

Glossary of Commonly Used Terms

1041

1041 Permit - The 1041 Land Use authorities give counties and municipalities control over” projects of statewide interest,” such as pipelines and water projects, within their boundaries. These powers were granted through House Bill 1041 (1974).

A

Abandonment - Abandonment is the loss of all or part of a water right due to non-use or the failure to prove diligence on a conditional water right resulting in the loss of the right and its placeholder status relative to other water rights. Absolute water rights are only declared abandoned by the water court when the water right holder expresses an intent to abandon the right.

Absolute Water Right – An absolute, or perfected water right, is a water right that is granted permanent status when water has been physically diverted or controlled and put to beneficial use. A water right is granted for a specific amount of water to be put to a beneficial use from a specific point of diversion or control, for a certain purpose and for some rights a specified period of use.

Acid rain - Rainfall contaminated by sulfur dioxide released into the atmosphere through the burning of fossil fuels, primarily coal. Acid rain may damage plants, animals and sensitive ecosystems.

Acre-Foot – An acre-foot is the standard unit of measurement for standing or stored water. It is the amount of water required to cover one acre of land (43,560 square feet) one-foot deep. An acre-foot is equal to 325,851 gallons.

Adjudication - A judicial process through which the existence of a water right is confirmed by court decree. With the court decree, the water right is given its priority among all other water rights, determining its place in line, or seniority, when there is not enough water to meet the needs of all users.

Administration - Administration is the action taken by the State Engineer’s Office when there is not enough water physically available to meet the demands of all water rights holders within a river basin. Through the process of administration, senior water rights are satisfied by shutting off water supplies to junior water rights, beginning with the most recent priority dates and moving back chronologically, until the all the supply of water available for diversion is expended.

Algae Bloom - A sudden onset of rapid growth of aquatic plant life caused by the introduction of high amounts of nutrients in a waterway. Runoff from agricultural and/or urban areas carrying large amounts of fertilizers, detergents or other compounds that

promote plant growth can be the cause of an algal bloom. The sudden proliferation of algae rapidly decreases the amount of oxygen available for fish and other aquatic life and can cause a large fish kill.

Alluvial Aquifer – Alluvial aquifers are generally shallow sand and gravel deposits laid down over time in a river channel or floodplain. The name “alluvial” refers to the loose, unlayered nature of the material – often silt, clay, sand, and gravel, deposited by running water in and around rivers.

Ambient - relating to the immediate surroundings of something.

Appropriation Date - An appropriation date is the earliest date approved by the water court demonstrating that a water rights holder intends to put water to beneficial use. The appropriation date places a water right in chronological order among other water rights, with those older being senior to it and those younger characterized as junior. In times of shortage, the oldest rights have first priority, with remaining water allocated in chronological order until there is no more water available for use. The older a water right’s appropriation date, the greater its value due to the likelihood it will have water in times of short supply.

Aquifer -An aquifer is an underground geologic formation containing water that can be tapped through wells or springs. There are two types of aquifers: tributary and non-tributary. A tributary aquifer is hydrologically connected to surface water sources, such as rivers, streams and lakes. Removing water from tributary aquifers depletes the connected surface water sources as well. Non-tributary groundwater is not physically connected to any surface water sources.

Arid / Semi-Arid - Aridity describes the relative lack of rain or snowfall to an area. Arid areas generally receive less than 10” of rain per year on average. In arid areas, plant and animal life forms must be adapted to living without significant moisture. A semi-arid area receives more precipitation annually than the arid areas, between 10” and 20” per year, yet is still considered relatively dry. Colorado, as a whole, is considered to be semi-arid, since the entire state receives on average approximately 17” of precipitation annually.

Arkansas Basin Kansas Colorado Compact – The underlying document used to administer the water transported from the mountains in Colorado downstream to Kansas for purposes of irrigation. The purposes of the compact are to: settle existing disputes and remove causes of future controversy between the states of Colorado and Kansas, and between citizens of one and citizens of the other state, concerning the waters of the Arkansas river and their control, conservation and utilization for irrigation and other beneficial purposes; and equitably divide and apportion between the states of Colorado and Kansas the waters of the Arkansas river and their utilization as well as the benefits arising from the construction, operation and maintenance by the United States of John Martin Reservoir Project for water conservation purposes.

