

HID 362

MESLEKİ İNGİLİZCE 2

Hafta 3

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2020-2021 Bahar Dönemi #evdekal

geology - broadly, the study of Earth and other planetary bodies

hydrogeology - the study of subsurface water, including its physical and chemical properties, geologic environment, its role in geologic processes, natural movement, recovery, contamination, and utilization;

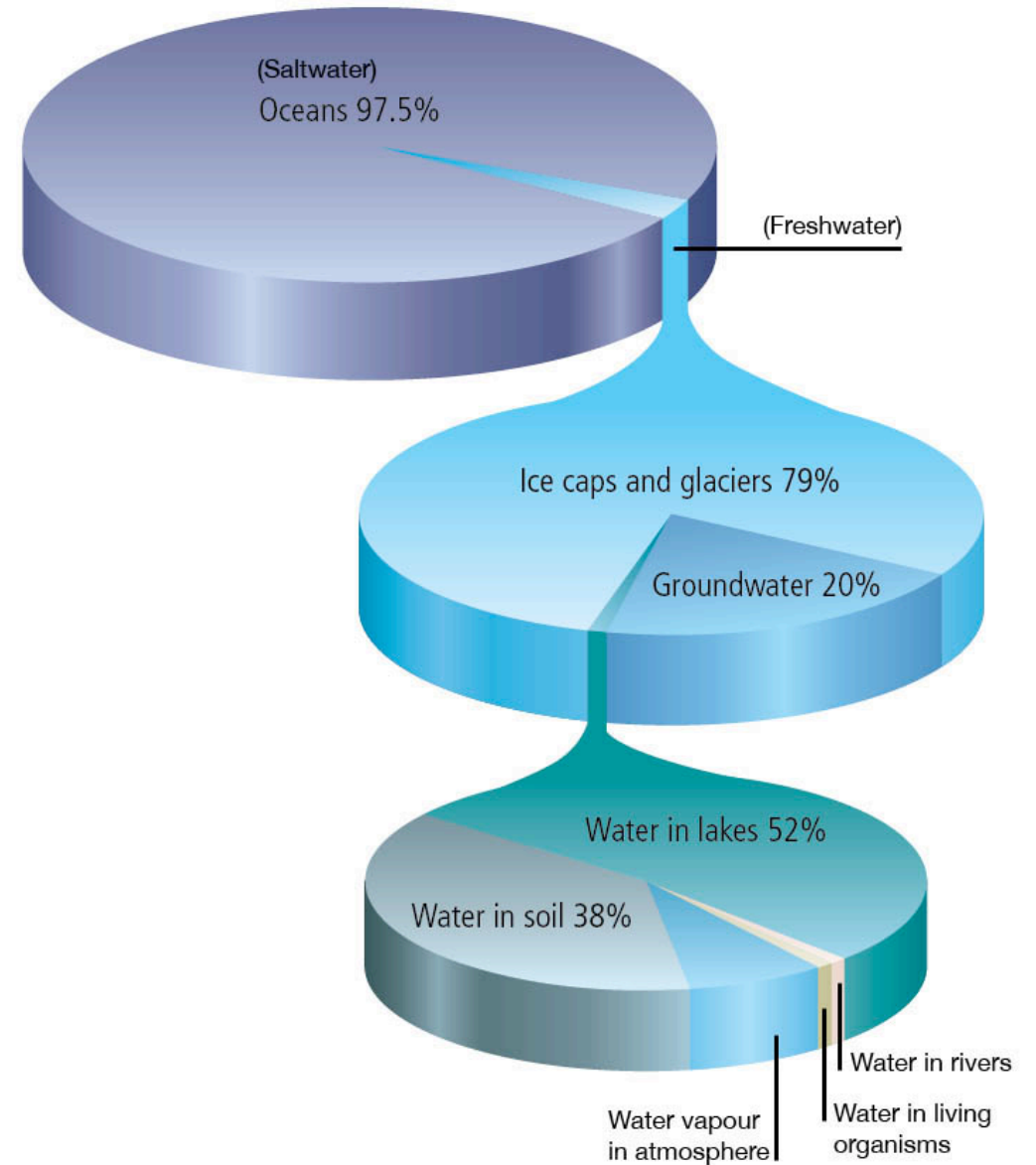
groundwater - generally all water beneath the land surface;

hydrology - a science that involves the study of waters of the Earth

hydrologic cycle - the circulation of water over, upon, and beneath the surface of the Earth.

