

APPENDIX C
GLOSSARY

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1.0 Glossary

Acequia—A system of community irrigation ditches and diversions adjacent to a river, often using natural materials such as rocks and brush for diversion structures.

Acre days—The number of acres covered by overbank flooding times the duration in days.

Acre foot—A volume of water that covers 1 acre to a depth of 1 foot (43,560 cubic feet, 1,234 cubic meters, 325,851 gallons).

Active capacity—The volume of space available for active conservation plus exclusive flood control pools.

Aggradation—A geologic process where streambeds and floodplains and the bottom of water bodies are raised in elevation by the addition of material; the opposite of degradation.

Annual mean discharge—The average or mean of the daily mean discharges for the water year.

Annual operating plan—A document that defines likely reservoir operations for a given year based on snow melt runoff forecasts and estimated demands.

Annual peak discharge—The maximum instantaneous discharge that occurs during an individual water year.

Armoring—(a) The natural process in which an erosion-resistant layer of relatively large particles is formed on a stream bed or bank due to the removal of finer particles by the flow; (b) Placement of a covering on a stream bank to prevent erosion; (c) Vegetative growth covering the channel bed or banks.

Avulsion—A sudden or abrupt change in course of a stream channel usually associated with the stream breaking through its banks during a flood.

Bankfull channel width—The distance across the channel between the tops of the left and right banks at the elevation of the floodplain, measured at right angles to the longitudinal flow direction.

Bankfull discharge—The maximum discharge that a channel is capable of transmitting without overtopping its banks (i.e., the channel capacity). Also, bankfull discharge is considered to be the discharge at which the floodplain experiences incipient flooding. In self-adjusted alluvial channels that are in a state of dynamic equilibrium with the imposed water and sediment supply and that are bounded by a self-formed floodplain, the magnitude of the bankfull discharge is often assumed to be about the same as the mean annual flood peak (recurrence interval of 1.5 to 2.33 years), although recurrence intervals for the bankfull discharge of 1 to 25 years have been reported in the literature.

Bed load—The portion of the total sediment discharge that moves in contact with the bed by rolling, sliding, or saltation.

Bed Material—Sediment material found in the bed of a stream in appreciable quantities.

Bed Material Load—The portion of the total sediment discharge that is composed of particle sizes that are commonly found in the bed; mobilized by flowing water; and may be transported either in suspension or as bed load. This portion of the total sediment discharge is related to the flow and sediment characteristics of the bed, and is generally carried at the capacity of the stream.

Bypass—(a) To allow flow through its natural course at a diversion structure; (b) water that remains in its natural course undiverted.

Capacity—The maximum volume of available space.

Carryover storage—Water held in storage until a specified time for release.

Channel aggradation—The raising of the channel bed through deposition of sediment by flowing water.

Channel capacity—The normal (non-emergency) operations maximum flow in a channel, usually set by analysis and policy.

Channel degradation—Lowering of the channel bed through removal of sediment by the flowing water.

Channel forming discharge—A theoretical discharge that, if constantly maintained in an alluvial stream over a long period of time, would produce the same channel geometry that is produced by the long-term variable runoff hydrograph. Various surrogates for the channel-forming discharge are often used to facilitate geomorphic analysis. The most common are bankfull discharge; a specific interval from the annual peak or partial duration frequency curves (e.g., 1.5-year peak discharge); and the effective discharge.

Confluence—The intersection of two or more water courses.

Conservation capacity—The volume that the conservation pool can hold.

Conservation pool—The space allocated for all normal uses, bounded below by inactive pool and above by exclusive flood control pool or joint use pool.

Daily mean discharge—Commonly, the mean of the 15-minute discharges for the 24-hour period of a day.

Daily mean flow—The flow in cfs amounting to the total volume of water for the 24-hour period (i.e., the average flow for the day).

Degradaton—A geologic process where the elevation of streambeds, sandbars and floodplains is lowered by erosion; the opposite of aggradation.

Deposition—The material settling out of water into a streambed. Occurs when the energy of the flowing water is unable to support the load of suspended sediment.

Designated flood frequency—The probability that a flood will occur in a given year (usually 20, 10, or 1 percent).

