

SECTION 7 GLOSSARY OF TERMS

Advection: The process by which solutes are transported by the bulk motion of the flowing groundwater.

Allochem: Sediment formed by chemical or biochemical precipitation within a depositional basin; includes intraclasts, oolites, fossils, and pellets.

Alluvium: Stream-deposited sediments, usually restricted to channels, floodplains, and alluvial fans.

Anion: A negatively charged ion that migrates to an anode, as in electrolysis.

Anisotropy: Condition where one or more of an aquifer's hydraulic properties vary according to the direction of groundwater flow.

Aquiclude: Rocks or sediments, such as shale or clay, which do not conduct water in significant quantities.

Aquifer: Rocks or sediments, such as cavernous limestone and unconsolidated sand, which store, conduct, and yield water in significant quantities for human use.

Aquitard: Rocks or sediments, such as cemented sandstone or marly limestone, that transmit water significantly more slowly than adjacent aquifers and that yield at low rates.

Artesian: Describes water that would rise above the top of an aquifer if intersected by a well; sometimes flows at the surface through natural openings such as fractures.

Baseflow: The "normal" discharge of stream when unaffected by surface runoff; derived from groundwater flowing into the stream channel.

Bedding plane: A plane that divides two distinct bedrock layers.

Bioherm: A mound-like unit of rock of different character than the surrounding rock, which was created by the dense growth and later fossilization and lithification of sedentary organisms such as corals.

Biomicrite: A limestone consisting of a variable proportion of fossil skeletal debris and carbonate mud.

Biostrome: A bedded, laterally extensive unit of rock created by the dense growth and later fossilization and lithification of sedentary organisms such as corals and shelled animals.

Bioturbation: The churning and stirring of a sediment by organisms.

Borehole: A drilled hole, commonly used for fluid or mineral extraction and injection, or for the monitoring or testing of geologic parameters.

Borrow pit: A small quarry, often in poorly or unconsolidated materials. The term is common on U.S. Geological Survey topographic maps.

Boxwork: Mineral structure which originally formed as blades or plates along cleavage or fracture planes and then the intervening material dissolved leaving the intersecting blades or plates as a network.

Breccia: A rock made up of highly angular coarse fragments. May be sedimentary or formed by crushing or grinding along faults.

Calcarenite: A deposit composed of cemented sand-sized grains of calcium carbonate, usually a biosparite or grainstone.

Calcareous: Containing calcium carbonate.

Calcite: The predominant mineral in limestone. It is relatively soluble compared to other common minerals, and allows for the dissolution of limestone and the precipitation of calcite speleothems.

Caliche: Gravel, sand, or desert debris cemented by porous calcium carbonate. A soil formed by the near-surface crystallization of calcite and/or other soluble minerals by upward-moving solutions.

Cation: An ion that bears a positive charge.

Cave: A naturally occurring, humanly enterable cavity in the earth, at least 5 m in length and/or depth, in which no dimension of the entrance exceeds the length or depth of the cavity (definition of the Texas Speleological Survey).

Cavern Porosity: Measure of the volume of cave space in rocks or sediments as a percentage of the total rock or sediment volume. Cavern porosity implies a large storage capacity for groundwater, and a sometimes tortuous flow path associated with the cave development.

Colluvium: Loose, poorly sorted deposits of sediment moved down-slope by gravity and sheetwash; includes talus and cliff-fall deposits.

Complexation: When polar interaction occurs between a solute molecule and a molecule of stationary phase, an associate (complex) is assumed to occur which actually removes the solute from the migration process.

Conduit flow: Groundwater movement along conduits; usually rapid and turbulent.

Conduit: A subsurface bedrock channel formed by groundwater solution to transmit groundwater; often synonymous with cave and passage, but generally refers to channels either too small for human entry, or of explorable size but inaccessible. When used to describe a type of cave, it refers to base level passages that were formed to transmit groundwater from the influent, upgradient end of the aquifer to the effluent, downgradient end.

