

G

Gabion — A wire cage, usually rectangular, filled with cobbles and used as a component for water control structures or for channel and bank protection.

GAC (Granular Activated Carbon) — In water treatment, granular activated carbon has been used mainly for taste and odor control, with some special applications that remove *Synthetic Organic Chemicals (SOCs)* or *Volatile Organic Chemicals (VOCs)* from contaminated water. Two basic forms of GAC are typically used: (1) a coal-based carbon manufactured as an adsorbent; and (2) a wood-based carbon manufactured primarily as a substrate for biological activity. Also see *Biological Activated Carbon (BAC) Process*.

Gage, or Gauge — (1) An instrument used to measure magnitude or position; gages may be used to measure the elevation of a water surface, the velocity of flowing water, the pressure of water, the amount of intensity of precipitation, the depth of snowfall, etc. (2) The act or operation of registering or measuring magnitude or position. (3) The operation, including both field and office work, of measuring the discharge of a stream of water in a waterway.

Gage Datum — The elevation of the zero point of the reference gage from which gage heights is determined as compared to sea level. This elevation is established by a system of levels from known benchmarks, by approximation from topographic maps, or by geographical positioning system (GIS). Also see *Datum*.

Gage Height (G.H.) — The height of the water surface above the gage datum (reference level). Gage height is often used interchangeably with the more general term, *Stage*, although gage height is more appropriate when used with a gage reading.

Gage Rod — A measuring device that shows the water level in the reservoir.

Gaging Station — A particular site on a stream, canal, lake, or reservoir where systematic observations of *Gage Height* or discharge are obtained through mechanical or electrical means. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed. Also referred to as a *Gage*.

Gaging Station Number — A *U.S. Geological Survey (USGS)* numbering system consisting of an eight-digit number assigned to a *Gaging Station* which identifies the station in downstream order relative to other gaging stations and sites where streamflow data are collected. The first two digits designate the major drainage basin, the others the station.

Gaining Stream — A stream or reach of a stream, the flow of which is being increased by the inflow of ground water seepage or from springs in, or alongside, the channel. Also referred to as an *Effluent Stream*. Also see *Stream*.

Gallery — (1) A passageway within the body of a dam or abutment; hence the terms “grouting gallery,” “inspection gallery,” and “drainage gallery.” (2) A long and rather narrow hall; hence the following terms for a power plant: “valve gallery,” “transformer gallery,” and “busbar gallery.”

Gallon [Imperial] — A unit of capacity in Great Britain containing four quarts, is used for both liquid and dry commodities, and is defined as the volume occupied by ten imperial pounds weight of distilled water, as weighed in air against brass weights with both water and air at 62° Fahrenheit, and the barometer at 30 inches (*atmospheric pressure*). It is equivalent to 4.5460 liters (277.420 U.S. cubic inches), or to 1.2003 U.S. gallons (defined below).

Gallon [U.S.] — A unit of capacity, containing four quarts, used in the United States primarily for liquid measure. One U.S. gallon contains 231 cubic inches, 0.133 cubic feet, or 3.7853 liters. One U.S. gallon is equivalent to the volume of 8.3359 pounds av. (avoirdupois) of distilled water at its maximum density (32.9°F or 4°C), weighed in dry air at the same temperature against brass weight of 8.4 density and with the barometer at 30 inches. It takes approximately 325,851 gallons to make up 1 acre-foot (AF). [*Historical Note:* The U.S. gallon is the same as the old English *wine gallon* which was originally intended in England to be equivalent to a cylinder of seven inches in diameter and six inches in height.]

Gallons per Capita (GPC) — A term used relative to water use per person per specified time, usually a day.

Gallons per Capita (Person) per Day (GPCD) — An expression of the average rate of domestic and commercial water demand, usually computed for public water supply systems. Depending on the size of the system, the climate, whether the system is metered, the cost of water, and other factors, *Public Water Supply Systems (PWSS)* in the

United States experience a demand rate of approximately 60 to 150 gallons per capita per day. Also see *Gallons per Employee per Day (GED)* for information on the application of this concept to commercial water use by *Standard Industrial Classification (SIC) Code*. [See Appendix C-4, Gallons Per Capita Per Day (GPCD), Water Used for Public Water Supplies by State.]

Gallons per Employee (Worker) per Day (GED, or GPED) — A measure or coefficient expressing an area's commercial water use per worker (employee), typically for distinct industry sectors. It is based on an analytical technique for measuring and forecasting commercial water use in a service area based upon the unique, seasonal, business-related water use by specific industrial sectors. GED commercial water-use coefficients are typically developed based upon Standard Industrial Classifications (SIC) codes for which comparable commercial water use and employment data are available. For forecasting more frequently than annually, GED coefficients will incorporate seasonal patterns (monthly or quarterly) as well. By deriving forecasts of trends in industry sector employment and combining them with appropriate, industry-specific GED coefficients, relatively accurate forecasts of the corresponding commercial water use may be obtained.

Gallons per Minute — A unit expressing rate of discharge, used in measuring well capacity. Typically used for rates of flow less than a few cubic feet per second (cfs).

Gamma Radiation — High energy photons which are emitted by many radioactive substances.

Game Fish — Those species of fish considered to possess sporting qualities on fishing tackle, such as salmon, trout, black bass, striped bass, etc.; usually more sensitive to environmental changes than *Rough Fish*.

Gap Analysis — A method for determining spatial relationships between areas of high biological diversity and the boundaries of *National Parks*, *National Wildlife Refuges (NWR)*, and other preserves. The primary goal of Gap Analysis is to prevent additional species from being listed as threatened or endangered. Analyses are made and displayed using a *Geographic Information System (GIS)*. Estimates of diversity are often derived from known or hypothesized relationships between mapped plant communities and animal populations. In addition to the *National Biological Survey*, which serves as the primary coordinating agency, there are over 200 collaborating organizations involved in performing Gap Analysis on a state-by-state basis, including businesses, universities, and state, local, and federal government entities. [The term *Gap* originated from an initial *Biodiversity* study in Hawaii which showed that for certain sensitive animal species there existed a physical (geographic) gap between the species and its habitat and wildlife preserves (national parks, forests, wildlife protection areas, etc.), indicating potential limitations of species and habitat protection.]

Gas — A state of matter; a substance that generally exists in the gaseous phase at room temperature.

Gas Chromatograph/Mass Spectrometer (GC/MS) — A highly sophisticated instrument that identifies the molecular composition and concentrations of various chemicals in water and soil samples.