Artesian Well - An artesian well taps underground water which is under sufficient pressure that water rises to the surface naturally.

Artificial Recharge - Artificial recharge is the process of spreading or impounding water on the land to increase the infiltration through the soil and percolation to the aquifer or of injecting water by wells directly into the aquifer. Surface infiltration systems can be used to recharge unconfined aquifers only.

Augmentation Plan - A way for junior appropriators to obtain water supplies through term and conditions approved by a water court that protect senior water rights from the depletion caused by the new diversions. Typically, this will involve storing junior water when in priority and releasing that water when a call comes on; purchasing stored waters from federal entities or others to release when a river call comes on; or purchasing senior irrigation water rights and changing the use of those rights to off-set the new user's injury to the system. These plans can be very complex and it is suggested that an engineering consultant be hired to allow for proper consideration of hydrologic and water right factors.

Augmentation Source - The supply of water used to replace depletions in an augmentation plan.

B

Base Flow – the portion of streamflow that comes from "the sum of deep subsurface flow and delayed shallow subsurface flow".

Basin - A basin is an area of land that collects water as either snow melt or rainfall and drains into a common body of water, such as a stream or a river.

Bed Sediment – deposition of silt, sand, and rock along the bottom of a water channel crating an underlying layer of soil under the water.

Beneficial Use - Water in Colorado must be diverted for a purpose used beneficially to get a water right. Beneficial use is the use of a reasonable amount of water necessary to accomplish the purpose of the appropriation, without waste. Some common types of beneficial use are; irrigation, municipal, wildlife, recreation, mining, household, etc.

Biological Opinion - A document that is the product of formal consultation, stating the opinion of the Service on whether or not a Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

Bureau of Land Management (BLM) - The Bureau of Land Management is a federal agency within the U.S. Department of the Interior that administers more than 247.3 million acres of public lands in the United States which constitutes one-eighth of the

landmass of the country. The agency manages 221 wilderness areas, 23 national monuments and some 636 other protected areas as part of the National Landscape Conservation System totaling about 30 million acres.

Bureau of Reclamation - The U.S. Bureau of Reclamation (USBR, BOR, BuRec, Reclamation) is a federal agency within the U.S. Department of the Interior whose historical purpose was to open the lands of the western U.S. to settlement through the construction of water projects to irrigate arid lands. They were responsible for building many of the west's major water projects, dams, reservoirs, tunnels and canals, building over 180 projects in 17 western states. Their primary mission has recently evolved into the role of water managers, rather than builders of new water projects.

Bypass Flow - Bypass flow in soil describes the process of preferential water movement through a relatively small fraction of continuous macropores or highly permeable pore regions while most of the surrounding soil volume (i.e., the porous matrix) is excluded.

C

Call - A call begins with a senior water user's request to a division engineer or ditch rider to restrict the use of water among junior water users, since there is not enough water in the system to allow all diversions of water. Starting with the most junior user, water diversions are shut-off until the more senior rights are satisfied.

Center Pivot Irrigation - Center-pivot irrigation (sometimes called central pivot irrigation), also called waterwheel and circle irrigation, is a method of crop irrigation in which equipment rotates around a pivot and crops are watered with sprinklers.

Check Structure - A device used to control the flow, pressure or direction of water through a canal or irrigation system. Check structures allow for more efficient use of water in a canal by regulating flows in a manner where less water is needed to accomplish a beneficial use.

Clean Water Act - the primary federal law in the United States governing water pollution. ... The first FWPCA was enacted in 1948, but took on its modern form when completely rewritten in 1972 in an act entitled the Federal Water Pollution Control Act Amendments of 1972.

Colorado Water Conservation Board (CWCB) - The Colorado legislature created the CWCB within the Department of Natural Resources in 1937. The board is comprised of 10 voting members appointed by the Governor and confirmed by the Senate and 5 non-voting members. The CWCB's mission is to "conserve, develop, protect, and manage Colorado's water for present and future generations."

Compact - A compact is an agreement among states, approved by Congress, resolving interstate matters. When compacts are made concerning rivers, the compact establishes

how states along a river allocate its water. Colorado has entered into nine interstate compacts agreeing to terms and conditions of water allocation.