Water Distribution on this Planet – Earth

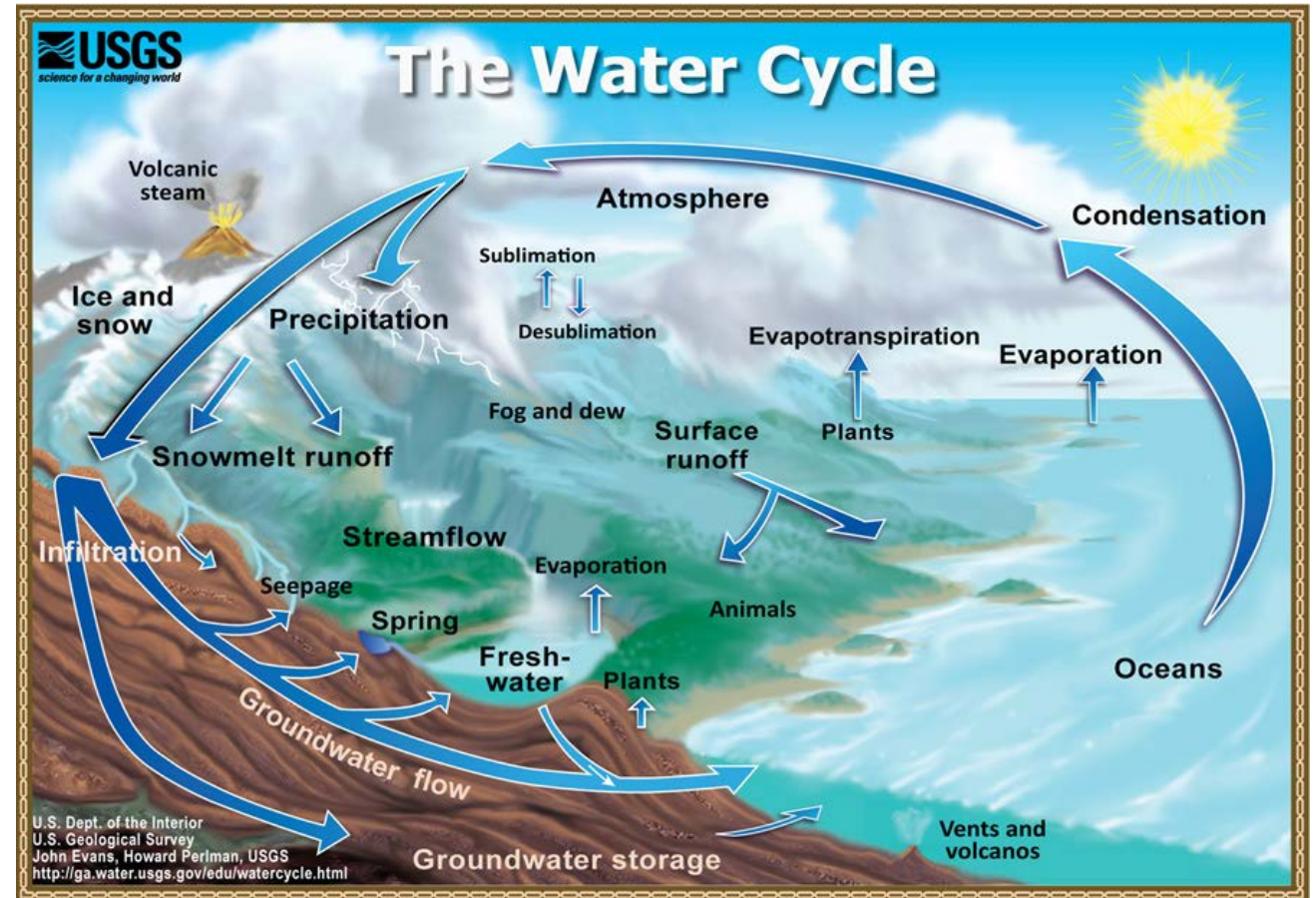
Saltwater
Ocean
Freshwater
Ice cap
Glacier
Groundwater
Lake
River
Soil
Water vapour
Atmosphere
Living organism



<https://sanits591.wordpress.com/2012/11/12/water-distribution-on-this-planet-earth/>

The Water Cycle

Precipitation
Evaporation
Evapotranspiration
Condensation
Sublimation
Snowmelt
Runoff
Streamflow
Surface runoff
Infiltration
Seepage
Spring
Groundwater flow
Groundwater storage