Gas Chromatography (GC) — A method of separating chemical components of a mixture which involves the passage of a gaseous sample through a column having a fixed adsorbent phase. It is in widespread use in quantitatively analyzing volatile compounds.

Gas Chromatography/Flame Ionization Detector (GC/FID) — A laboratory analytical method used as a screening technique for semi-volatile organic compounds that are extractable from water in methylene chloride.

Gasification — The process of combining coal with air (or pure oxygen) and steam to yield a gaseous product suitable for use either as a direct source of energy or as a raw material used in the synthesis of chemicals, liquid fuels, or other gaseous fuels.

Gate — (1) (Irrigation) Structure or device for controlling the rate of water flow into or from a canal, ditch, or pipe. (2) (Dam) A device in which a leaf or member is moved across the waterway from an external position to control or stop the flow. The following types of gates apply to dams and other such structures:

[1] **Bulkhead Gate** — A gate used either for temporary closure of a channel or conduit to empty it for inspection or maintenance or for closure against flowing water when the head differential is small, e.g., a diversion tunnel closure. Although a bulkhead gate is usually opened and closed under nearly balanced pressures, it nevertheless may be capable of withstanding a high pressure differential when in the closed position.

[2] **Crest Gate (Spillway Gate)** — A gate on the crest of a spillway to control overflow or reservoir water level.

[3] **Emergency Gate** — A standby or reserve gate used only when the normal means of water control is not available.

[4] **Fixed Wheel Gate (Fixed Roller Gate, Fixed Axle Gate)** — A gate having wheels or rollers mounted on the end posts of the gate. The wheels bear against rails fixed in side grooves or gate guides.

[5] **Flap Gate** — A gate hinged along one edge usually either the top or bottom edge. Examples of bottom-

hinged flap gates are tilting gates and fish belly gates, so-called due to their shape in cross section.

[6] **Flood Gate** — A gate to control flood release from a reservoir.

[7] **Guard Gate (Guard Valve)** — A gate or valve that operates fully open or closed. It may function as a secondary device for shutting off the flow of water in case the primary closure device becomes inoperable, but is usually operated under balanced pressure, no-flow conditions.

[8] **Outlet Gate** — A gate controlling the outflow of water from a reservoir.

[9] **Radial Gate (Tainter Gate)** — A gate with a curved upstream plate and radial arms hinged to piers or other supporting structures.

[10] **Regulating Gate (Regulating Valve)** — A gate or valve that operates under full pressure and flow conditions to throttle and vary the rate of discharge.

[11] **Slide Gate (Sluice Gate)** — A gate that can be opened or closed by sliding it in supporting guides.

Gated Pipe — (Irrigation) Portable pipe with small gates installed along one side for distributing water to corrugations or furrows.

GC-MS — An analytical technique involving the use of both *Gas Chromatography (GC)* and *Mass Spectrometry (MS)*, the former to separate a complex mixture into its components and the latter to deduce the atomic weights of those components. It is particularly useful in identifying organic compounds.

GED [Gallons per Employee per Day] — A coefficient system for measuring and forecasting commercial water use by *Standard Industrial Classification (SIC) Code*. See *Gallons Per Employee (Worker) Per Day (GED)*.

Gel — (Water Quality) A jellylike material formed by the coagulation of a colloidal suspension or sol.

General Circulation Models (GCMs) — Computer-generated models that make projections of climatic conditions through the use of various factors such as atmospheric circulation, biospheric modeling and oceanic circulation. An extension of this methodology is the general circulation and conceptual hydrologic models which attempt to predict more regional and hydrographic basin precipitation and runoff patterns (discharge) based on changing global climatic conditions.

(Truckee River) General Electric Decree [California] — Represented the resolution, through a 1915 federal court consent decree, of a lengthy series of conflicts, litigation, and negotiations between the U.S. Bureau of Reclamation (USBR, then the U.S. Reclamation Service, USRS) and the Truckee River General Electric Company (predecessor to the present-day Sierra Pacific Power Company), which, in 1902, through a complicated series of real estate transactions had obtained title to the Lake Tahoe Dam, surrounding lands, and the hydropower plants on the Truckee River. The Bureau of Reclamation was in desperate need of Lake Tahoe water for its Newlands Project, then nearing completion near Fallon in Churchill County. This decree granted the Bureau of Reclamation an easement to operate the Lake Tahoe Dam and to use surrounding property owned by the power company. On its part, the Bureau of Reclamation was required to provide certain year-round flow rates (the *Floriston Rates*), measured at a stream gage near the state line, to support hydropower generation. These rates, in fact, dated back to a 1908 river flow agreement among the Truckee River General Electric Company, the Floriston Land and Power Company, and the Floriston Pulp and Paper Company and required that "...there shall be maintained a flow of water in the said Truckee River at Floriston [California] of not less than 500 cubic feet per second from the First day of March to the 30th day of September inclusive, in each year, and of not less than 400 cubic feet per second from the 1st day of October to the last day of February, inclusive, in each year." While this decree did dictate how the Lake Tahoe Dam would be operated, it did little to solve the concerns of residents of the lake and lessen California's concerns over the apportionment of Lake Tahoe waters.

General Improvement District (GID) [Nevada] — A public entity created under the provisions of the Nevada Revised Statutes and authorized by the respective county commission to provide specific services to a limited geographical area. A GID may be formed to provide one or a combination of services such as road maintenance, parks and recreation facilities, water and sanitary sewer service. etc.

General Stream Adjudication — A judicial proceeding to determine the extent and validity of all water rights within a given geographic area, for example, along a given river reach, throughout one or more river basins, or within a state.

Generator — A machine that changes water power, steam power, or other kinds of mechanical energy into electricity.

Geographic Information System (GIS) — A computer information system that can input, store, manipulate, analyze, and display geographically referenced (spatial) data to support the decision-making processes of an organization. A map based on a database or databases. System plots locations of information on maps using latitude and longitude.

Geography — The science of the earth and life, especially the description of land, sea, air, and the distribution of plant and animal life, including man and his industries, with reference to the mutual relations among these diverse

elements. As general areas of study, geography is divided into:

- [1] **Mathematical Geography** — deals with the figure and motion of the earth, of its seasons, tides, etc., of its measurement, and of its representation on maps and charts by various methods of projection;
- [2] **Physical Geography** — deals with the exterior physical features and changes of the earth's land, water, and air;
- [3] **Biological Geography** — has to do with the relation of living things to their physical environment; and
- [4] **Commercial Geography** — deals with commodities, their place of origin, paths of transactions, etc.