Compact Call – The right of a water user to take water out of the river system down a channel to a field for irrigation. The compact call is the first call for water out of John Martin Reservoir by either the State of Kansas or the State of Colorado District 67 Ditches.

Conditional Water Right - A conditional water right is a legal right that holds a place in line for a planned water project this is not yet complete. Conditional rights are granted to provide the time to get a water diversion or storage project planned and constructed without losing the priority date of when the project was originally conceived. Evidence that plans to develop the project are still moving forward must be proven to a water court judge every six years in an act called “diligence” to keep the conditional water right on the books and preserve its place in line among other water appropriators.

Conjunctive Use - Conjunctive use is the coordinated use of both ground and surface water resources to maximize the availability of both. In wet periods, surface water will generally be the preferred water source, and excess surface water may be used to recharge underground aquifers. During drought periods when surface water is scarce, a greater reliance can be placed on ground water to meet consumptive needs. The Front Range, with substantial ground water resources, is increasingly looking to conjunctive use as a way to optimize their water supplies.

Conservancy District - A conservancy district is a taxing body created for the purpose of constructing, paying for and operating water projects. A conservancy district can cover a very large area of the state or a very small one, depending upon how many people agree to be included and the area benefiting from the project or projects.

Conservation - preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife.

Conservation District - A conservation district is a policy-making body that is chartered by the General Assembly of Colorado for the purpose of protecting and developing the water resources of a portion of the state. Many conservancy districts can be located within the boundaries of a conservation district.

Consumptive Use - Consumptive use is the amount of water that does not return to its source after it has been diverted and put to beneficial use. Not all water is physically consumed when it is diverted. Unconsumed water that returns to a water supply through a municipal or industrial wastewater system or an irrigation system’s tailwater is called return flow. Return flows are then available for other downstream water users.

Continental Divide – A drainage divide on a continent such that the drainage basin on one side of the divide feeds into one ocean or sea, and the basin on the other side either feeds into a different ocean or sea, or else is endorheic, not connected to the open sea.

Contributing Area - A grid giving contribution to flow for each cell

Cubic Feet per Second - A cubic foot per second is one cubic foot of water passing by a single point for one second. CFS is the standard unit of measure for water that is in motion, such as water flowing in rivers and streams. A flow rate of one cfs would mean that 7.48 gallons passed by a point of reference in one second or 448.8 gallons of water in one minute. Over the course of 24 hours, a flow of one cfs would produce 646,317 gallons or almost the equivalent of two acre-feet per day.

D

Dam - A dam is a physical structure that impounds and controls the flow of a waterway, backing up water to allow for the diversion or storage of water. Dams moderate the flow of water by absorbing flood or high season flows and controlling the amount of water that is subsequently released downstream. A dam is not the equivalent of a reservoir, though constructing dams on rivers and streams typically form reservoirs behind them.

Decree - An official document issued by the court defining the priority, amount, use, timing and location of a water right.

Deficit Irrigation - An optimization strategy in which irrigation is applied during drought-sensitive growth stages of a crop. Outside these periods, irrigation is limited or even unnecessary if rainfall provides a minimum supply of water.

Depletion - A depletion is the amount of water lost to a river system or aquifer when water is diverted from it. (See consumptive use.)

Desalination - The process of removing dissolved salts from brackish groundwater or seawater or other saline waters. (Desalinization is used as an interchangeable term.)

Diligence - Diligence is the effort accomplished by a conditional water right holder to physically use water for a beneficial purpose, thereby perfecting that water right and making it absolute. Diligence must be proved to the water court every six years for the conditional right to remain on the books and hold its place in line. When diligence is not satisfactorily proved to the water court, it can be declared abandoned and its conditional decree date lost.

Discharge Permit - A permit required by the federal Clean Water Act to introduce effluent, or waste water, into waters of the state. (see also National Pollutant Discharge Elimination System or NPDES.)

Ditch Rider - “Ditchrider” is the nickname applied to anyone who manages a ditch system, canal network or water distribution system and is responsible for ensuring that senior water rights are met first or that ditch company members receive the amount of water owned.

Diurnal - Diurnal describes the fluctuations of streamflow throughout the day. The rate of snowmelt increases with periods of sun exposure and increased temperature. Stream flows increase after the sun exposure of daylight hours and corresponding decrease after periods of darkness.