Confined: Pertaining to aquifers with groundwater restricted to permeable strata that are situated between impermeable strata.

Confining Layer: One which, because of its position because of its impermeability or low permeability relative to that of the aquifer, gives the water in the aquifer artesian head.

Conformable: A contact between strata that reflects a period of continuous deposit of material, typically a smooth surface without evidence of the erosion in the underlying older strata; see unconformity.

Corbula: A small, bivalved clam that occurs in both the upper and lower Glen Rose Limestone and forms an important marker bed that distinguishes the boundary of the Upper and Lower members of the Glen Rose Formation.

Cretaceous: A period of the geologic time scale that began 135 million years ago and ended 65 million years ago.

Crossbedded: The arrangement of laminations of strata transverse or oblique to the main planes of stratification of the strata concerned; inclined, often lenticular beds between main bedding planes.

Dehalogenation: Dehalogenation is the process of removing the chlorine molecules from an organic molecule. Generally an anaerobic process that is often referred to as reductive dechlorination.

Dehydrohalogenation: Reaction in which an alkyl halide, on being treated with a base such as sodium ethoxide, is converted to an alkene by loss of a proton from one carbon and the halogen from the adjacent carbon.

Depth: In relation to the dimensions of a cave or karst feature, it refers to the vertical distance from the elevation of the entrance of the cave or feature to the elevation of its lowest point. See vertical extent for comparison.

Diagenesis: Process involving physical and chemical changes in sediment after deposition that converts into consolidated rock; includes compaction, cementation, recrystallization, and perhaps replacement as in the development of dolomite.

Diffuse flow: Laminar and very slow groundwater movement within small voids of primary and

Dip: The angle that joints, faults or beds of rock make with the horizontal; colloquially described as the "slope" of the fractures or beds. "Updip" and "downdip" refer to direction or movement relative to that slope.

Discharge: The water exiting an aquifer, usually through springs or wells; also the amount of water flowing in a stream.

Dolomite: A term applied to a carbonate rock that approximate the mineral dolomite ($\text{CaMg}(\text{CO}_3)_2$) in composition. Commonly associated with a process whereby limestone becomes dolomite by the substitution of magnesium carbonate for a portion of the original calcium carbonate.

Dolostone: A term proposed for a sedimentary rock composed of fragmental, concretionary, or precipitated dolomite of organic or inorganic origin.

Drainage basin: A watershed; the area from which a stream, spring, or conduit derives its water.

Drainage divide: Location where water diverges into different streams or watersheds. On the surface they usually occur along ridges or elevated areas. In aquifers, they occur along highs in the potentiometric surface between groundwater basins.

Electrokinetics: Remediation process in which a low-voltage direct-current electric field is applied across a section of contaminated soil to move contaminants. The principle of

electrokinetics remediation is similar to a battery. After electrodes (a cathode and anode) are introduced and charged, particles (e.g., ions) are mobilized by the electric current. Ions and water move toward the electrodes.

Electromigration: The transport of ions and ion complexes to the electrode of opposite charge.

Electron Acceptor: A compound that receives or accepts an electron during cellular respiration. The microorganism through its cellular machinery collects the energy for its use. The process starts with the transfer of an electron from an electron donor. During this process) the electron acceptor is reduced and the electron donor is oxidized.

Electron Donor: A compound that gives up or donates an electron during cellular respiration, resulting in the release of energy. The microorganism through its cellular machinery collects the energy for its use. The final result is the electron is donated to an electron acceptor. During this process the electron donor is oxidized and the electron acceptor is reduced.

Electroosmosis: The movement of soil moisture or groundwater from the anode to the cathode of an electrolytic cell.

Electrophoresis: The transport of charged particles or colloids under the influence of an electric field; contaminants bound to mobile particulate matter can be transported and separated on the basis of their tendency to migrate to a positively or negatively charged electrode at a particular pH.