Geohydrology — A term which denotes the branch of *Hydrology* relating to subsurface or subterranean waters; that is, to all waters below the surface. Related terms include *Geohydrologic* and *Geohydrologist*.

Geologic Erosion — Normal or natural erosion caused by geological processes acting over long geologic periods and resulting in the wearing away of mountains, the building up of flood plains, coastal plains, etc.

Geologic Log — A detailed description of all underground features (e.g., depth, thickness, type of formation, etc.) discovered during the drilling of a well.

Geologic Time (History) — Geologic history can be divided into five great *Eras* of recorded time. These Eras and approximate time periods include:

- [1] **Archeozoic** — 4,500 million years ago (MYA) to 3,500 MYA;
- [2] **Proterozoic** (or **Prepaleozoic**) — 3,500 MYA to 586 MYA;
- [3] **Paleozoic** — 570 MYA to 230 MYA;
- [4] **Mesozoic** — 230 MYA to 65 MYA; and
- [5] **Cenozoic** — 65 MYA to present.

Each time Era (except the first) is divided into *Periods* (e.g., the Cenozoic into the *Quaternary* and the *Tertiary*) and Periods are further divided into *Epochs* (e.g., the Tertiary into the *Pliocene*, *Miocene*, *Oligocene*, *Eocene*, and the *Paleocene*). For each time period, whether an Era, Period, or Epoch, there is a corresponding rock formation by which the time period has been dated. Rock formations constituting a specific (time) Era form a *Group* of rocks; those rocks having been formed during a specific (time) Period constitute a rock *System*; and those rock formations originating during a specific (time) Epoch are said to belong to a particular *Series* of rocks. Series of rock formations are further subdivided into *Formations*, *Stages*, etc. See Appendix F-1, Geologic Time Chart.

Geological Age — (Archeology) A period of time, earlier than the present postglacial period, which can only be effectively dated geologically, that is by its rock formations and fossilized matter within those rock formations.

Geological Survey — A systematic examination of an area to determine the character, relations, distribution and origin or mode of formation, of its rock masses and other natural resources.

(United States) Geological Survey (USGS) — An agency of the U.S. Department of Interior responsible for providing extensive earth-science studies of the Nation's land, water, and mineral resources. The USGS was established by an act of Congress on March 3, 1879, to provide a permanent federal agency to conduct the systematic and scientific "classification of the public lands, and examination of the geological structure, mineral resources, and products of national domain." An integral part of that original mission is to publish and distribute the earth-science information needed to understand, plan the use of, and manage the nation's energy, land, mineral, and water resources. Since 1879, the research and fact-finding role of the USGS has grown and been modified to meet the changing needs of the nation it serves. As part of that evolution, the USGS has become the map-making agency for the federal government, the primary source of data on surface- and ground-water resources of the nation, and the employer of the largest number of professional earth scientists. The USGS is organized into three operational Divisions: the National Mapping Division (NMD), charged with development and application of mapping and *Geographic Information System (GIS)* technology; the Geologic Division (GD), which conducts geologic mapping and research; and the Water Resources Division (WRD). The mission of the Water Resources Division of the USGS is to provide the hydrologic information and understanding needed to manage the nation's water resources to benefit its residents. Typical water resource programs sponsored by the WRD include:

- [1] Data collection to aid in evaluating the quantity, quality, distribution, and use of the nation's water resources;
- [2] Analytical and interpretive water-resources appraisals to describe the occurrence, quality, and availability of surface and ground water throughout the nation;
- [3] Basic and problem-oriented research in hydraulics, hydrology, and related fields of science and engineering;
- [4] Scientific and technical assistance in hydrology to other federal, state, and local agencies;
- [5] Development and maintenance of national computer data bases and associated Geographic Information Systems (GIS) of hydrologic data — streamflow, water quality and biology, groundwater characteristics,

and water use; and

- [6] Public distribution of water-resources data and results of water-resources investigations through reports, maps, computerized information services, and other forms of release.

Programs of the Water Resources Division are funded under three types of arrangements:

- [1] **Federal Program** — funding is appropriated directly to USGS by the U.S. Congress for projects of national interest;
- [2] **Cooperative Program** — funding is shared by USGS and interested state and local agencies; and
- [3] **Other Federal Agencies (OFA) Program** — funding is supplied by federal agencies requesting technical assistance from the USGS.

The Water Resources Division's headquarters is at the USGS National Center in Reston, Virginia. Regional offices are maintained in Reston; Atlanta, Georgia; Denver, Colorado; and Menlo Park, California. With the exception of the National Research Program (NRP) centers at Reston, Denver, and Menlo Park, most of the WRD program is distributed to 51 USGS District Offices organized by state boundaries.

Geology — The science that studies the physical nature and history of the earth.

Geomorphic Surface — A mappable area of the land surface formed during a defined time period by deposition or erosion (or both, in different parts) of at least a thickness of material sufficient to accommodate a pedogenic soil. Its age (i.e., period of formation) ordinarily is defined by relations to other geomorphic surfaces, or by the soils or sediments that form or underlie the surface.

Geomorphology (Geomorphic) — That branch of both physiography and geology that deals with the form of the earth, the general configuration of its surface, and the changes that take place in the evolution of land forms. The term usually applies to the origins and dynamic morphology (changing structure and form) of the earth's land surfaces, but it can also include the morphology of the sea floor and the analysis of extraterrestrial terrains. Sometimes included in the field of physical geography, geomorphology is really the geological aspect of the visible landscape. Also see *Geomorphology, Historical*, and *Geomorphology, Process*.

Geomorphology, Historical — Historical geomorphology represents one branch of *Geomorphology* which provides the means to analyze the long-term change in landforms through the concept of cyclic change. The concepts evolved at the turn of the 20th century and were put forward by the American geologist William Morris Davis. The theory stated that every landform could be analyzed in terms of structure, process, and stage. Structure and process are treated by the science of geomorphology. However, the concept of stage introduced the element of time, and is subject to a far greater degree of interpretation. As postulated by Davis, every landform underwent development through a predictable, cyclic sequence: i.e., youth, maturity, and old age. Historical geomorphology relies on various chronological analyses, notably those provided by stratigraphic studies of the last 2 million years, known as the *Quaternary Period*. The relative chronology usually may be worked out by observation of stratigraphic relationships, with the time intervals involved established more precisely by dating methods such as historical records, radiocarbon analysis, tree-ring counting (*Dendrochronology*), and paleomagnetic studies. By applying such methods to stratigraphic data, a quantitative chronology of events is constructed that provides a means for calculating long-term rates of change. Also see *Geomorphology, Process*.