Diversion - The removal of water from its natural course or location by means of ditches, headgates, reservoirs, pipeline, conduit, well, pump or other structure or device.

Division Engineer – The technical oversight position used to approve or oversee and operation within a given geographical area.

Domestic Use – water used for indoor and outdoor household purposes— all the things you do at home: drinking, preparing food, bathing, washing clothes and dishes, brushing your teeth, watering the yard and garden, and even washing the dog.

Drainage Area – The geographical area outlining the boundaries of where a drop of water will flow. The area is typically “funnel” shaped as the end point is localized and expanding outward to the largest points of the area.

Drainage Basin – The geographical representation of how liquids will travel along a drainage area as the terrain traversed is mapped.

Drawdown - The lowering of reservoir water levels by releasing stored water or pumping ground water. A reservoir may be drawn down during the winter months to make room for spring flood flows caused by melting snows.

Drip Irrigation - An efficient irrigation practice where small, steady flows of water are released to individual plants through a network of irrigation hoses and tubes. This is an expensive but efficient irrigation practice.

Drought - Drought occurs when precipitation is less than average for a lengthy period of time. The term is very subjective, and there are different interpretations of what constitutes a drought. Physiological drought occurs when the amount of precipitation is unable to adequately sustain endemic flora and fauna. Agricultural drought is declared when precipitation is inadequate to sustain the growth of agricultural crops.

Due Diligence – reasonable steps taken by a person in order to satisfy a legal requirement, especially in buying or selling something.

Duty of Water – refers to the quantity of water, as determined by the Colorado Division of Water Rights, that is required to satisfy the irrigation water requirements in each area. The underlying concept is that only so much water may be beneficially used.

E

Effluent - Effluent is any outflow of water. In connection with human water uses, the term effluent is most often used in the context of water whose quality has been impaired by human use, animal use or otherwise compromised by its diversion from its natural source. Treated effluent is the term used for discharges from wastewater treatment plants and returned to a river, stream or other water source.

Effluent Exchange – The practice of using wastewater effluent as a replacement source for diversion of water upstream.

Eutrophication - Eutrophication is the process where nutrient loading contributes to the decline of water bodies and their eventual conversion to land. Through nutrient loading, bodies of water gradually become boggy or marshy and slowly fill in with organic matter that displaces water. This process can be accelerated by human activities that either load waters with excess nutrients stimulating plant growth or through silt loading.

Evapotranspiration – the sum of evaporation and plant transpiration from the Earth's land and ocean surface to the atmosphere. Evaporation accounts for the movement of water to the air from sources such as the soil, canopy interception, and waterbodies.

Exchange - An exchange is an agreement between parties where water can be diverted or stored at one point, in exchange for an equivalent amount of water being released or bypassed at another point on a river system. In an exchange, the diversion or storage of water and the release or bypass of water from another point must occur simultaneously to prevent injury to other water users. Exchanges must be approved by the State Engineer's Office, who will ensure that the exchange functions properly.

F

Fecal Coliform - Fecal coliform is a bacteria present in the intestinal tracts of humans and warm-blooded animals. When introduced into water systems, it contaminates the water and may spread disease.

Federal Reserved Water Right - The federal government has claimed that whenever it reserves a portion of land, for instance Indian reservations and national parks, that an implied water right is attached to that land to fulfill the purpose of the land's reservation. These rights were first established in the landmark *Winters v. U.S.* (1908) case. The claim to these water rights is very contentious, because these rights are in many cases not asserted at the time of the land's reservation, instead coming later with large senior claims.

Flood Irrigation – an ancient method of irrigating crops. It was likely the first form of irrigation used by humans as they began cultivating crops and is still one of the most commonly used methods of irrigation used today.

Flood Plain - an area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.

Free River - Free river conditions occur when there is more water than all perfected water rights on a river system, enabling any water user, with or without water rights, to use water from that waterway. A free river is most likely to occur during the spring runoff or on streams that have few water users.

Furrow Irrigation – a type of surface irrigation in which trenches or “furrows” are dug between crop rows in a field. Farmers flow water down the furrows (often using only gravity) and it seeps vertically and horizontally to refill the soil reservoir. Flow to each furrow is individually controlled.