WATERSHED-BASIN

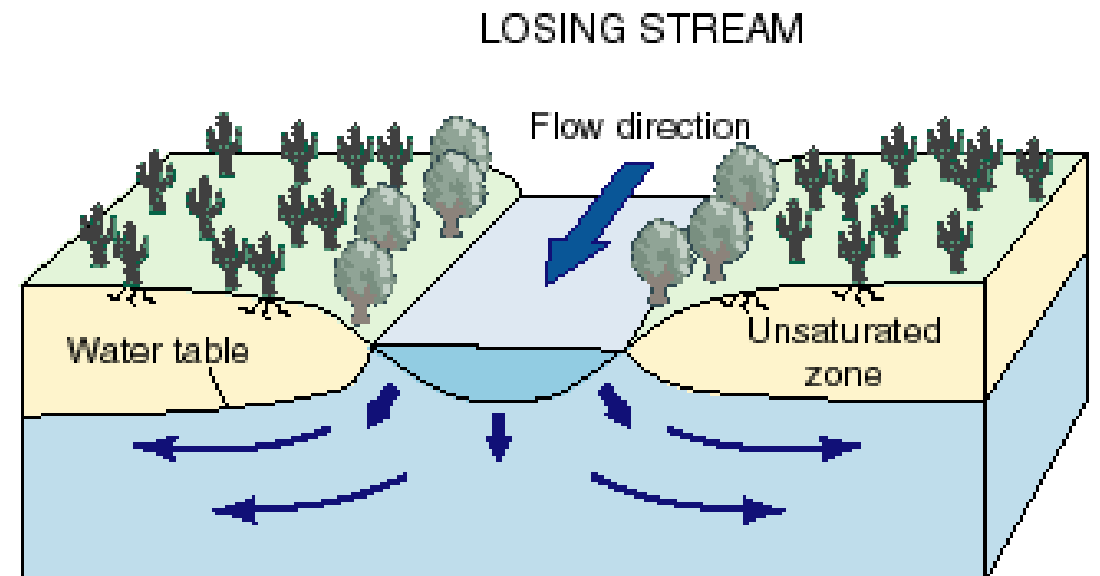
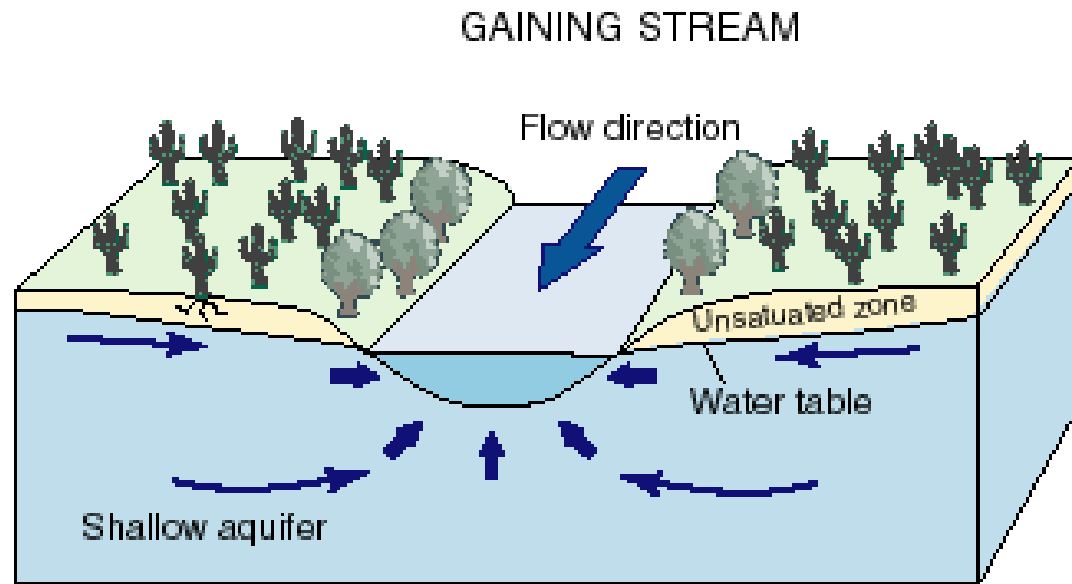
watershed - the area of land drained by a single stream or river or, in the case of karst, drained by a single doline or group of dolines. Watershed and catchment are equivalent terms.

catchment - the area of land drained by a single stream or river or, in the case of karst, drained by a single doline or group of dolines. Catchment and watershed are equivalent terms.

divide - a topographic high (or ridge) separating surface watersheds (catchments). A ground water divide is elevated area, line, or ridge of the potentiometric surface separating different groundwater flow systems.

basin - (1) an aquifer or aquifer system whose boundaries are defined by surface-water divides, topographic barriers; (2) a structural basin in which the aquifers are isolated from adjacent aquifers; (3) a geographical region drained by a network of rivers and/or streams.

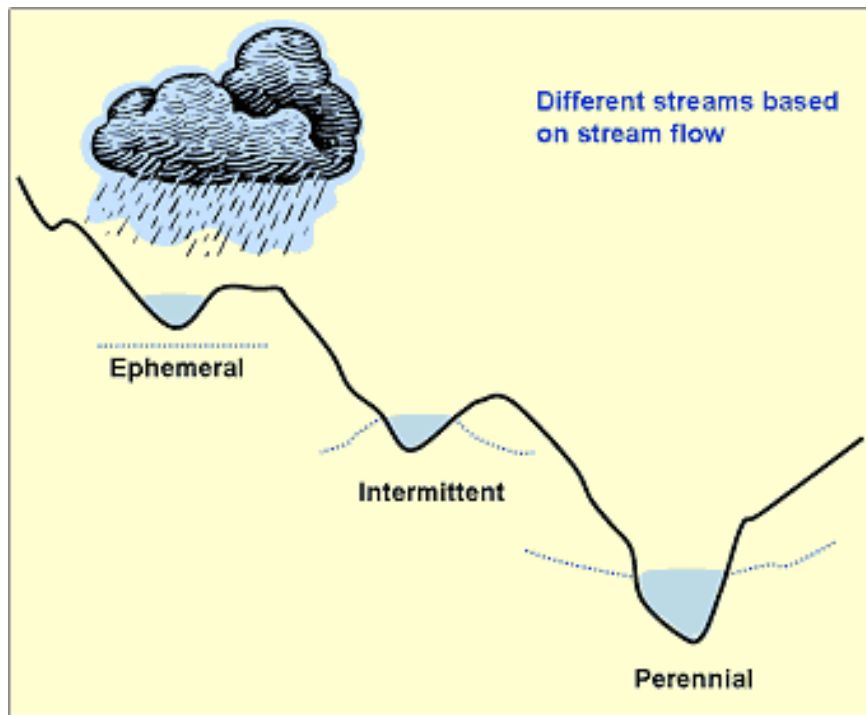
surface water – water in streams, rivers, lakes, wetlands, and reservoirs;