Geomorphology, Process — The second branch of *Geomorphology*, process geomorphology analyzes contemporary dynamic processes at work in landscapes. The mechanisms involved are weathering and erosion and combine processes that are in some respects destructive and in others constructive. The bedrock and soil provide the passive material, whereas the climatic regime and crustal dynamics together provide the principal active variables. Also see *Geomorphology, Historical*.

Geophysical Log — A record of the structure and composition of the earth encountered when drilling a well or similar type of test or boring hole.

Geophysics, also Geophysical — The study of the physical characteristics and properties of the earth, including geodesy, seismology, meteorology, oceanography, atmospheric electricity, terrestrial magnetism, and tidal phenomena.

Geponics — The art or science of cultivating the earth; husbandry.

Geopressed Reservoir — A geothermal reservoir consisting of porous sands containing water or brine at high temperature or pressure.

Geosol — (Geography) A stratigraphic unit of distinctive material, laterally traceable.

Geothermal — Terrestrial heat, usually associated with water as around hot springs.

Geothermal Energy — The heat energy available in the earth's subsurface, extracted from three basic sources: (1) steam; (2) hot water; and (3) hot rocks or near surface intrusions of volcanic molten rock. The normal thermal gradient of the earth's crust is such that the temperature in a deep well or mine typically increases by about 1 °F

(0.56°C) for each 100 feet of depth.

Geothermics — The science pertaining to the earth's interior heat. Its main practical application is in finding natural concentrations of hot water, the source of *Geothermal Energy*, for use in electric power generation and direct heat applications such as space heating and industrial drying processes. Heat is produced within the crust and upper mantle of the earth primarily by decay of radioactive elements. This geothermal energy is transferred to the earth's surface by diffusion and by convection movement of magma (molten rock) and deep-lying circulating water. Surface hydrothermal manifestations include hot springs, geysers, and *Fumaroles*.

Geyser — A periodic thermal spring that results from the expansive force of super heated steam. Also, a special type of thermal spring which intermittently ejects a column of water and steam into the air with considerable force.

GFD — Gallons per square foot of membrane per day; the flux for reverse osmosis membranes.

Giardia Lamblia — A flagellate protozoan that causes the severe gastrointestinal illness *Giardiasis*, when it contaminates drinking water.

Giardiasis — A disease that results from an infection by the protozoan parasite *Giardia Intestinalis*, caused by drinking water that is either not filtered or not chlorinated. The disorder is more prevalent in children than in adults and is characterized by abdominal discomfort, nausea, and alternating constipation and diarrhea.

Gigawatt Hour (GWh) — One billion *Watt-hours (Wh)*.

Gill — (1) A unit of volume or capacity in the U.S. Customary System, used in liquid measure, equal to ¼ of a pint or four ounces (118 milliliters). (2) A unit of volume or capacity, used in dry and liquid measure, equal to ¼ of a British Imperial pint (142 milliliters).

GIS — See *Geographical Information System (GIS)*.

Glacial — (1) Characterized or dominated by the existence of *Glaciers*. Used of a geologic or *Glacial Epoch* period of time, i.e., the *Pleistocene epoch*. (2) Extremely cold; icy. (3) Having the appearance of ice.

Glacial Action — The resultant effects caused by the movement of a *Glacier*. Also see *Glacial Till*, *Glaciofluvial Deposits*, *Moraines*, *Lateral Moraines*, and *Terminal Moraines*.

Glacial Drift — All earth material transported and deposited by the ice and/or by water flowing from a glacier. It consists of rock flour, sand, pebbles, cobbles, and boulders, and may occur in a heterogeneous mass or be reasonably well sorted, depending on the manner of deposition.

Glacial Epochs — (Geology) Any of those parts of geological time, from Pre-Cambrian time onward in both the Northern and Southern hemispheres, during which a much larger portion of the earth was covered by glaciers than at present. More specifically refers to the latest of the glacial epochs, that of the Quaternary period, known as the *Pleistocene Epoch*, beginning some 3 million years ago, during which Canada, northern and northeastern U.S., northern and northwestern Europe, and northern Asia, together with most high mountain regions in the Northern Hemisphere were largely covered with ice. It has been divided into a number of stages. Those recognized for the interior of North America are, in order of age: *Jerseyan* or *Nebraskan* (glacial); *Aftonian* (interglacial); *Kansan* (glacial); *Yarmouth* and *Buchanan* (interglacial); *Illinoian* (glacial); *Sangamon* (interglacial); *Iowan* (glacial); *Peorian* (interglacial); *Earlier Wisconsin* (glacial); an unnamed (interglacial) interval; *Later Wisconsin* (glacial); *Champlain* (glaciolacustrine epoch).

Glacial Outwash — Stratified material, chiefly sand and gravel deposited by meltwater streams in front of the margin of a glacier.

Glacial Period — (Geology) The period of time encompassing the *Glacial Epochs*.

Glacial Till — Till is the mixture of rocks, boulders, and soil picked up by a moving glacier and carried along the path of the ice advance. The glacier deposits this till along its path — on the sides of the ice sheet, at the toe of the glacier when it recedes, and across valley floors when the ice sheet melts. These till deposits are akin to the footprint of a glacier and are used to track the movement of glaciers. These till deposits can be good sources of ground water, if they do not contain significant amounts of impermeable clays. Also see *Moraines*, *Lateral Moraines*, and *Terminal Moraines*.

Glaciate, also Glaciation — (1) Alteration of the earth's solid surface through erosion and deposition by glacier ice. (2) To cover with ice or a *Glacier*; to subject to or affect by *Glacial Action*. (3) To freeze.

Glaciated Valley — A *U-Shaped Valley* formerly occupied by a *Glacier*.

Glacier — A huge mass of ice, formed on land by the compaction and recrystallization of snow, that moves very slowly downslope or outward due to its own weight.

Glacier Meal — Finely ground rock particles produced by glacial abrasion. Also referred to as *Rock Flour*.