Dissolved oxygen (DO)—The amount of free oxygen found in water; usually the most commonly employed measurement of water quality. Low DO levels adversely affect fish and other aquatic life. The ideal dissolved oxygen for fish life is between 7 and 9 mg/L. Most fish cannot survive when DO falls below 3 mg/L.

Diversion—A controlled amount of water taken out of the main channel and transported elsewhere.

Effective discharge—The incremental discharge that transports the largest percentage of bed material over the long-term. In self-adjusted alluvial streams that are in a state of dynamic equilibrium with the

imposed water and sediment supply, the magnitudes of the effective discharge and bankfull discharge are usually similar.

Endangered species—A species of subspecies whose survival is in danger of extinction throughout all or a significant portion of its range.

Entrainment—The process by which aquatic organisms, suspended in water, are involuntarily carried by the motion of water.

Exceedance probability—The probability that a random hydrologic event will exceed a given magnitude, expressed in percent. For flood frequency curves, the exceedance probability is the reciprocal of the recurrence interval. For example, the 100-year flood has a 1-percent chance, on average, of being equaled or exceeded in any given year.

Extirpated species—A species of plant or animal that is no longer found in a given area.

Firm yield—The amount of water that can be provided by a basin and reservoir system with reasonable certainty each year. For the San Juan-Chama Project including Heron Reservoir, it is 96,200 acre-feet each year.

Flood control pool—The pool from top of active conservation to the top of total capacity, exclusively for flood storage.

Flood frequency—Synonymous with Recurrence Interval.

Floodplain—The relatively flat area adjoining a river channel that is constructed by vertical and lateral accretion processes of the river in the present climate and that is overtopped during times of high discharge when the bankfull capacity of the channel is exceeded.

Flow duration curve—The cumulative distribution function that represents the percentage of time that a specified discharge is equaled or exceeded. Flow duration curves are generally based on the daily mean discharge.

Gain—The addition of water not accounted for upstream.

Geomorphologic—Of or related to the configuration of landforms and earth features.

Hydraulic geometry—A general term used to characterize the relationships between discharge and the channel morphology, hydraulics, and sediment transport in an alluvial channel. The relationships are usually expressed in the form of power functions of discharge as a function of width, depth, and velocity.

Hydraulic height—Height to which water rises behind the dam, the difference between the lowest point in the original streambed and the maximum water surface.

Hydraulic routing—The mathematical technique for relating inflow and outflow hydrographs using both continuity and momentum equations.

Hydrograph—A graph showing the flow of water with respect to time for a given point on a channel.

Hydrologic Routing—The mathematical technique for relating inflow and outflow hydrographs using continuity equation and analytical or assumed storage/release relationship.

Imported waters—Waters from another basin, also known as “transbasin”, “transmountain”, or, in this case, “SJC” for San Juan-Chama.

Incidental benefits—After the primary purpose for releasing water is satisfied, other benefits are realized from the use of the water. Examples are fishery flows and rafting releases that arise out of the irrigation releases.

Inundation—Flooding 6 inches or more above the land surface.

Lag—The time for water in a channel to get from one known point to another downstream.

Lake evaporation—The evaporation measured from a standard pan multiplied by a pan coefficient to more closely match actual evaporation from the lake.

Lateral migration—Movement of the channel in a direction that is generally perpendicular to the general down-valley flow direction due to erosion of the channel banks.

Longitudinal stream profile—A profile of elevation versus linear distance along a river reach, usually representing the minimum elevation in the channel cross-section, also known as the thalweg (see “thalweg”).

Loss—The reduction in quantity of water in transit not attributable to intended removal such as diversion. Also used to denote reservoir loss for present, hypothetical, and pre-reservoir conditions.

Mean annual discharge—The average or mean of the annual mean discharge for more than one water year or for the period of record.

Morphology—Shape and physical characteristics of the river.

Native water—Water from precipitation or other sources within the basin. Also known as "Natural", "Rio Grande", and "RG".

Natural water—(See “native water”.)

Non-exceedance probability—The probability that a random hydrologic event will not exceed a given magnitude, expressed in percent.

Non-vegetated channel—The main channel of a river that conveys the bulk of the annual mean discharge and is generally devoid of perennial vegetation.