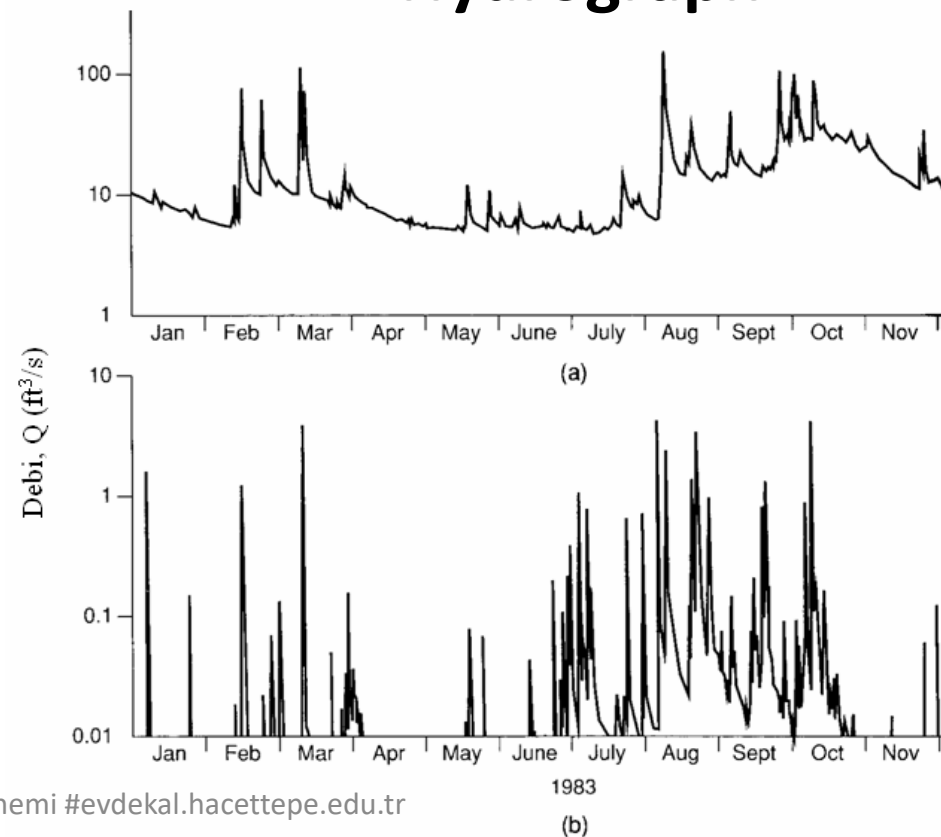
perennial stream - a stream that flows all year. Compare with ephemeral and intermittent streams

ephemeral stream- a stream that flows only briefly after rainfall events. Ephemeral streams commonly losing streams.

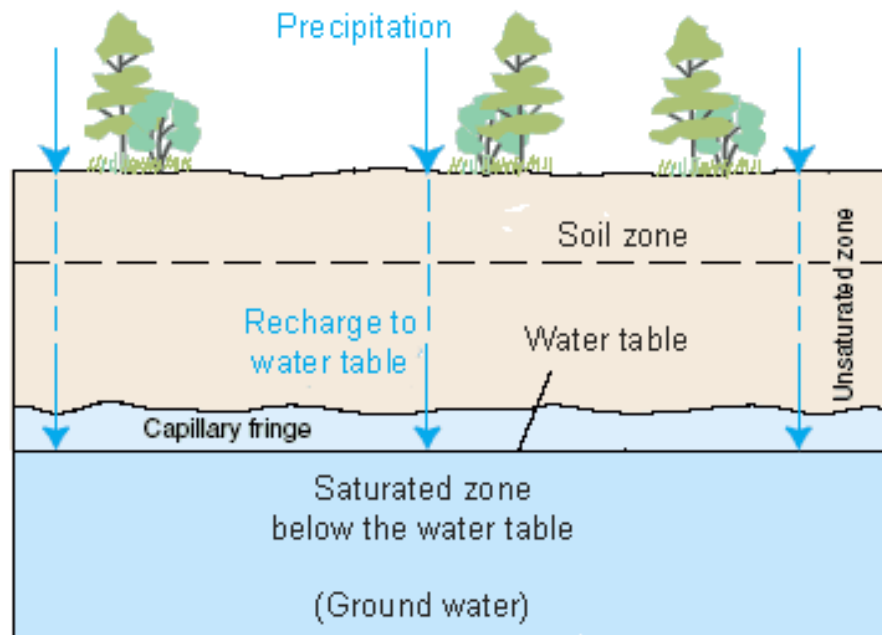
intermittent - a stream which typically does not flow all year long, usually flowing only in the “wet” season.