Futile Call - A futile call occurs when a downstream senior water right cannot be satisfied, even after upstream junior water rights are curtailed. This can occur when a water source completely dries up or when transit losses, the amount of water lost through evaporation and seepage as it passes along a water way, completely consume the amount of the junior right.

G

Gaging Station – a location used by hydrologists or environmental scientists to monitor and test terrestrial bodies of water.

Groundwater - Ground water is any water that exists beneath the earth’s surface. Where it exists in substantial amounts, it may be tapped for human use or may even flow freely to the surface. There are two kinds of groundwater: tributary and designated, or non-tributary. Tributary groundwater is hydrologically connected to surface water, since any depletion of that groundwater will affect the flow or level of the surface water it is connected to. Designated groundwater is only remotely connected to surface water. Designated groundwater is managed by a modified prior appropriations doctrine. If aquifers are depleted faster than they are recharged, the aquifer cannot sustain itself and will begin to run dry. Ownership of designated groundwater in Colorado is principally determined by surface land ownership.

Groundwater Recharge - Groundwater recharge is the flow of water into a groundwater basin or aquifer. Recharge occurs naturally or can happen through human intervention to stimulate the recharge through construction of seepage ponds or the active reinjection of water into the ground (see conjunctive use.)

H

Head - Head is the force (pressure) created by a volume of water. The more water captured over a given location, the more head. Head represents potential energy which is realized when that water is released. Flowing water creates more head as the distance and/ or angle of its fall increases.

Headgate - A headgate is a structure that controls the amount of water entering a diversion. A headgate can completely shut off a diversion, reduce the flow of water to a measured amount or permit the free flow of water. Headgates can be located at the top of a diversion or along a ditch or canal that serves multiple diversions.

Headwater – a tributary stream of a river close to or forming part of its source.

Historic Use - Historic use documents the physical diversion and consumptive use of a water right over a period of time. Private diversion records or State Engineer's office records typically document a water user's historic use.

Hydroelectric - Hydroelectric power generation is the production of electricity from running or falling water, either from free-running watercourses or releases from a dam.

Hydrograph - A hydrograph is the graphic depiction of varying water levels at a given measuring point over a period of time. A hydrograph can record fluctuations over the course of one day, showing the diurnal fluctuations of flows, over the period of days, weeks, months or years.

Hydrologic Cycle - The hydrologic cycle is the circulation of water from the earth's surface to its atmosphere and back to earth again by taking on different forms such as snow, rain or vapor. The earth has a constant amount of water present. However, water moves from place to place and from one form to another through evaporation, transpiration (the release of water by plants), condensation and precipitation.

I

Injury - Injury is the act of depriving a senior water right owner of their full water right. New water rights, changes of water rights, exchange and substitution agreements are only allowed if they do not injure other water users or uses.

Instream Use – refers to water use taking place within a stream channel. Examples are hydroelectric power generation, navigation, fish propagation and use, and recreational activities. Some instream uses, usually associated with fish populations and navigation, require a minimum amount of water to be viable.

Instream Flow – the water flowing in a stream channel. This simple concept belies the difficulty of determining what that flow should be among competing uses for water, such as irrigation, public supply, recreation, hydropower, and aquatic habitat.

Irrigation Return Flow – surface and subsurface water that leaves the field following application of irrigation water. While irrigation return flows is a point source, they are expressly exempted from permit requirements under the Clean Water Act (P.L. 92-500, as amended).

Irrigation Use – application of water to help grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of inadequate rainfall.

Irrigation District - An irrigation district is a public organization that supplies water to residents of the district through diversions, canals, laterals, pipes and other water transport systems primarily for the purpose of agricultural irrigation.

L

Long-Term Monitoring – the continuous readings of a device over long periods of time as opposed to short time frames.

M

Minimum Stream Flow - Colorado recognizes the benefits of water flowing in the state's rivers and streams. The Colorado Water Conservation Board (CWCB) has been granted the exclusive authority to hold water rights for the minimum flows necessary to protect the natural environment.

