

GLOSSARY OF TERMS

- Actual Elephant Butte Effective Supply* – the recorded flow of the Rio Grande at the gaging station below Elephant Butte Dam, adjusted for net changes in storage in the Elephant Butte reservoir during the year as determined by the Rio Grande Compact commissioners
- Aquifer* – a saturated zone of soil beneath the ground surface capable of yielding water to wells
- Cone of depression* – area immediately surrounding a well, where the groundwater elevation is lowered due to effects of pumping from wells
- Conjunctive-use* – use of a combination of water sources for water supply; i.e., use of surface water and groundwater
- Consumptive irrigation requirement* – the quantity of irrigation water that is consumptively used by crops or is evaporated from the soil surface within a designated period of time. The consumptive irrigation requirement is equal to the consumptive use minus the effective rainfall.
- Consumptive use* – the amount of water lost from the hydrologic system through evaporation, transpiration, and the building of plant tissue in a specified period of time.
- Correlation analysis* – involves the determination of the relationship between different processes. (For example, the likelihood that the flow of the Jemez River will be high if the Otowi native flow is high in a particular year.)
- Credits and debits* – the excess, or shortage, of surface water actually delivered, compared to the obligation, according to the Rio Grande Compact
- Credit/debit balance* – the end-of-the-year balance of credits and debits accrued under the Rio Grande Compact
- Depletion* – losses from the water supply for agricultural, domestic, riparian use or evaporation from open water surfaces
- Depletion graphs* – graphs showing the net depletion through a defined river reach; these graphs illustrate where net gains and losses are occurring
- Deterministic* – exhibiting behavior that can be described according to the laws of physics

Descriptive statistics – involves describing the nature of, and variability in, a population or set of events. (For example, the average, maximum, and minimum payout of a slot machine and how often it pays out.)

Double-mass curves – graphs depicting / comparing upstream and downstream cumulative flows within a defined reach of river versus time

Effective rainfall – rainwater available for use by plants; the portion of the rainfall event that does not flow overland into an arroyo or stream, infiltrate to the water table and contribute to aquifer recharge, or become lost to immediate evaporation from soils.

Elephant Butte Effective Index Supply – (also called *Elephant Butte Scheduled Delivery*) the delivery obligation at Elephant Butte, according to the resolution adopted by the Rio Grande Compact Commission, February 1948. The value of this delivery obligation is determined based on inflow conditions at the Otowi Gage.

Elephant Butte Scheduled Delivery – the delivery obligation at Elephant Butte for a given annual Otowi Index Supply, as interpolated from the schedule provided in the resolution adopted by the Rio Grande Compact Commission, February 1948. The value of this delivery obligation is determined based on inflow conditions at the Otowi Gage.

Ephemeral tributaries – rivers or streams that only flow during certain times of the year or under certain hydrologic conditions.

Evapotranspiration (ET) – the combined processes of simple evaporation and plant transpiration through which liquid water is converted to water vapor and lost to the atmosphere

Evapotranspiration rate – the rate at which evapotranspiration occurs. In this study, measured in acre-feet per acre per year

Farm delivery – The amount of water delivered to a farm for irrigation of crops (including incidental on-farm losses and return flow).

[Water] Gains – increases in the water supply within a system or reach of a river. For example, gains to streamflow may occur due to precipitation, snowmelt, wastewater discharge, or agricultural return flow.

Metadata – Data about data. Metadata may include site identification information, spatial organization and reference, data quality, temporal data, entity and attribute information, distribution, and reference information.

Monte Carlo Analysis – The Monte Carlo method encompasses any technique of statistical sampling employed to approximate solutions to quantitative problems. In the context of the work presented in this document, Monte Carlo Analysis is used to

characterize the water budget. Inflow and depletion terms are described with *probability distributions* that characterize the historic variability for each term. Then, the water budget is evaluated using a Monte Carlo analysis; a random number is generated for each probabilistic term, and used to select a value for that term from the term's probability distribution. This is repeated 10,000 times to provide a distribution of outcomes.

