swamp. |
| **swamp** | A type of wetland normally characterized by the presence of *surface water*, and dominated by forest vegetation. |
| **taxa** | A collection of any named group of organisms, i.e. plants or animals |
| **temporary wetlands** | In the Prairie Pothole Region, these wetlands have a central wet meadow zone surrounded, at times, by a low prairie zone. Typically, they will dry in the summer. They provide important bird habitat as feeding and resting sites, particularly following snow melt. |
| **terminal electron acceptors** | Elements or compounds that can accept electrons generated by biotic respiration. |
| **terrigenous** | Deriving from a terrestrial landform. |
| **thalweg** | The line joining the deepest points of a stream channel. |
| **thermal regime** | Characteristic temperature(s) within a soil profile. |
| **throughfall** | The portion of intercepted precipitation that ultimately drips from vegetation surfaces onto the ground. |
| **throughflow** | 1) The lateral movement of water in an unsaturated zone during and immediately after a precipitation event. 2) Water that infiltrates into the soil on a slope and subsequently emerges as seepage at the foot of the slope, as opposed to interflow which enters directly into a stream. |
| **tidal amplitude** | The range of fluctuation between mean high tide and mean low tide. |
| **tidally influenced** | Streams or bodies of water whose surface water elevation and/or chemistry is influenced by tides. |
| **tidal waters** | ". . . those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects" (33CFR Part 328, Section 328.3 (a)(7)(f)). |
| **tidal wetland** | A wetland influenced by astronomic tides. |
| **TOB** | Top of bank |
| **topographic** | A term referring to the slope and elevation of land. |
| **tractive force** | The force of drag or shear acting on the wetted area of the stream channel in the direction of flow |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

| | |
|---|---|
| **transformation** | The process of converting a material (nutrient, etc.) from one form to another. Examples would be particulate organic carbon to dissolved organic nitrogen, organic nitrogen to ammonia. |
| **transmissibility** | See transmissivity. |
| **transmissivity** | The rate at which water is transmitted through a unit width of an aquifer or confining bed under a unit hydraulic gradient. It is a function of the properties of the liquid, the porous media, and the thickness of the porous media. |
| **transpiration** | The process by which plants release water vapor through their leaves to the atmosphere. |
| **transport mechanism** | Physical processes that move materials from one location to another. |
| **transport, riparian** | Movement of water from upland regions to the floodplain either by overland flow and/or subsurface flow. |
| **trapezoid (channel)** | Refers to man-made water conveyance systems having flat bottoms and uniform sloping sides, usually constructed of concrete. |
| **tree** | Single-stem, woody vegetation >10 ft (3 m) tall. |
| **turbidity** | Cloudiness or lack of clarity in water due to suspended organic and/or inorganic materials. |
| **turnover rate** | The flux, or rate of change of a specific reservoir or pool (e.g. water, chemical substrates, etc.). |
| **tussock** | A plant form that is tufted, bearing many stems arising as a large dense cluster from the crown. |
| **unchannelized flow** | Normally reserved for surface flow that is diffuse and thus not confined to a channel. Also non-channelized flow. |
| **unconfined aquifer** | An aquifer with groundwater and a water table (i.e., water that is not under pressure due to confining strata). |
| **unconfined ground water** | Groundwater that has free water, or a water table (i.e. water that is not confined under pressure due to impermeable strata). |
| **unidirectional flow** | Horizontal flow that occurs in one direction in contrast to bidirectional flow associated with astronomic tides or seiche. |
| **unsaturated zone** | 1) The layer of soil between the land surface and the water table that includes the root zone, intermediate zone and capillary fringe. The pore spaces contain water at less than atmospheric pressure, as well as air and other gases. Saturated bodies, such as perched ground water, may sometimes exist in the unsaturated zone. |
| **upland related** | Processes, structures, etc. associated with topographically higher areas adjacent to wetlands. |

**HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued**

| | |
|---|---|
| **upland** | Topographically higher areas adjacent to waters/wetlands that do not meet the criteria for are not wetlands themselves. |
| **UTM** | Universal Transverse Mercator |
| **vadose zone** | The aerated region of soil above the permanent water table. |
| **valley** | The lowest topographic areas within landscapes. Usually formed by the cutting action of streams, rivers, glaciers, etc. |
| **valuation** | The process of assigning significance criteria to values. |
| **value of wetland function(s)** | The relative importance of wetland function, or functions, to an individual or group. |
| **values** | Generally, what people consider important or economical. Values can be 'measured' in a relative way by categorizing what motivates people into activity. |
| **variable assessment area** | The zone(s) (*i.e.*, real extent , volume, vertical or linear distance) where condition(s) of field indicators are examined, measured or otherwise used to develop index scores for HGM variables. |
| **variable condition** | The condition of a variable as determined through quantitative or qualitative measures. |
| **variable index** | A measure of how an assessment model variable in a wetland compares to the reference standards of a regional wetland subclass in a reference domain. |
| **variable** | An attribute or characteristic of a wetland ecosystem or the surrounding landscape that influences the capacity of wetland to perform a function. |
| **vector based** | Pictures or maps that are derived from mathematical information; as opposed to raster, which is composed of individual pixels. |
| **velocity head** | Energy contained in water as a function of its mass and velocity. |
| **vertical fluctuations** | The movement of water upward and downward in the soil profile. |
| **viscosity** | The property of a fluid describing its resistance to flow. Units of viscosity are force-time per area (newton-seconds per meter squared ($N \cdot s \cdot m^{-2}$) or pascal-seconds (Pa·s)). |
| **volatilization** | A change of state of an element or compound to the gas phase. |
| **water budget** | An evaluation of all sources of input and corresponding discharge (output) with respect to an aquifer or a drainage basin. |
| **water quality** | Qualitative and quantitative conditions of water, usually in reference to physical, chemical, and biological properties, and usually from the perspective of use and benefits to society. |
| **water source** | The place of origin of water that enters a terrestrial or aquatic system. Examples would be rainfall (precipitation), streams, lakes, ground water, and oceans. |

