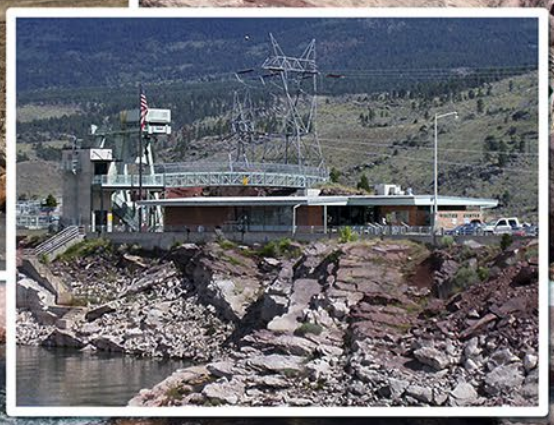
BUREAU OF RECLAMATION

Upper Colorado River Basin Consumptive Uses and Losses 2021 – 2025

Interior Region 7: Upper Colorado Basin



U.S. Department of Interior

November 2025

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover photos: background photo of a scenic view of the Colorado River near Grand Junction, Colorado. Inset photos from left to right:

1. Flaming Gorge Dam and reservoir, Utah. (Reclamation photo by Chad Douglas)
2. Center pivot irrigating alfalfa crop, Utah.
3. Cattle drink and cool off in an irrigation ditch in Gunnison County, Colorado.
4. Potash evaporation ponds in Moab, Utah.
5. Azotea tunnel outlet, New Mexico. (Reclamation photo by T. Ross Reeve)
6. Visitor Center, powerplant switchyards at Flaming Gorge Dam, Utah.

Foreword

This report reflects the Department of the Interior's best estimate of actual consumptive uses and losses within the Upper Colorado River System. The reliability of the estimate is affected by the availability of data and the current capabilities of data evaluation.

Summary

This report presents provisional estimates of the consumptive uses and losses from the Upper Colorado River System for each calendar year from 2021 through 2025. This report will be updated as further data become available. This report includes a breakdown of the beneficial consumptive use by major types of use, major tributary streams, and, where possible, individual States.

The Colorado River rises in the Rocky Mountains of Colorado, flows southwesterly about 1,400 miles and terminates in the Gulf of California. Its drainage area of 241,000 square miles (excluding Mexico) represents one fifteenth of the area of the United States. Its water is used for irrigation, municipal, industrial , electric power generation, export and import, and other purposes. Large amounts are exported from the system to adjoining areas. This table summarizes annual water use from the system by basins and States. Distribution of water use by types of use from the various reporting areas is in the main report.

Summary. Upper Colorado River System: Water Use by States, Basins, and Tributaries1 (1,000 acre-feet)

STATE AND SYSTEM OF USE	2021	2022	2023	2024	2025	Average 2021-25
ARIZONA						
Upper System	11	11	12	12		12
COLORADO						
Upper System	1,804	1,847	2,302	1,917		1,968
NEW MEXICO						
Upper System	355	347	424	345		368
UTAH						
Upper System	835	912	1,049	1,154		988
WYOMING						
Upper System	590	666	590	687		633
OTHER						
Upper System Undistributed by State						
Reservoir Evaporation	334	268	335	357		323
UPPER COLORADO RIVER SYSTEM						
Upper System	3,595	3,784	4,377	4,116		3,968
Other: Reservoir Evaporation						
and Channel Losses	334	268	335	357		323
UPPER COLORADO RIVER SYSTEM						
GRAND TOTAL	3,929	4,052	4,712	4,472		4,291

[1] Consumptive uses and losses includes water uses satisfied by groundwater.

Acronyms and Abbreviations

BIA	Bureau of Indian Affairs
COOP	Cooperative Observer Program
CU_{irr}	Consumptive use for irrigation
CUL	Consumptive Uses and Loses
eeMETRIC	earth engine Mapping EvapoTranspiration at high Resolution with Internalized Calibration
ET_a	Actual evapotranspiration
EToF	Fraction of reference ET
FWS	free water surface
GIS	Geographic Information Systems
gridMET	Gridded Surface Meteorological
HUC	Hydrologic Unit Code
M&I	Municipal and Industrial
NDVI	Normalized Difference Vegetation Index
Net CU	Consumptive use for irrigation (CU_{irr}) adjusted for incidental use
NWS	National Weather Service
SRP	Salt River Project
Stat.	Statute
UCRS	Upper Colorado River System
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

Contents

1. Introduction

The Colorado River System is composed of portions of seven states—Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. It has a drainage area of about 241,000 square miles (excluding Mexico) and represents about one-fifteenth of the area of the United States.