Native water – Surface water from the Rio Grande and Chama River originating in Colorado and Northern New Mexico

Net Supply – Monthly diversions to irrigation canals reported by the irrigation district to the USBR

Otowi Index Supply – the recorded flow of the Rio Grande at Otowi Bridge, adjusted for storage in reservoirs constructed after 1929 and for trans-mountain diversions, in accordance with procedure approved by the Rio Grande Compact Commission.

Perennial tributaries – rivers or streams that flow continuously throughout the year.

Probabilistic – (also called *stochastic*) exhibiting uncertainty that can be described using the laws of chance

Probability distribution fitting – the process of finding a curve or mathematical formula to describe a set of measured data

Quaternary alluvium – Generally unconsolidated geologic materials deposited by rivers during the Quaternary period of geologic time (within the past two million years).

Return flows – Water returning to the river or groundwater after diversion, including tail water from farms, drainflow or applied irrigation water seeping past the root zone.

Rio Grande Compact – 1939 agreement between Colorado, New Mexico and Texas governing the delivery obligations of Colorado to New Mexico and New Mexico to Texas for waters of the Rio Grande basin.

Risk analysis – (also called uncertainty analysis) method for considering the combined effects of multiple probabilistic (uncertain) processes, and/or characterizing the range of possible outcomes

Salvaged evapotranspiration – a decrease in the evapotranspiration rate due to such factors as a decrease in availability of shallow groundwater to plants

San Juan-Chama Project water – Surface water from the Colorado River system delivered through the San Juan-Chama Project to the Rio Chama and thence to the Rio Grande

Santa Fe Group aquifer system – a deep complex of unconsolidated alluvial sediments along the Rio Grande that form an aquifer that is hydraulically connected with the Rio Grande.

[Water] Source – a resource for either surface or groundwater

Spill year – A year during which there is flow over the spillway at the Elephant Butte Reservoir (hypothetical spills may occur without an actual spill, given certain conditions, and are treated similarly under the Compact)

Static value – a term defined as a constant within the probabilistic water-budget model

Steady-state conditions – a system at equilibrium; conditions at which the system has stabilized

Storage – the amount of water existing in the interstices of a geologic medium as part of a groundwater system

Stream-connected aquifer – an aquifer with hydraulic connection with a surface water system. In a stream-connected aquifer, the pumping of groundwater will eventually reduce stream flow within the same basin

Trans-mountain diversions – Water diverted from drainage systems other than the Rio Grande, for use in the Rio Grande system (i.e., San Juan-Chama Project water)

USGS gaging stations – locations where the U. S. Geological Survey has installed equipment for monitoring of river level and flow rate

Waste – A term used in USBR monthly water distribution data sheets for water returned to the river through wasteways and drains

Water budget – A summary that shows the balance in a hydrologic system between water supplies to the system (inflow) and water losses from the system (outflow)

Water supply – the amount of water potentially available for use within a study area; this must account for both the hydrologic supply and the legal limitations imposed by water allocation agreements such as the Rio Grande Compact

Acronyms

AMAFCA – Albuquerque Metropolitan Arroyo Flood Control Authority

COE – U.S. Army Corps of Engineers

DEM – Digital Elevation Models

DRG – Digital Raster Graphics

EDAC – Earth Data Analysis Center

EPA – U.S. Environmental Protection Agency

ESC – Executive Steering Committee

FGDC – Federal Geographic Data Committee

GIS – Geographic Information Systems

HRAP – National Weather Service Hydrologic Rainfall Analysis Project

ISC – New Mexico Interstate Stream Commission

LUTA – Land Use Trend Analysis

MRGCD – Middle Rio Grande Conservancy District

MRGPR – Middle Rio Grande Planning Region

MRGWSS– Middle Rio Grande Water Supply Study

NEXRAD – NEXt Generation Weather RADar System. A network of approximately 160 radar systems throughout the United States and at several overseas locations, which provide precipitation information. The system was installed by the National Weather Service, in conjunction with other agencies.

NPDES – National Pollution Discharge Elimination System

OSE – New Mexico Office of the State Engineer

PDSI – Palmer Drought Severity Index

SSPA – S. S. Papadopoulos & Associates, Inc.

SSPR – Socorro-Sierra Planning Region

USBR – U. S. Bureau of Reclamation

USGS – U. S. Geological Survey

URGWOM – Upper Rio Grande Water Operations Model