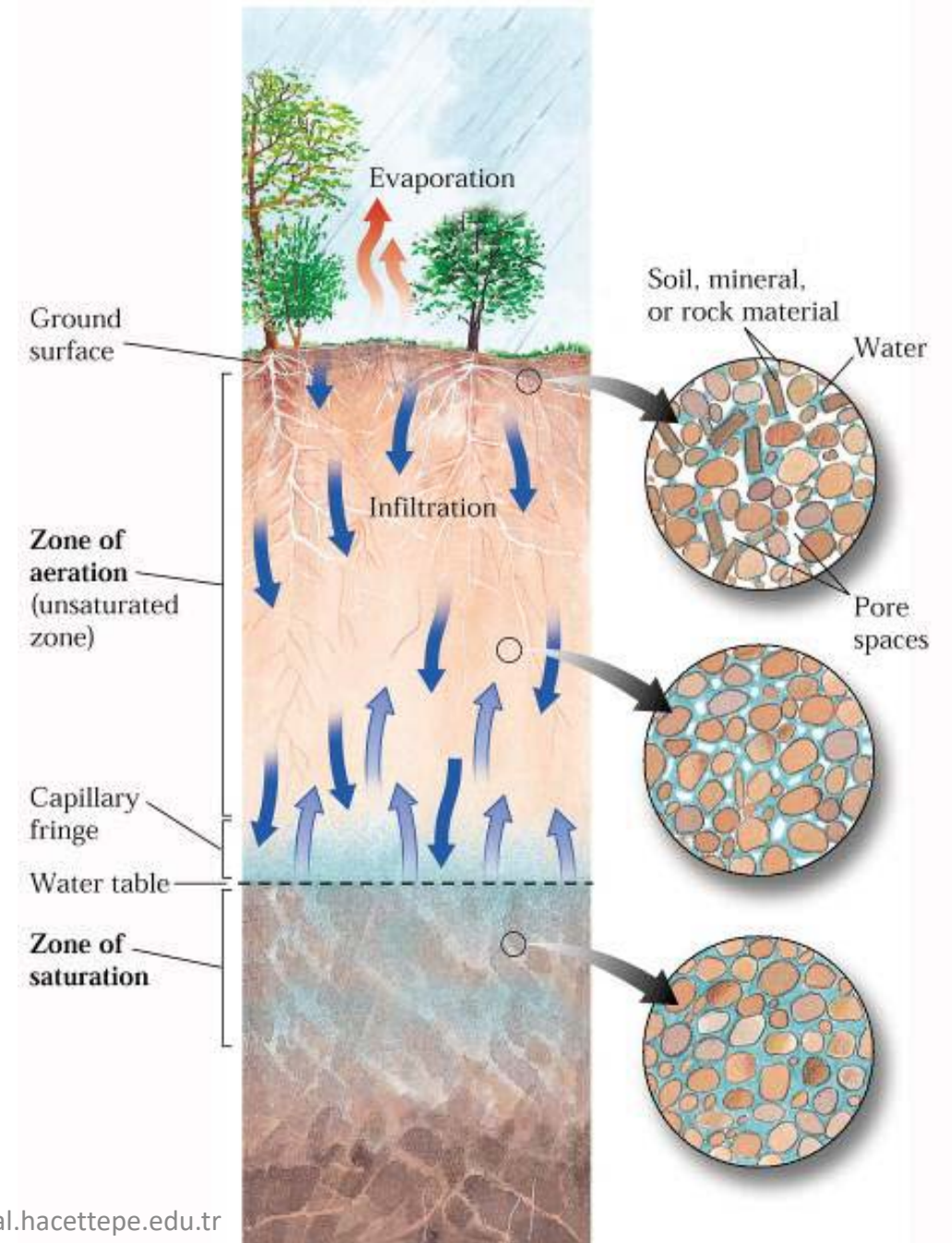
Hydrograph

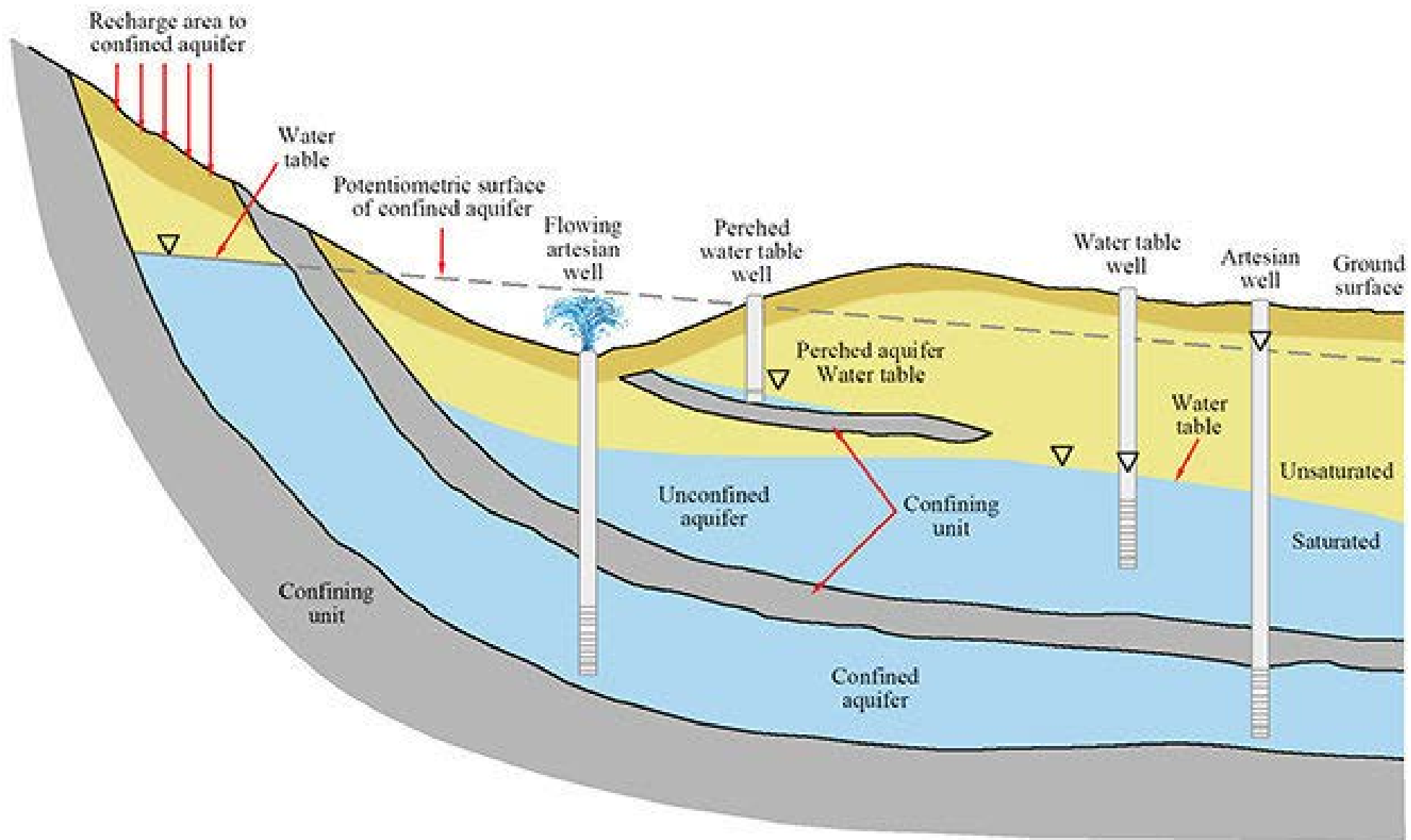


OCCURENCE OF GROUNDWATER



<http://www.turfdrain.com/february-2017-understanding-water-tables-capillary-fringe/>





aquifer - a consolidated or unconsolidated geologic unit (material, stratum, or formation) or set of connected units that yields water of suitable quality to wells or springs in economically usable amounts.

aquiclude- a geologic material, stratum, or formation that contains water (i.e., has porosity) but does not transmit it (i.e., has zero or negligible permeability).

aquifuge - a geologic material, stratum, or formation that neither contains nor transmits water (i.e., has zero or negligible permeability and porosity).

aquitard - a geologic material, stratum, or formation of low permeability (a confining unit) that transmits significant amounts of water on a regional scale or over geologic time.

PROPERTIES OF POROUS MEDIA

porosity (φ or n) - the volume of the voids divided by the total volume of porous medium.

specific retention (S_r) - the ratio of the volume of water a porous material will retain against gravity drainage to the total volume of the porous material [-].

specific yield (S_y) - the volume of water that a saturated porous medium can yield by gravity drainage per unit volume of the porous medium.

DARCY'S LAW

Darcy's Law - the discharge of water (Q) through a unit area of porous medium is directly proportional to the hydraulic gradient (i) normal to that area (A). The constant of proportionality is the hydraulic conductivity (K).

$$Q = K.i.A$$

hydraulic conductivity (K) - the volume of fluid that flows through a unit area of porous medium for a unit hydraulic gradient normal to that area.

darcian velocity (q) - the discharge through an area of porous medium divided by that area. Also called specific discharge. $[L\ t^{-1}]$. It is equal to the discharge divided by the area.