This report incorporates provisional annual estimates of consumptive uses and losses of water from the Upper Colorado River System from 2021 through 2024. Wherever available, water use reports prepared in accordance with legal requirements concerning the operation of the Colorado River were used. Base data needed to estimate onsite consumptive uses were taken largely from existing reports and studies and from ongoing programs. Where current data were not available, estimated values were developed by various techniques and reasoned judgment. In general, methodology followed the techniques normally used within the system for estimating water use.

Nothing in this report is intended to interpret the provisions of the Colorado River Compact (45 Statute [Stat.]. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona vs. California, et al. (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 United States Code [U.S.C.] 618a), the Colorado River Storage Project Act, (70 Stat. 105; 43 U.S.C. 620), or the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501).

2. Study Reporting Areas

The drainage area of the Upper Colorado River Basin in the United States is approximately 109,500 square miles. The river originates in the Rocky Mountains of Colorado and Wyoming, flows southwest about 640 miles, and leaves the study area at Lee Ferry, Arizona. The system consists of portions of five states: Arizona, Colorado, New Mexico, Utah, and Wyoming. The drainage area is divided into three reporting areas for the purposes of this report.

The major tributary streams selected as reporting areas in the Upper Colorado River System are: Green River (Wyoming, Colorado, Utah), Upper Main Stem (Colorado, Utah), and San Juan - Colorado (Colorado, New Mexico, Utah, Arizona). These boundaries of the reporting areas are shown in Figure 1.

The term "Upper Division States" refers to the States of Colorado, New Mexico, Utah, and Wyoming. "Lower Division States" refers to the States of Arizona, California, and Nevada. The Upper Colorado River System (UCRS) refers to the hydrologic boundaries. Lee Ferry is the division point between the Upper Colorado River System and the Lower Colorado River System.