Glacioeustacy — (1) The condition in which massive ice sheets store considerable quantities of water. Generally refers to periods of time during the Wisconsin age of the Pleistocene (glacial) epoch, when the oceans were some 300 to 330 feet lower than today and these waters were stored in the massive glaciers of this Ice Age period. (2)

Changes in sea level due to storage or release of water on land as snow and glacier ice.

Glaciofluvial Deposits — Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and may occur in the form of outwash plains, deltas, kames, eskers, and kame terraces. Also see *Glacial Action*, *Glacial Drift* and *Glacial Till*.

Glaciolacustrine — (Geology) Pertaining to, or characterized by, glacial and lacustrine processes or conditions applied especially to deposits made in lakes.

Glaciology — Collectively, the branches of science concerned with the causes and modes of ice accumulation and with ice action, on the earth's surface. Specifically, the branch of geology which studies the effects of glacial epochs, glaciation, and ice in modifying the earth's surface and in affecting the life and distribution of plants and animals.

Glade — An open, spacious *Wetland*, as in the *Everglades*.

Glauconite — A greenish clay mineral, a hydrous silicate of potassium, iron, aluminum, or magnesium, $(K,Na)(Al,Fe,Mg)_2(Al,Si)_4O_{10}(OH)_2$, found in greensand and used as a fertilizer and water softener.

Glaze — Homogeneous, transparent ice layers which are built up, either from supercooled rain or drizzle, or from rain or drizzle, when the surfaces on which it forms are at temperatures of 32°F (0°C) or lower. Glaze often forms a matrix for sleet pellets that fall at the same time.

Glob — A small drop; a globule.

Global Positioning System (GPS) — A system which verifies latitude and longitude of a location on the ground through the use of a transmitter and a remote (satellite) vehicle.

Globule — A tiny ball or globe, especially a drop of liquid.

Gobbet — A small amount of liquid; a drop.

“Goodness of Fit” — (Statistics) Generally speaking, a “good” econometric model is one which helps to explain or account for a large proportion of the variance in the dependent variable. Large residuals, or unexplained variations, imply a poor fit, while small residuals imply a good fit. As a more precise measure of this goodness of fit, a *Coefficient of Determination*, R^2 , is used which measures the proportion of the total variation in the dependent variable explained by the variations in the independent variable(s). Also see *Criteria Testing*.

Gooseneck — A portion of a water service connection between the distribution system water main and a meter. Sometimes referred to a *Pigtail*.

Gore-Tex — A trademark used for a water-repellant, breathable laminated fabric used primarily in outerwear and shoes.

GPCD — Gallons per capita (per person) per day — a measure of water use in municipalities. [See Appendix C-4, Gallons Per Capita Per Day (GPCD), Water Used for Public Water Supplies by State.]

GPD — Gallons per day, a measure of the rate of flow or the rate of water withdrawal from a well. Typically used when the rate of flow in cubic feet per second (cfs) is too low to be useful.

Grab Sample — Typically, a single water or air sample drawn over a short time period. As a result, the sample is not representative of long-term conditions at the sampling site. This type of sampling yields data that provides a snapshot of conditions or concentrations at a particular point in time.

Graben — (Geology) (1) A depressed tract bounded on at least two sides by faults and generally of considerable length as compared to its width. (2) A rather steeply sided valley formed when faulting caused a block-shaped area to drop relative to the surrounding terrain. Lake Tahoe, situated on the border between the states of California and Nevada, occupies a graben.

Grade — (Hydraulics) The slope of a stream bed.

Grade-Control Structure — A weir, dam, sill, drop structure, or other structure used to control erosion in stream channels with steep grades or where the slope has been destabilized.

Graded Stream — A stream in which, over a period of years, the slope is delicately adjusted to provide, with available discharge and with prevailing channel characteristics, just the velocity required for transportation of the sediment load supplied from the drainage basin. Also, a stream in which most irregularities, such as waterfalls and cascades, are absent. Streams tend to cut their channels lower at a very slow rate after they become graded.

Grade Stabilization Structure — A structure for the purpose of stabilizing the grade of a gully or other watercourse, thereby preventing further head-cutting or lowering of the channel grade.

Gradient — Degree of incline; slope of a stream bed. The vertical distance that water falls while traveling a horizontal distance downstream. Also see *Hydraulic Gradient* and *Temperature Gradient*.

Gradually Varied Flow — (Hydraulics) Non-uniform flow in which depth of flow changes gradually through a reach. Typical of normal natural valley and channel flow, which can be either steady or unsteady flows.

Grain — A unit of weight equivalent to 1/7000th pound. The hardness of water is sometimes expressed in units of grains per gallon. Also see *Avoirdupois Weight*.