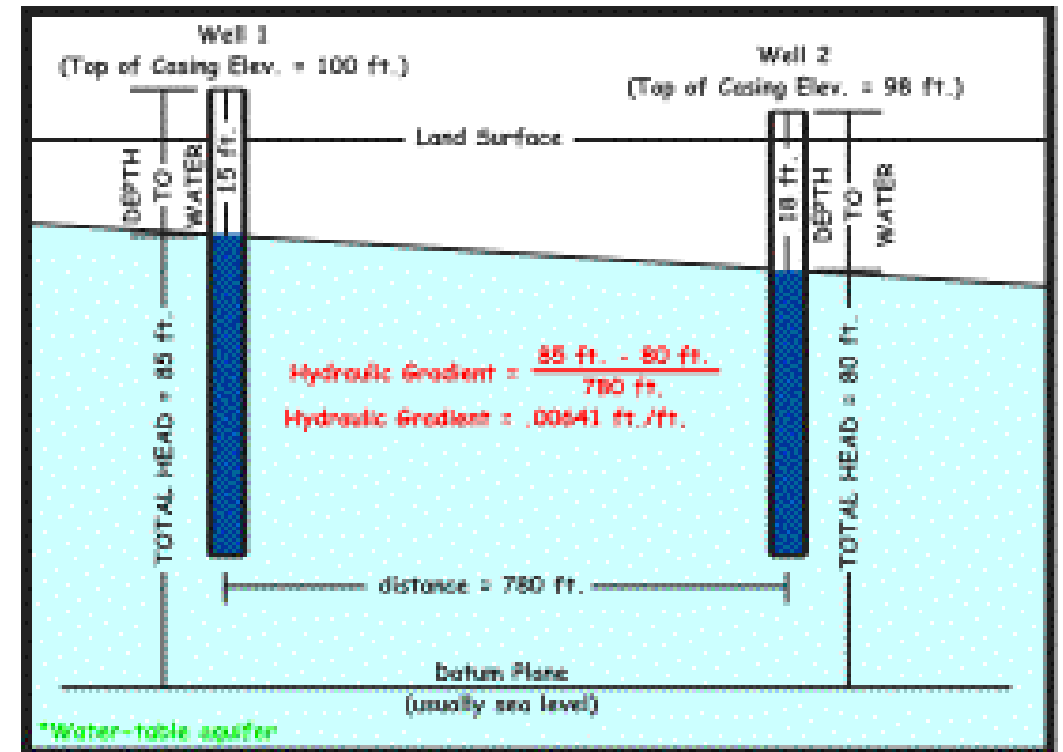
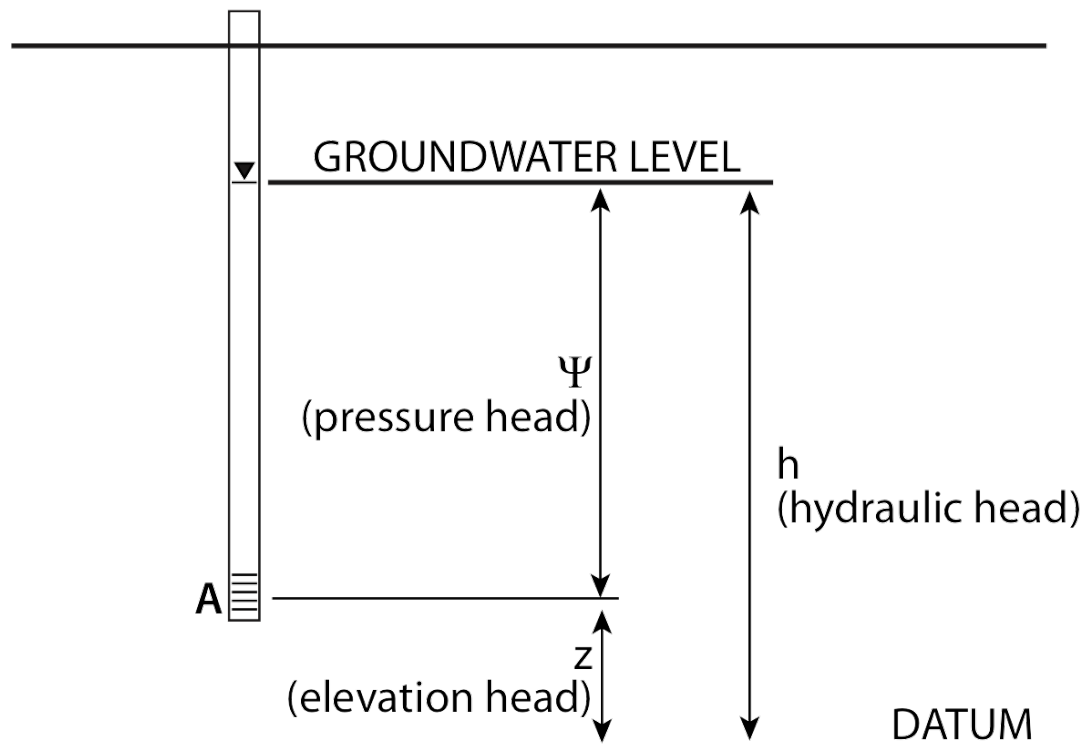
$$q = Q/A$$

specific discharge (q) - the discharge per unit area normal to flow, same as the darcian velocity $[L/t]$.

effective porosity (ϕ_{eff}) - the porosity contributing to the flow of water or the interconnected porosity.

hydraulic gradient (i or Vh)- the change in hydraulic head with direction.

hydraulic head (h) - the elevation in a well in reference to a specific datum; the mechanical energy per unit weight of water [L].