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**water stress** A water deficit condition of plants that are losing water by transpiration faster than they can uptake water through their roots.

**water surface profile** A plot of depth of water in a channel along the length of the channel.

**water table drawdown** A decrease in the elevation of the water table as a result of evaporation, evapotranspiration,or artificial withdrawal of surface water or groundwater through gravity release or pumping.

**water table map** A potentiometric surface map for an unconfined aquifer that shows lines of equal elevation of the water table.

**water table rebound** An increase in water table elevation at night following a daytime decrease in water table elevation due to evapotranspiration. The cause may by due to redistribution of water among pore spaces, or the adjustment toward hydrostatic equilibrium with controlling potentiometric gradients.

**water table** The surface in an unconfined aquifer or confining bed at which the pore water pressure is atmospheric. It can be measured by installing shallow wells extending into the zone of saturation and then measuring the water level in those wells.

**water year** The twelve month period from October 1 through September 30. Water year is designated by the calendar year in which the water year ends, and which includes 9 of the 12 months. For example, the water year ending September 30, 1980 is called "1980 water year".

**waters of the United States** "....(a)(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams, (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate , or foreign commerce including such waters: (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purposes by industries in interstate commerce; (4) All impoundments of waters otherwise defined as waters of the United States under this definition. (5) Tributaries of waters identified in paragraphs 1-4 above; (6) The territorial sea: (7) Wetlands adjacent to waters (0ther than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds defined in 40 CFR Section 423.11(m) which meet the criteria of this definition) are not waters of the United States (8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA. (404(b)(1) Guidelines - 40 CFR Section 230.3(s))" (33CFR Part 328, Section 328.3 (a)(1)-(6)).

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**watershed** The area of land from which surface water drains to a single outlet.

**weir** A device placed across a stream that forces water to flow over a specially designed spillway that allows measurement of the amount of water being discharged.

**wet biomass** The amount of dry biomass plus contained water.

**wetland** Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats and fens. (Source: Article II - Coastal Zoning Ordinance, Santa Barbara County)

**wetland assessment area (waa)** The wetland area to which results of an assessment are applied.

**wetland banking** The process of creating a "bank" of created, enhanced, or restored wetlands to serve, at a future date, as mitigation for project impacts.

**wetland conversion** See conversion.

**wetland creation** See creation.

**wetland ecosystem** In 404 ".....areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Corps Regulation 33 CFR 328.3 and EPA Regulations 40 CFR 230.0). In a more general sense, wetland ecosystems are three dimensional segments of the natural world where the presence of water, at or near the surface, creates conditions leading to the development of redoximorphic soil conditions, and the presence of a flora and fauna adapted to the permanently or periodically flooded or saturated conditions.

**wetland enhancement** The process of increasing the capacity of a wetland to perform on, or more functions. Wetland enhancement can increase functional capacity to levels greater than the highest sustainable functional capacity achieved under reference standard conditions, but usually at the expense of sustainability, or a reduction of functional capacity of other functions. Wetland enhancement is typically done for mitigation.

**wetland function** The normal activities or actions that occur in wetland ecosystems, or simple, the things that wetlands do. Wetland functions result directly from the characteristics of a wetland ecosystem and the surrounding landscape, and their interaction.

**wetland related** Processes, components, etc. associated with wetlands.

**wetland restoration** The process of restoring wetland function in a degraded wetland. Restoration is typically done as mitigation.

## HYDROGEOMORPHIC WETLAND FUNCTION ASSESSMENT GLOSSARY, continued

**wetland** 1) "... those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation, typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Corps Regulation 33 CFR 328.3 and EPA Regulations 40 CFR 230.3). 2) "... lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of the land is covered by shallow water"

**wilting point** The soil moisture content below which plants are unable to withdraw soil moisture.

**winnowed, winnowing** The selective sorting or removal of fine particles by wind action leaving the coarser grains behind.

**xeric** Dry or droughty condition, environments characterized by lack of moisture

**xerophyte** A plant that maintains is existence in an area of minimal water by virtue of an extensive shallow root system.

**zone of aeration** See unsaturated zone.

**zone of saturation** See saturated zone.