En echelon: Typically refers to faults or other structures that occur in an overlapping but collectively linear arrangement, such as to form a fault zone.

Epikarst: The highly solutioned zone in karst areas between the land surface and the predominantly unweathered bedrock.

Estavelle: A feature that either recharges or discharges groundwater, depending on the level of the water table or potentiometric surface.

Evaporite: One of the sediments deposited from aqueous solution as a result of extensive or total evaporation of the solvent.

Evapotranspiration: A term embracing that portion of the precipitation returned to the air through direct evaporation or by transpiration by vegetation.

Fabric-Selective: Classification of carbonate porosity based on pore types as proposed by Choquette and Pray (1970). Porosity under this classification includes interparticle, intraparticle, intercrystal, moldic, fenestral, shelter, and framework porosities, as opposed to non-fabric selective such as vug and channel, cavern, and fracture porosities.

Facies: The characteristic appearance or aspect of a rock unit; often subclassified or described based on stratigraphy, fossils, mineralogy, lithology, and other similar factors; a stratigraphic body as distinguished from other bodies of different appearance or composition or a lateral subdivision of a stratigraphic unit.

Fault: Fracture in bedrock along which one side has moved with respect to the other.

Fenestral Porosity: Fenestrae are small pores which are common in carbonates and typically form because of desiccation and gas generation. While local porosities may be high, fenestrae form in a very narrow range of environments and occur in thin, discontinuous horizons. They

are prone to early cementation and often contain geopetal sediments. They are, at best, only a minor porosity type complementing the more typical porosity types in peritidal sequences, such as intercrystalline and moldic porosity.

Fissure flow: Groundwater movement along fractures and bedding planes that usually have been enlarged by solution. Flow is laminar to turbulent, and generally constitutes a moderate to large volume of groundwater in karst aquifers.

Floodplain: The flat surface that is adjacent and slightly higher in elevation to a stream channel, and which floods periodically when the stream overflows its banks.

Fossiliferous: Bearing or containing fossils. In stratigraphy, the term usually implies the rock has a high percentage of fossilized material bound within the matrix.

Fracture: A break in bedrock that is not distinguished as to the type of break (usually a fault or joint).

Geomorphology: The branch of geology that studies the shape and origin of landforms.

Grade: The continuous descending profile of a stream; graded streams are stable and at equilibrium, allowing transport of sediments while providing relatively equal erosion and sedimentation. A graded profile generally has a steep slope in its upper reaches and a low slope in its lower reaches.

Grainstone: A limestone description based upon the Dunham Mudstone Classification (1062). Grainstones are grain-supported carbonate rocks with no mud, and are not originally bound together during deposition. Often the interstices of these rocks are filled with a sparry cement.

Head: The difference in water level elevations that creates the pressure for water movement down a gradient.

Heterogeneous: Condition where an aquifer's hydraulic properties vary in different locations.

Homogeneous: Condition where an aquifer's hydraulic properties are the same in all locations.

Honeycomb: An interconnected series of small voids in rock, commonly formed in karst by near surface (epikarstic) solution, or by phreatic groundwater flow.

Hydrogeology: The study of water movement through the earth, and the geologic factors that affect it.

Hydrograph: A graph illustrating changes in water level or discharge over time.

Hydrology: The study of water and its origin and movement in atmosphere, surface, and subsurface.

Hydrostratigraphy: A geologic framework consisting of a body of rock having considerable lateral extent and composing a reasonably distinct hydrologic system.

Impermeable: Does not allow the significant transmission of fluids.

Joint: Fracture in bedrock exhibiting little or no relative movement of the two sides.

Karst feature: Generally, a geologic feature formed directly or indirectly by solution, including caves; often used to describe features that are not large enough to be considered caves, but have some probable relation to subsurface drainage or groundwater movement. These features

typically include but are not limited to sinkholes, enlarged fractures, noncavernous springs and seeps, soil pipes, and epikarstic solution cavities.