SPRINGS

spring - a discharge (or issue) of water from the earth; a natural fountain.

A spring occurs when ground water intersects the surface and water seeps through and flows on land.



<https://www.kusturclub.com/tr/pamukkale>



KAPUZBAŞI ŞELELERİ_sultans



<http://www.arpanuttravel.com/destinations/pamukkale/>



<http://www.hurriyet.com.tr/seyahat/galeri-bozkirin-ortasinda-bir-vaha-cifteler-40387052#page-1>

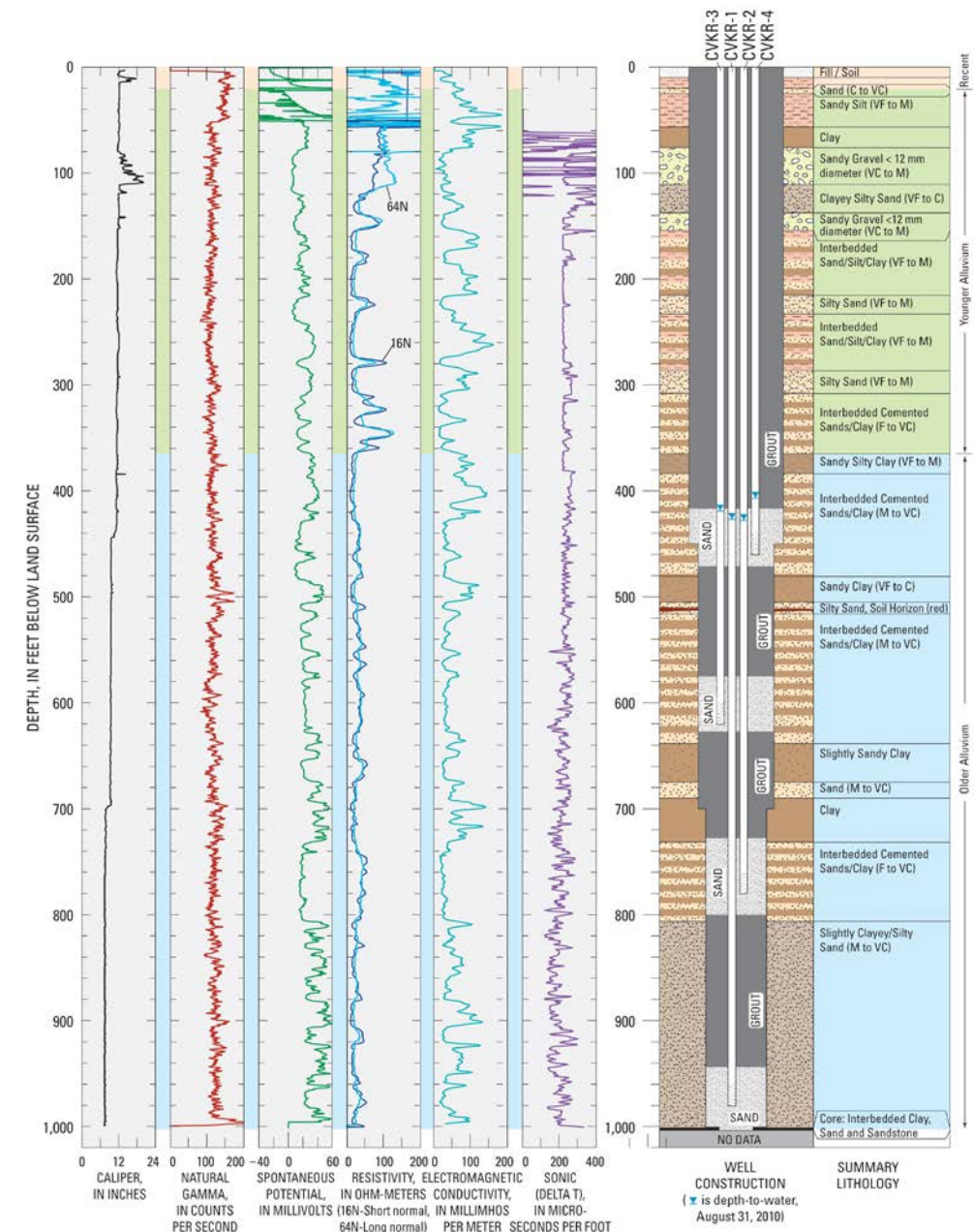
borehole - a hole drilled into the earth into which well casings or piezometers may be installed.

well - any artificial excavation or borehole constructed for the purposes:

of exploring for or producing groundwater, or

for injection, monitoring or dewatering purposes.

well log - an accurately record made during or after drilling that shows the value of various parameters (e.g., formation thickness, well diameter, fractures, geophysical properties, geochemical data, or flow data) with depth in the well.



<https://ca.water.usgs.gov/projects/cuyama/cuyama-wells.html>