Mitigation - Mitigation is the remedy of negative consequences of certain actions. Mitigation is required or requested for most water development projects. Mitigation may be required when constructing reservoirs, diverting large quantities of water from a stream or transferring water from one basin of the state to another. Mitigation can take the form of constructing new wetlands, building new storage to compensate for a loss of water, repairing a stream channel and any other action deemed prudent by affected parties.

Monitoring – observe and check the progress or quality of (something) over a period of time; keep under systematic review.

Mouth – the part of a river where the river flows into another river, a lake, a reservoir, a sea or an ocean.

Municipal Use – the consumption of water through a taxing entity designed to deliver domestic water to individual stock holders inside the taxing boundaries.

N

Native Water – the flow of water that historically would have traversed the path along the designation within the system.

Non-Consumptive - Any use of water that does not consume or deplete water through its use is non-consumptive. Recreation and aesthetics are examples of water use that are non-consumptive.

Non-Point Source Pollution - Non-point source pollution comes from diffuse sources that can only be broadly identified. This may come in the form of rain or snow melt runoff carrying sediments, wastes, bacteria and toxic agents that are harmful to existing water quality.

Non-Tributary Groundwater – groundwater that returns back to the river system without traversing through a localized channel but through the up-flux of pressure from underlying water molecules.

O

Over-Appropriation - A stream or river is over-appropriated when it does not have enough water to meet the needs of all the water rights holders. Many rivers and streams in Colorado are over-appropriated, especially in dry years, in which case the water rights system determines which water users have a right to use water.

P

Penstock - A penstock is a man-made conduit for moving water in a controlled manner. Penstocks send water to turbines for electrical generation or to waterwheels to produce dynamic energy.

Percolation - Percolation is the infiltration of water through porous soils. Water percolates through soils as it moves down to groundwater basins or aquifers.

Perfected Right - A water right is considered perfected when water is actually put to beneficial use.

Pneatophytes - Pneatophytes are a class of plants with long root systems capable of tapping the water table or other groundwater supplies. Concern exists over the loss of water due to proliferation of pneatophyte species such as tamarisk, which can reduce the amount of water otherwise available for human and environmental benefit.

Point Source Pollution - Point source pollution is a contaminant discharged to a water body at a known point such as from a drain or waste outlet.

Potable Water - Potable water is water that is fit for human consumption either through its natural purity or due to treatment removing or neutralizing impurities.

Priority Date - A priority date is the date assigned to a water right by the water court, reflecting the first time water was put to beneficial use or when a conditional right was secured. The older the priority date, the more senior a water right is and the more likely it will be entitled to water during dry periods. The more recent the priority date, the more junior a water right, and the less likely it will receive water in times of scarcity.

Prior Appropriation - Prior appropriation is the basis for Colorado's water laws and its priority system of allocating water. The prior appropriator, or the first person to put water to a beneficial use, has the superior right to use water in instances when there is not enough water to meet the needs of all water users. Water users who put water to beneficial use after others must subordinate their use to those who previously established a water use.

Priority System - The priority system was established when Colorado was still a territory to solve disputes over ownership and use of water. The system prioritizes use of water based upon who used water first. Those who put water to beneficial use first retain the senior right to continue using that water before newer users. When there is not enough water to satisfy all of the water users, the junior, or most recent user, must curtail or forego use until senior rights are fulfilled.

Priority Date – the date a court signed document was recorded giving it precedence over anything to come after the fact.

Public Trust - The doctrine of public trust espouses that essential human resources, such as air and water, are owned by all people and these resources should be preserved and protected for the common public benefit. Public interest in these resources includes not only economic uses, but also values such as aesthetics, environmental protection, recreation, and others. Governmental entities, as the guardians of the public trust, must be held responsible for preserving the qualities of these resources in an optimal state for the public good.

Public Supply Withdrawals – water is delivered to users for domestic, commercial, and industrial purposes out of a stored location.

R

Raw Water - Raw water is water collected directly from its native source before treatment to bring it up to drinking water standards.

Recharge -

Recreational In-Channel Diversion (RICD): Recreation is the most recent use of water that is eligible for a water right in Colorado. In a RICD, a quantified amount of water is permitted to remain in the stream for recreational uses and will be protected from uses that would diminish the decreed flow under the priority system. This use of water does

not require the diversion of water outside of its normal course, but must show a measure of capture and control of the flow for the beneficial purpose. Kayak and other whitewater recreation courses are the most popular form of RICDs and are non-consumptive in their use of water.