- Gram** — The basic unit of weight in the *Metric System* equal to 1/1000 kilogram and nearly equal to the mass of one cubic centimeter of water at its maximum density; also equal to 1/28th of an ounce or 0.0022046 pound.
- Graminoid** — A grass or grass-like plant.
- Gram Molecular Weight (GMW)** — The mass, in grams, of a substance equal to its molecular weight. For example, the molecular weight of water (H₂O) is 18 (the sum of the atomic weights of two hydrogen atoms and one oxygen atom), so its gram molecular weight is 18 grams. The amount of a material equal to its gram molecular weight comprises one gram-mole of the substance.
- Granite** — (Geology) A light-colored plutonic igneous rock made up of interlocking grains of glassy or milky quartz, white or pink feldspar, and specks of dark mica or hornblende. The Sierra Nevada Mountains (California and Nevada) are made up of granite and similar rock types.
- Granular Activated Carbon (GAC)** — In water treatment, granular activated carbon has been used mainly for taste and odor control, with some special applications that remove *Synthetic Organic Chemicals (SOCs)* or *Volatile Organic Chemicals (VOCs)* from contaminated water. Two basic forms of GAC are typically used: (1) a coal-based carbon manufactured as an adsorbent; and (2) a wood-based carbon manufactured primarily as a substrate for biological activity. Also see *Biological Activated Carbon (BAC) Process*.
- Granular Activated Carbon Treatment (GACT)** — A filtering system often used in small water systems and individual homes to remove organics. This process can also be highly effective in removing elevated levels of radon from water.
- Grass/Forb** — An early forest successional stage where grasses and forbs are the dominant vegetation.
- Grassed Waterway or Outlet** — A natural or constructed waterway, usually broad and shallow and covered with erosion-resistant grasses, suitable to resist potential damages resulting from runoff.
- Grassland** — An area, such as a prairie or meadow, of grass or grasslike vegetation. More specifically, grasslands constitute a geographical region dominated by shrubs and grasses, receiving 10 to 30 inches of rain annually. *Alpine Grasslands* are in cool, high-elevation areas. *Temperate Grasslands*, called *Prairie* (North America), *Pampas* (South America), *Steppe*, (Asia), or *Veldt* (South Africa), are found in regions with moderate temperatures. *Tropical Grasslands*, also called *Savannas*, are found in warmer climates. Also see *Biome*.
- Graupel** — A snow or ice crystal heavily coated with *Rime*.
- Gravel** — A mixture composed primarily of rock fragments 2 mm (0.08 inch) to 7.6 cm (3 inches) in diameter. Usually contains much sand.
- Gravel Envelope** — In well construction, a several-inch thickness of uniform gravel poured into the annular space between the well casing and the drilled hole. Also referred to as *Gravel Pack*.
- Gravitational Head** — Component of total *Hydraulic Head* related to the position of a given mass of water relative to an arbitrary datum.
- Gravitational Water** — Water that moves into, through, or out of a soil or rock mass under the influence of gravity.
- Gravity Dam** — A dam constructed of concrete and/or masonry that relies on its weight for stability. Also see *Dam*.
- Gravity Flow** — The downhill flow of water through a system of pipes, generated by the force of gravity.
- Gravity Irrigation** — (1) Irrigation in which the water is not pumped but flows and is distributed by gravity, includes sprinkler systems when gravity furnishes the desired head (pressure). (2) Irrigation method that applies irrigation water to fields by letting it flow from a higher level supply canal through ditches or furrows to fields at a lower level.
- Graywater (Gray Water or Greywater)** — Waste water from a household or small commercial establishment which specifically excludes water from a toilet, kitchen sink, dishwasher, or water used for washing diapers. More commonly spelled *Greywater*.
- Grazing** — The consumption by livestock and wildlife of range or pasture forage. Although strictly grazing refers to consumption of *Forbs* (i.e., an *Herbaceous* plant other than a *Graminoid*) and graminoids (i.e., grass or grass-like plants), it is often used in a general sense to include both grazing and browsing.
- Great Basin [Nevada]** — The hydrographic Great Basin, whose unique inward-draining characteristics were first recognized by John C. Frémont as early as 1846, represents an area covering most of Nevada and much of western Utah and portions of southern Oregon and southeastern California. The region consists primarily of arid, high elevation, desert valleys, sinks (playas), dry lake beds, and salt flats. The Great Basin is characterized by the fact that all surface waters drain inward to terminal lakes, sinks or playas. Portions of Nevada which are excluded from the Great Basin include the extreme north-central portion of the state, where surface waters drain northward into the Snake River Basin, thence to the Columbia River and finally to the Pacific Ocean, and the south-eastern portion of Nevada where surface waters drain into the Colorado River Basin, thence to the Gulf of California (Mexico) and the Pacific Ocean. Within the Great Basin, major river drainage systems located wholly or partially in Nevada

include: (1) the Truckee River, whose source is Lake Tahoe (Basin) in the Sierra Nevada and located partly in California and Nevada and whose terminus is Pyramid Lake in western Nevada; (2) the Carson River, whose west and east forks originate along the eastern slopes of the Sierra Nevada in California and whose terminus is the Carson Sink (Playa) in west-central Nevada; (3) the Walker River, whose west and east forks also originate along the eastern slopes of the Sierra Nevada in California and whose terminus is Walker Lake in western Nevada; and (4) the Humboldt River, the only major river wholly contained within Nevada and whose principal source is the Ruby, Jarbidge and Independence Mountains in eastern Nevada and whose terminus is the Humboldt Sink in west-central Nevada. Pyramid Lake and Walker Lake in western Nevada represent the only lake remnants of the ancient Lake Lahontan, an Ice Age lake that covered a considerable portion of northwestern Nevada during much of the Pleistocene Epoch of some two million to 10,000 years before present. At its peak elevation, this lake joined all these river systems of western and northern Nevada. The Great Salt Lake in western Utah, the last major lake remnant of the ancient Ice Age Lake Bonneville, which once covered a large portion of northwestern Utah and spilled over into eastern Nevada, is also contained within the Great Basin and serves as the terminus for surface water drainage from the western slopes of the Wasatch Range in north-central Utah.

Great Divide — The watershed of North America comprising the line of highest points of land separating the waters flowing west from those flowing north or east, coinciding with various ranges of the Rocky Mountains, and extending south-southeast from Northwestern Canada to Northwestern South America. More commonly referred to as the *Continental Divide*.

Green Line — A specific area where a more or less continuous cover of perennial vegetation is encountered when moving away from the perennial water source.

Greenbelt — (1) A strip of natural vegetation growing parallel to a stream that provides wildlife habitat and an erosion and flood buffer zone. This strip of vegetation also retards rainfall runoff down the bank slope and provides a root system that binds soil particles together. (2) An area where measures are applied to mitigate fire, flood and erosion hazards to include fuel management (suppression of combustibles), land use planning, and development standards. More traditionally, an irrigated landscaped buffer zone between developed areas and wildlands, usually put to additional uses such as parks, bike and riding trails, golf courses, etc.

Greenhouse Effect — The phenomenon whereby the earth's atmosphere traps solar radiation, caused by the presence in the atmosphere of gases such as carbon dioxide, water vapor, and methane that allow incoming sunlight to pass through but absorb heat radiated back from the earth's surface. As the amount of carbon dioxide increases due to the combustion of fossil fuels and deforestation, especially of tropical rain forests, it is proposed that more heat energy will be retained by the earth's atmosphere, resulting in a change in rainfall and wind patterns and melting of the polar ice, thus raising the global sea level. The change in weather patterns could have devastating consequences to the world's present prime agricultural areas. A significant rise in sea level could flood many coastal cities and damage ecologically important coastal wetlands. Other heat-absorbing gases that are increasing in the atmosphere as a result of human activities are nitrous oxide and chlorofluorocarbons.

Greywater (Graywater or Gray Water) — Wastewater from clothes washing machines, showers, bathtubs, hand washing, lavatories and sinks that are not used for disposal of chemicals or chemical-biological ingredients. Less commonly spelled *Graywater* or *Gray Water*.

Grit — Dense inorganic matter, such as sand and gravel, present in water or sewage.

Grit Chamber — A small detention basin designed to permit the settling of inorganic materials while passing the organic fraction.

Grit Removal — The process of removing sand and fine gravel from a stream of domestic waste in a *Grit Chamber*.