Karst: A terrain characterized by landforms and subsurface features, such as sinkholes and caves, which are produced by solution of bedrock. Karst areas commonly have few surface streams; most water moves through cavities underground.

Lag time: The time between aquifer recharge or discharge and the initial resulting response of the aquifer, usually measured as the rise or fall of the hydrograph.

Laminar flow: Smooth water movement along relatively straight paths, parallel to the channel walls.

Length: In relation to the dimensions of a cave or karst feature, it refers to the summed true horizontal extent of the cave's passages or the feature's extent.

Lenticular: Bedding feature that is shaped approximately like a double convex lens. When a mass of rock thins out from the center to a thin edge all around, it is said to be lenticular in form.

Limestone: A bedded sedimentary deposit consisting chiefly of calcium carbonate (CaCO₃). A general term for that class of rocks which contain at least 80 percent of the carbonates of calcium or magnesium.

Lineament: A linear feature, usually observed in aerial photographs, which likely represents a geologic feature such as a fault, joint, or lithologic contact.

Lineation: A linear alignment of features that may indicate control by fractures or other geologic features or processes.

Lithic: Refers to sediments and rocks in which rock fragments are more important proportionally than matrix.

Lithology: The description or physical characteristics of a rock.

Marl: Rock composed of a predominant mixture of clay and limestone.

Mesozoic: The era of the geologic time scale that extended from about 245 million years ago to 65 million years ago; it begins with the Triassic Period, continues through the Jurassic Period, and ends with the Cretaceous Period.

Metabolism: The chemical changes in living cells, by which the energy is provided for the vital processes and activities, and new material is assimilated to repair the waste.

Methanogenesis: The microbial generation of methane as a result of anaerobic decomposition of organic matter.

Moldic Porosity: A type of secondary porosity created through the dissolution of a preexisting constituent of a rock, such as a shell, rock fragment or grain. The pore space preserves the shape, or mold, of the dissolved material.

Mudstone: A limestone description based upon the Dunham Mudstone Classification (1062). Lime mudstones are composed of clay sized carbonate particles with less than 10 percent grains.

Nodular: Composed of nodules (rounded mineral aggregates).

Normal fault: A fault where strata underlying the fault plane are higher in elevation than the same strata on the other side of the fault plane.

Not-Fabric Selective: Classification of carbonate porosity based on pore types as proposed by Choquette and Pray (1970). Porosity under this classification includes vug and channel, cavern, and fracture porosities, as opposed to fabric selective such as. interparticle, intraparticle, intercrystal, moldic, fenestral, shelter, and framework porosities.

Onlapping: The extension of successive stratigraphic units beyond the marginal limits of their predecessors onto older rocks as in the deposits of a transgressing sea.

Packstone: A limestone description based upon the Dunham Mudstone Classification (1062). Packstones are grain-supported carbonate rocks; (i.e., there is less clay size matrix than allochems).

Pelecypod: A division(class) of the phylum Mollusca.

Perched groundwater: Relatively small body of groundwater at a level above the water table; downward flow is impeded within the area, usually by impermeable strata.

Permeability: Measure of the ability of rocks or sediments to transmit fluids.

Permeable: Allows the significant transmission of fluids.

Phreatic Zone: Designation of groundwater in the zone of saturation.

Phreatic: The area below the water table, where all voids are normally filled with water.

Physiography: The study of the genesis and evolution of land forms.

Piezometer: An instrument for measuring the pressure head of liquids. A nonpumping well, generally of small diameter and short screen length, for measuring the elevation of a water table.

Porosity: Measure of the volume of pore space in rocks or sediments as a percentage of the total rock or sediment volume.

Potentiometric surface: A surface representing the level to which underground water confined in pores and conduits would rise if intersected by a borehole. See water table.

Quaternary: A period of the geologic time scale that began 2 million years ago and continues to the present.