Regulation 31 – The basic standards and methodologies for surface water in the state of Colorado.

Regulation 85 – Nutrient Management Control Regulations by the state of Colorado designed to help meet the EPA Clean Water Act Standards.

Reservoir - A reservoir is a body of stored water impounded by a dam. Reservoirs are constructed to provide drought protection, flood control, recreation and water for present and future use.

Return Flow - Water that returns to streams and rivers after it has been put to use is called a return flow. In most cases when water is used, not all of it is consumed and the remainder is returned to lakes, rivers or streams. When irrigating fields, for example, some water will typically flow off the land, referred to as tail water, and return to a waterway. Another portion will return after seeping into the ground, slowly percolating back to streams as groundwater. In municipalities, most of the water used in homes flows to wastewater treatment plants, where it will be treated and returned to a water source.

Reviewable Waters –

Riffle - A riffle is a stretch of stream or river where the flow of water is disturbed by rocks, contributing to the oxygenation of water. Riffles are productive areas of a stream and are essential habitat for aquatic invertebrates, fish and other aquatic plant species.

Riparian Area - A riparian area is any portion of land that borders a natural water course and serves as a transitional zone between the waterway and upland areas. Riparian areas can be sensitive ecosystems hosting species of plants and animals that are dependent upon a wet environment.

Riparian Doctrine - A body of water law called riparian law evolved in the wet climate of England and later took hold in the eastern United States. Riparian law grants the right to divert water based upon ownership of land adjoining a waterway. Anyone residing on property which contains or borders a waterway has the right to divert as much water as they need as long as they do not injure other downstream users. Riparian law is not feasible in Colorado due to the semi-arid climate.

Riprap - Riprap is a protective layer of rocks, cement or other objects that prevent the erosion or sloughing off of streambanks and can themselves collect sediments carried by the stream to reinforce the bank structure.

River Basin - A river basin is the land area that naturally drains into a particular water course. The eight largest river basins in Colorado are the Colorado, South Platte, North Platte, Arkansas, Rio Grande, San Juan, White and Yampa River basins.

River Reach - A river reach is any segment of river that has a similar physical and/ or biological characteristic to it.

S

Salinity - Salinity refers to the amount of salts dissolved in water. High salinity levels may be toxic to fresh water fish, harm vegetation and impact irrigated agriculture.

Salt - A salt is a natural compound formed from two elements, or by the reaction between an acid and a base, that join themselves with an ionic bond. Sodium chloride, or common table salt, is the most well known salt. Magnesium chloride, calcium carbonate (also known as lime or limestone), calcium carbonate (gypsum) and potassium chloride are other examples of salts. The bond that combines the paired elements as a salt is readily broken by water, making salts an easily dissolved contaminant to water supplies.

Soil Moisture - Soil moisture is the measure of water content in the ground that has direct bearing on the soil's ability to sustain plant and animal life as well as how much precipitation the soil will absorb during the next precipitation event. Soil moisture is measured in the upper layers of soil where evaporation and plant transpiration of available moisture occurs.

Spillway - A spillway is a component of a dam allowing for a controlled, rapid release of water. Spillways prevent the breaching or over-topping of dams during flood conditions by offering a second option for releasing water from a reservoir in addition to sending water through the normal outlet works.

Spring Runoff - Spring runoff is the increased stream and river flows occurring as snow melts with warmer spring and early summer temperatures. The vast majority, 80%, of Colorado's surface water comes from melting snows and the highest stream flows usually occur during the months of May, June and July. Spring runoff flows are often referred to as "flood flows" since historically runoff flows flooded lowlands and over topped streambanks, especially prior to the construction of dams and reservoirs designed to capture these flood flows.

Subordination - Subordination is the voluntary relinquishment of a water right's priority to selected or all junior water rights. A large water project or trans-mountain diversion may subordinate its water rights to protect in-basin water rights or to allow for an increment of new water development that otherwise would be precluded by a strict adherence to the priority system.