Groin — A small jetty extending from a shore to protect a beach against erosion or to trap shifting sands.

Gross Erosion — The total of all sheet, gully, and channel erosion in a drainage basin, usually expressed in units of mass.

Gross Reservoir Capacity — The total amount of storage capacity available in a reservoir for all purposes, from the streambed to the normal maximum operating level. It does not include surcharge (water temporarily stored above the elevation of the top of the spillway), but does include dead (or inactive) storage.

Gross Duty of Water — (Irrigation) The irrigation water diverted at the intake of a canal system, usually expressed in depth on the irrigable area under the system. Also see *Net Duty of Water*.

Gross Precipitation — The amount of precipitation measured in the open; that is, before the interception process depletes the amount reaching the ground.

Gross Reservoir Capacity — The total storage capacity available in a reservoir for all purposes, from the streambed to the normal maximum operating level. Includes dead (or inactive) storage, but excludes surcharge (water temporarily stored above the elevation of the top of the spillway).

- Gross Water Requirement (Farm)** — The *Farm Delivery Requirement* plus the seepage losses in the canal system from the headworks to the farm unit plus the waste of water due to poor operation.
- Gross Water Yield** — (1) The available water runoff, both surface and subsurface, prior to use by man's activities, use by phreatophytes, or evaporation from free water surfaces. (2) The estimated or actual available water, both surface and sub-surface, prior to agricultural and phreatophytic use. Generally, this water yield is estimated for a stream or streams at a point above the highest diversion for the main body of irrigated land on a flood plain of a valley.
- Ground** — (1) The solid surface of the earth. (2) The floor of a body of water, especially the sea.
- Ground Cover** — Plants grown to keep soil from eroding.
- Ground Rupture** — The movement of the ground along one side of a *Fault* relative to the other side, caused by an earthquake.
- Ground Truth** — (Data Analysis and Interpretation) Verification of aerial photointerpretation by observers on the ground.
- Ground Water, also Groundwater** — (1) Generally, all subsurface water as distinct from *Surface Water*; specifically, the part that is in the saturated zone of a defined aquifer. (2) Water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper level of the saturate zone is called the Water Table. (3) Water stored underground in rock crevices and in the pores of geologic materials that make up the earth's crust. Ground water lies under the surface in the ground's *Zone of Saturation*, and is also referred to as *Phreatic Water*.
- Ground Water Barrier** — Rock, clay, or other natural or artificial materials with a relatively low permeability that occurs (or is placed) below ground surface, where it impedes the movement of ground water and thus causes a pronounced difference in the heads on opposite sides of the barrier.
- Ground Water Basin** — A ground-water reservoir together with all the overlying land surface and the underlying aquifers that contribute water to the reservoir. In some cases, the boundaries of successively deeper aquifers may differ in a way that creates difficulty in defining the limits of the basin. A ground-water basin could be separated from adjacent basins by geologic boundaries or by hydrologic boundaries.
- Ground Water, Confined** — Ground water under pressure significantly greater than atmospheric, with its upper limit the bottom of a bed with hydraulic conductivity distinctly lower than that of the material in which the confined water occurs.
- Ground Water Discharge** — (1) The flow of water from the *Zone of Saturation*. (2) (Water Quality) Ground water entering near coastal waters which has been contaminated by landfill leachate, deep well injection of hazardous wastes, septic tanks, etc.
- Ground Water Disposal** — Refers to wastewater that is disposed of through the ground either by injection or seepage. This includes the following discharge methods: absorption beds, injection wells, drain fields, percolation ponds, rapid infiltration basins, and spray fields (land application). Land application systems (reuse systems) are considered a groundwater disposal method as the wastewater used to irrigate turf or crops is generally intended to filter down through the soil.
- Ground Water Divide** — A line on a water table on either side of which the water table slopes downward. It is analogous to a drainage divide between two drainage basins on a land surface. It is also the line of highest *Hydraulic Head* in the water table or *Potentiometric Surface*.
- Ground Water Flow** — (1) Water that moves through the subsurface soil and rocks. (2) The movement of water through openings in sediment and rock that occurs in the *Zone of Saturation*.
- Ground Water Flow Model** — (1) A digital computer model that calculates a hydraulic head field for the modeling domain using numerical methods to arrive at an approximate solution to the differential equation of ground-water flow. (2) Any representation, typically using plastic or glass cross-sectional viewing boxes, with representative soil samples, depicting ground-water flows and frequently used for educational purposes.
- Ground Water, Free** — Unconfined ground water whose upper boundary is a free water table.
- Ground Water Hydraulics** — The study of the movement of water, especially water under pressure and water's movement through various soil medium.
- Ground Water Hydrology** — The branch of *Hydrology* that deals with ground water; its occurrence and movements, its replenishment and depletion, the properties of rocks that control ground water movement and storage, and the methods of investigation and utilization of ground water. Also referred to as *Ground Water Hydraulics*, although this term pertains more to the study of the motion of water.
- Ground Water Law** — The common law doctrine of *Riparian Rights* and the doctrine of prior appropriation (*Appropriative Rights*) as applied to ground water. See *Appropriation Doctrine* and *Riparian Doctrine*.
- Ground Water Level** — The elevation of the water table or another potentiometric surface at a particular location.