Outlet works—A feature of a dam used to regulate releases usually for flows within the downstream safe channel capacity.

Overbank—The area of a floodplain covered by floodwater overflowing its banks.

Planform—The shape or horizontal pattern of a river when viewed from above.

Pool—A named physical space within a reservoir of a similarly named capacity, with defined upper and lower elevation boundaries. Example: The “active conservation pool” has a capacity of the “active conservation capacity”.

Probable maximum flood (PMF)—The largest flood reasonably expected at a point on a stream because of a probable maximum storm and favorable runoff conditions.

Recurrence interval—The average time interval, over the long term, between occurrences of a hydrologic event. For example, the 100-year peak discharge is the instantaneous annual peak discharge that, on average, is equaled or exceeded once every 100 years.

Reservoir exchange rate—A measure of the turnover of water in each reservoir as a measure of fishery productivity, calculated by dividing the reservoir volume by the average annual discharge.

Reservoir inflow—The amount of water entering a reservoir expressed in acre-feet per day or cubic feet per second.

Riparian—The area along the banks of a waterway, including the associated soils, vegetation and wildlife.

River cross-section geometry—A distance-elevation relationship depicting the shape of the ground surface across the channel, perpendicular to the flow direction. The convention among hydraulic engineers, hydrologists, and geomorphologists is to plot the relation from left to right bank looking downstream.

Routing—The mathematical technique for relating inflow and outflow hydrographs, most often used for flood waves.

Rule—A user specified macro-algorithm defining an operational constraint or requirement. Usually included in groups that are ordered by priority. Used in reference to URGWOM.

Run of the river—An operational philosophy placing low priority on power generation, requiring releases to be driven by other purposes first.

Scour—A localized lowering of the channel bed from the removal of bed material due to turbulence caused by an obstruction or hard point in the channel such as bridge piers and abutments, rock jetties, and bedrock outcrops.

Sediment pool—The reservoir space allocated for sediment deposition.

Seepage—The slow movement or percolation of water through small cracks, pores, and interstices from an embankment, abutment, or foundation.

Stage-discharge relationship—The relationship between the height of the water-surface above an arbitrary or known datum and the discharge at that water-surface.

Steering committee—The interagency group responsible for direction, management, and budget support for this Water Operations Review and EIS.

Storage—The quantity of water in a specified space.

Suspended Sediment Load—The portion of the total sediment discharge that moves in suspension in the water column.

Temporal—Relating to a transient event, usually short in duration.

Thalweg—The line connecting the lowest points along a channel bed.

Threatened species—A species of plant or animal that has the potential of becoming endangered in the near future.

Time step—The chosen time increment for the model run.

Top of dam—The elevation of the uppermost surface of a dam, usually a road or walkway, excluding an parapet wall, railing, or curb.

Total capacity—The total amount of available storage, equaling live capacity plus dead capacity.

Total sediment discharge—The total quantity of sediment that passes a cross section of the river over a specified unit of time. The total sediment discharge is the composite of suspended sediment load and bed load. It is also the combination of the bed material load and wash load.

Transbasin diversion—Water imported from one basin to another or across the continental divide. Also known as "San Juan-Chama", "SJ-C", and "transmountain" water.

URGWOM (Upper Rio Grande Water Operations Model)—Includes four different types of models: Forecasting, Water Operations, Accounting, and Planning. The model of the upper and middle Rio Grande from the Colorado headwaters and San Juan-Chama diversions down to Fort Quitman, Texas.

Waiver—A request by a San Juan-Chama project contractor to modify the December 31 delivery date for San Juan Chama project water stored in Heron Reservoir. Waiver requests are granted if Reclamation concurs that there is benefit to the United States in extending delivery in the following calendar year.

Water accounting—After-the-fact reconciliation and operational planning of water movements and deliveries.

Water operations—Planning, scheduling, and delivering water from reservoir storage and releases for all usage, safety, and environmental purposes.

Water ownership—The recognition of allocations, storages, and deliveries of water as property of an entity.

Water types—A concept of the division of water as derived from multiple sources, in this case; SJ-C and RG waters.

Wild and Scenic—A reach of river protected from commercial development that is tightly managed to retain its natural state to the greatest extent possible.