Substitution - Similar to an exchange, a substitution involves taking water from one point of diversion while releasing water from another source to satisfy downstream senior rights. In a substitution, the diversion and the release do not happen at the same time. Substitutions occur mostly between reservoirs. Instead of releases of water occurring at the same time as the diversion, releases will take place at specified times in the future or as calls come on the river and the demands necessitate releases. Substitutions must be approved by the State Engineer's Office, which administers these arrangements.

Surface Water - Any water that is above ground in lakes, rivers, streams, reservoirs, etc. is referred to as surface water. Surface water ultimately comes from snowmelt and rainwater that has collected above ground. Surface water is a renewable, though inconsistent, source of supply.

Surge Irrigation - A form of flood irrigation where pulses of water are sent down furrows to disperse irrigation water over a field. Using the impetus provided by the surges, a smaller volume of water is required to irrigate an entire field. In traditional flood irrigation, a large volume of water is needed to create the head (pressure) necessary to spread water over the entire irrigated area. Surge irrigation loses less water to deep percolation and reduces the amount of tail water sent back to waterways.

T

Total Dissolved Solids (TDS) - Total dissolved solids is a measurement of minerals and other compounds dissolved in water. TDS concentration is usually expressed in milligrams per liter. The higher the level of dissolved minerals, the "harder" the water and the lower the water quality. High levels of TDS from salts can harm irrigated farmland, rendering it incapable of supporting crops or diminishing its ability to do so.

Transit Loss - Transit loss is the amount of water lost as it flows from one place to another. A number of factors may contribute to transit loss, including: evaporation, seepage into the streambed, and uptake by vegetation in the riparian area, among others. Transit losses are charged against the quantity of water released from reservoirs as they make their way downstream to intended points of diversion or storage.

Trans-basin/ Trans-mountain Diversion - A trans-basin diversion is the removal of water from one river basin to another river basin. A trans-mountain diversion is the removal and transport of water across the Continental Divide. These diversions of water are 100% consumptive since no water from the diversion will return to the basin of origin's waters as return flow. Colorado water law (*Coffin v. Left Hand Ditch*) provides for trans-mountain diversions by allowing the diversion of water from where it naturally flows to where it is needed within the state, regardless of distance.

U

Unappropriated - Available water that is not yet claimed by an existing water right.

V

Virgin Flow - Virgin flow is the streamflow quantity that would naturally exist in a waterway without diversions.

W

Water Court - Water Court is the mechanism by which water rights are adjudicated and therefore officially recognized by the State of Colorado. Water judges are district judges appointed by the Colorado Supreme Court and have jurisdiction in the determination of water rights, the use and administration of water, and all other water matters within the jurisdiction of the water divisions.

Water Right - A water right is a private property right in the State of Colorado that establishes in what priority a water user may use water for a beneficial purpose. The priority in which someone can divert water to put it to a beneficial use is granted by the water courts in the State of Colorado. A water right allows diversion of a certain amount of water, in a specified order among other water users, from a certain point along a body of water and for a specified purpose. The older, or more senior, the water right, the fewer other water users whose needs must be satisfied before the user is allowed to divert water. The younger, or more junior, the water right, the greater number of senior water rights that must be satisfied before a junior right can divert water.

Water Trade - A water trade is swapping of ownership of water stored in different reservoirs or from different “pools” within a reservoir. This does not involve diversions or releases to meet downstream needs.

Watershed - Watersheds are areas of land that catch precipitation and drain into a body of water. Watershed can refer to either small collection areas that feed into streams or small bodies of water or they can refer to large areas such as river basins.

Well Permit: The State Engineer’s Office (SEO) issues permits to drill water wells that specify the rate of withdrawal, intended use and location. The Groundwater Management Act of 1957 recognized that tributary groundwater extraction depletes surface water supplies and is subject to the prior appropriation doctrine.

Wetland - Wetlands are unique and sensitive areas that are either flooded or saturated with water for all or parts of the year and which support vegetation and animals that are adapted to living in these wet conditions. Wetlands include areas such as bogs, marshes, swamps and similar environments. Wetlands are often transitional zones between aquatic and terrestrial areas, encompassing characteristics of both.

Withdrawal – the removal of water out a stored location to be used for beneficial use.

X

Xeriscape - A combination of seven common-sense gardening principles that save water while creating a lush and colorful landscape.

Y

Yield – the amount of production that was produced by a crop in a given year with a given amount of inputs and outputs.