- Ground Water Mining** — (1) The withdrawal of groundwater through wells, resulting in a lowering of the groundwater table at a rate faster than the rate at which the groundwater table can be recharged. (2) The withdrawal of water from an aquifer in excess of recharge which, if continued over time, would eventually cause the underground supply to be exhausted or the water table could drop below economically feasible pumping lifts.
- Ground Water Mound** — Raised area in a water table or other *Potentiometric Surface*, created by *Ground Water Recharge*. See *Groundwater Mounding*.
- Groundwater Mounding** — Commonly, an outward and upward expansion of the free water table caused by shallow re-injection, percolation below and impoundment, or other surface recharge method (essentially, the reverse of the cone of depression effect created by a pumping well). Mounding can alter groundwater flow rates and direction; however, the effects are usually localized and may be temporary, depending upon the frequency and duration of the surface recharge events.
- Ground Water Outflow** — That part of the discharge from a drainage basin that occurs through the ground water. The term “underflow” is often used to describe the ground water outflow that takes place in valley alluvium (instead of the surface channel) and thus is not measured at a gaging station.
- Ground Water Overdraft** — The condition of a ground water basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average. Sometimes used interchangeably with *Ground Water Mining*.
- Ground Water, Perched** — Ground water that is separated from the main body of ground water by an impermeable (unsaturated) layer.
- Ground Water Plume** — A volume of contaminated groundwater that extends downward and outward from a specific source; the shape and movement of the mass of the contaminated water is affected by the local geology, materials present in the plume, and the flow characteristics of the area groundwater.
- Ground Water Prime Supply** — The long-term average annual percolation to the major ground water basins from precipitation falling on the land and from flows in rivers and streams. Also includes recharge from local sources that have been enhanced by construction of spreading ground or other means. Recharge of imported and reclaimed water is not included nor is recharge using applied irrigation water.
- Ground Water Recharge** — (1) The infiltration of water into the earth. It may increase the total amount of water stored underground or only replenish the groundwater supply depleted through pumping or natural discharge. (2) The natural or intentional infiltration of surface water into the *Zone of Saturation*, i.e., into the *Ground Water*. (2) Inflow of water to a ground water reservoir (*Zone of Saturation*) from the surface. Infiltration of precipitation and its movement to the water table is one form of natural recharge. Also, the volume of water added by this process.
- Ground Water Registration** — A statement made by a well owner registering the *Beneficial Use* of ground water. See (*Prior Appropriation Doctrine*).
- Ground Water Reservoir** — An aquifer or aquifer system in which ground water is stored. The water may be introduced into the aquifer by artificial or natural means.
- Ground Water Reservoir Storage** — The amount of water in storage within the defined limit of the aquifer.
- Ground Water Runoff** — A portion of runoff which has passed into the ground, has become ground water, and has been discharged into a stream channel as spring or seepage water.
- Ground Water Storage** — The storage of water in ground water reservoirs.
- Ground Water Storage Capacity** — The space or voids contained in a given volume of soil and rock deposits. Also, the reservoir space contained in a given volume of deposits. Under optimum conditions of use, the usable ground water storage capacity volume of water that can be alternately extracted and replaced in the deposit, within specified economic limitations.
- Ground Water System** — All the components of subsurface materials that relate to water, including *Aquifers* (confined and unconfined), *Zones of Saturation*, and *Water Tables*.
- Ground Water Table** — (1) The depth below the surface of the ground where the soil is saturated (the open spaces between the individual soil particles are filled with water). (2) The upper surface of the *Zone of Saturation* for underground water. It is an irregular surface with a slope or shape determined by the quantity of ground water and the permeability of the earth materials. In general, it is highest beneath hills and lowest beneath valleys. Also referred to as the *Water Table*.
- Ground Water, Unconfined** — Water in an aquifer that has a water table.
- Ground Water Under the Direct Influence (UDI) of Surface Water** — Any water beneath the surface of the ground with: (1) a significant occurrence of insects or other microorganisms, algae, or large-diameter *Pathogens*; or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Under direct influence conditions are

determined for individual sources in accordance with criteria established by the state.

Ground Water Velocity — The rate of water movement through openings in rock or sediment. Also see *Darcy's Law*.

Grout Curtain — (Dam) A barrier produced by injecting grout into a vertical zone, usually narrow horizontally, in the foundation of a dam to reduce seepage under the dam. Also referred to as *Grout Cutoff*.

Growing Season — (1) The period and/or number of days between the last freeze in the spring and the first frost in the fall for the freeze threshold temperature of the crop or other designated temperature threshold. (2) Also, the average number of days exceeding 32°F (0°C).

Growth Management Program — A program comprised of several techniques to coordinate public and private decisions about the location and timing of development in order to best utilize environmental and physical resources.

Gush — To flow forth suddenly in great volume.

Gulf — A portion of an ocean or sea extending into the land; a partially landlocked sea, usually larger than a bay.

Gulf Stream — (Geography) The warm ocean current of the North Atlantic. It originates in the westward equatorial current caused by the trade winds, but is deflected northward by the coast of South America into the Gulf of Mexico; issuing thence, it follows approximately the coast of North America to the island of Nantucket, where it is deflected more to the eastward. Its influence is felt as far as Norway. Where it issues from the Gulf of Mexico, its velocity is more than four miles per hour, but in much of the northern part of the Atlantic its velocity is only 10 to 15 miles per day.

Gully, also Gulley — (1) A channel or miniature valley cut by concentrated runoff but through which water commonly flows only during and immediately after heavy rains or during the melting of snow; may be *Dendritic* or branching or it may be linear, rather long, narrow, and of uniform width. (2) A small valley or gulch. The distinction between *Gully* and *Rill* is one of depth. A gully is sufficiently deep that it would not be obliterated by normal tillage operations, whereas a rill is of lesser depth and would be smoothed by ordinary farm tillage.

Gully Erosion — The widening, deepening, and headcutting of small channels and waterways due to erosion; severe erosion in which trenches are cut to a depth greater than 30 centimeters (approximately one foot). Also see *Erosion*.

Gully Reclamation — Projects designed to prevent erosion in gullies by either filling them in or planting vegetation to stabilize the banks. May include the use of small dams of manure and straw, earth, stone, or concrete to collect silt and gradually fill in channels of eroded soil.

Gumbo — A fine, silty soil, common in the southern and western United States, that forms an unusually sticky mud when wet.

Gurgitation — A whirling or surging motion, as of water.

Guttation — The loss of water in liquid form from the uninjured leaf or stem of the plant, principally through water stomata (the microscopic opening in the epidermis of plants, surrounded by guard cells and serving for gaseous exchange); the exudation of water from leaves as a result of root pressure.

Gutter — (1) A channel at the edge of a street or road for carrying off surface water. (2) A trough fixed under or along the eaves of a building for draining rainwater from a roof. (3) A furrow or groove formed by running water.

Guzzler — A manmade water collecting device used in wildlife management. In a typical configuration, the guzzler is constructed of a large impervious surface, say a plastic apron, which catches precipitation and feeds it into a storage container. An opening is then provided in the container which allows access to wildlife to drink.

Gymnosperms (Gymnospermae) — (Botanical) One of the two classes within the plant family *Spermatophyta*, or seed plants, the other being *Angiosperms (Angiospermae)*. Gymnosperms are of lower phylogenetic rank, as they includes plants having the seeds naked, or not enclosed in an ovary. This class includes the extinct orders (sub-classes) *Bennettitales* and *Cordaitales*, and the orders *Cycadales*, *Ginkgoales*, *Gnetales*, and *Pinales*. Also see *Angiosperms*.