Reach: The length of a stream or stream segment; often used to denote similar physical characteristics.

Recharge: Natural or artificially induced flow of surface water to an aquifer.

Reverse fault: A fault where strata underlying the fault plane are lower in elevation than the same strata on the other side of the fault plane.

Rudist: A group of bivalves which evolved during the Late Jurassic to Cretaceous and lived in warm, shallow oceans of low latitudes. They became extinct at the Cretaceous/Tertiary boundary. Most rudists have not much in common with 'normal' bivalves and developed bizarre, occasionally large shells. Different to other bivalves, one or both valves are uncoiled which

allowed for accretion of the shell along the complete mantle margin and the construction of tubular shells.

Schist: A medium or coarse-grained metamorphic rock with sub-parallel orientation of the micaceous minerals which dominate its composition.

Seep: A spring that discharges a relatively minute amount of groundwater to the surface at a relatively slow rate; typically a "trickle."

Shale: A laminated sediment in which the constituent particles are predominantly of the clay-sized grade.

Sinkhole: A natural indentation in the earth's surface related to solutional processes, including features formed by concave solution of the bedrock, and/or by collapse or subsidence of bedrock or soil into underlying solutionally formed cavities.

Slickensides: Polished and striated (scratched) surface that results from friction along a fault plane.

Solution: The process of dissolving; dissolution.

Specific capacity: The productivity of a well, expressed as the rate of discharge divided by the drawdown of the water level.

Specific yield: The storage term for unconfined aquifers; see storativity.

Spring: Discrete point or opening from which groundwater flows to the surface; strictly speaking, a return to the surface of water that had gone underground.

Stage: The water level elevation or height measured in a stream or a well.

Storativity: The volume of water released from or taken into an aquifer for each unit of aquifer surface area per unit of change in head; usually refers to storage within confined aquifers. See specific yield.

Strata: Layers of sedimentary rocks; usually visually distinguishable. Often called beds. The plural of , stratum.

Stratigraphic: Pertaining to the characteristics of a unit of rock or sediment.

Stratigraphy: Pertaining to or the study of rock and sediment strata, their composition and sequence of deposition.

Strike: The direction of a horizontal line on a fracture surface or on a bed of rock; perpendicular to dip.

Structure: The study of and pertaining to the attitude and deformation of rock masses. Attitude is commonly measured by strike and dip; deformational features commonly include folds, joints, and faults.

Stylolite: A term applied to parts of certain limestones which have a column-like development; the 'columns' being generally at right angles or highly inclined to the bedding planes, having grooved, sutured, or striated sides, and irregular cross sections.

Syn depositional: A process or mechanism occurring at the same time that sediment is being deposited.

Terrace: A relatively narrow, flat topographic surface; with reference to streams it usually marks the elevation of a former, higher, water level, and is composed of and formed by the deposition of unconsolidated sand, gravel, and related alluvial material.

Transmissivity: The rate at which water moves through a unit width of an aquifer under a unit hydraulic gradient.

Trend: The azimuthal direction of a linear geologic feature, such as the axis of a fold or the orientation of a fracture; commonly used to denote average or general orientations rather than specific orientations.

Unconfined: Pertaining to aquifers having no significant impermeable strata between the water table and the land surface.

Unconformity: A break in the sequence of stratigraphic deposition that is often recognized by an erosional surface overlain by younger strata; see conformable.

Vadose: Pertaining to the zone above the water table where all cavities are generally air-filled, except during temporary flooding.

Vug: A small cavity in rock, often lined with crystals, and generally not significantly related to groundwater movement.

Wackestone: A limestone description based upon the Dunham Mudstone Classification (1062). Wackestones are carbonate rocks which are matrix-supported; i.e., there are more than 10% grains, but the fine grain clay size matrix essentially surrounds the grains.

Water table: The boundary of the phreatic and vadose zones. A potentiometric surface but the term is used only in unconfined aquifers.

Sources

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