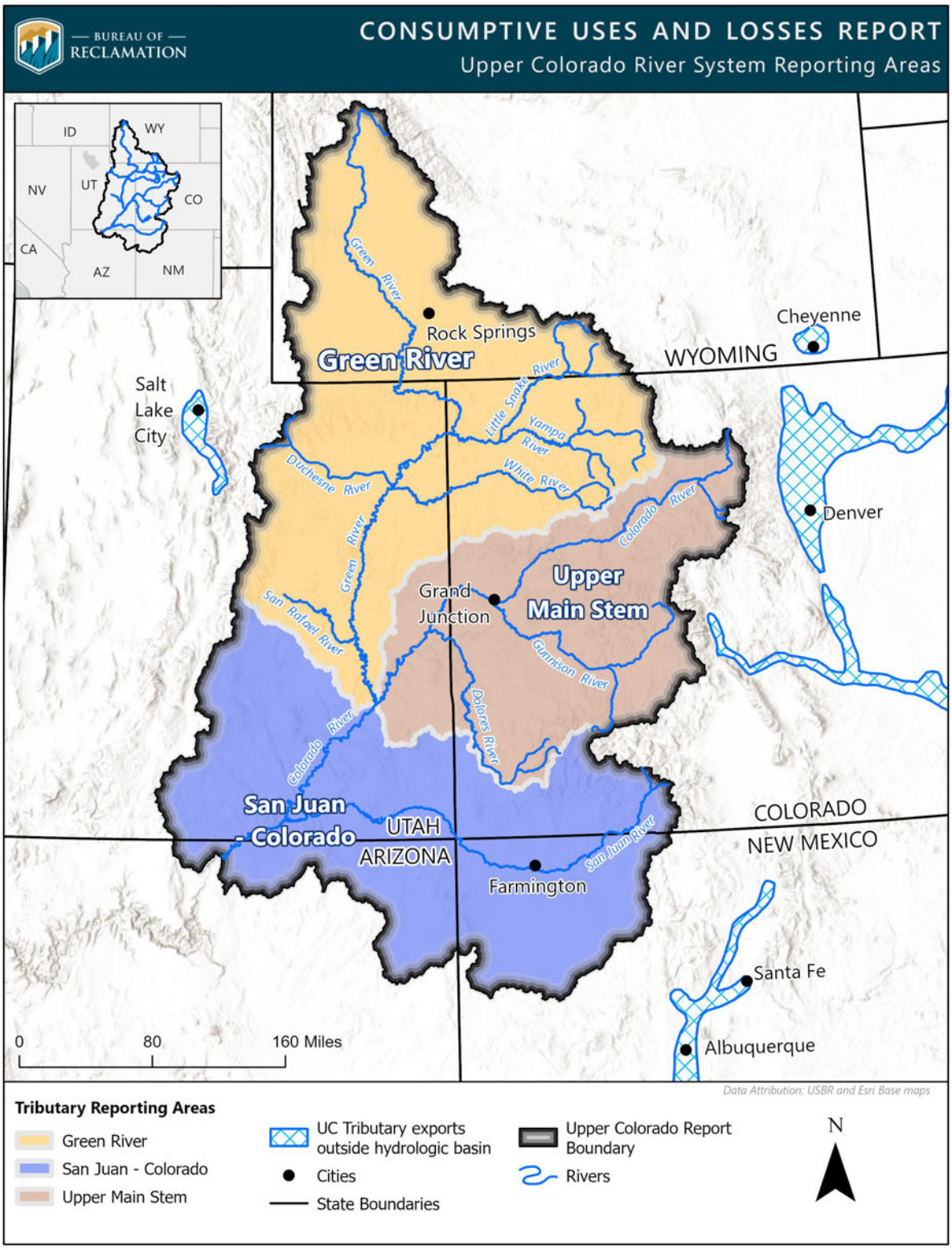


Figure 1. Upper Colorado River System reporting area boundaries.

2.1. Green River (Wyoming, Colorado, and Utah)

The Green River reporting area comprises approximately 44,700 square miles in southwestern Wyoming, northwestern Colorado, and northeastern and east central Utah.

Principal tributaries of the Green River are Blacks Fork, New Fork, and Little Snake River in southwestern Wyoming; Yampa and White Rivers in northwestern Colorado; and the Price, Duchesne, and San Rafael Rivers in eastern Utah.

Additionally, the Great Divide Basin Hydrologic Unit Code (HUC) 8 (14040200), a closed basin in Wyoming, is not included as part of the Upper Colorado River System reporting area.

The largest towns in the reporting area are Rock Springs and Green River in Wyoming; Vernal and Price in Utah; and Craig, Steamboat Springs, and Meeker in Colorado.

Fontenelle Reservoir in Wyoming, Flaming Gorge in Wyoming and Utah, and Strawberry Reservoir in Utah are the major impoundments in the reporting area. Flaming Gorge Reservoir evaporation is not reported in this reporting area because its evaporation remains undistributed by state and is reported separately along with three other major reservoirs noted in the sections below.

During the reporting period (2021 – 2024) and excluding any share of undistributed reservoir evaporation, irrigation consumptive use accounted for about 77 percent of the total water use in the Green River reporting area and approximately 10 percent was exported to the Great Basin in Utah. Approximately 675,300 acres of land were irrigated on average during the reporting period.

2.2. Upper Main Stem (Colorado and Utah)

The Upper Main Stem reporting area consists of the Colorado River and its tributaries above the mouth of the Green River. Principal tributaries are the Roaring Fork, Gunnison, and Dolores Rivers. The Upper Main Stem reporting area consists of 26,200 square miles, with about 85 percent of the area in Colorado and the remainder in Utah.

Grand Junction, Montrose, Rifle, and Glenwood Springs are the principal towns in the Colorado portion of the upper main stem of the Colorado River. Moab is the only major community in the Utah portion of the Upper Main Stem of the Colorado River.

The Aspinall Unit and Lake Granby in Colorado are the major impoundments in the reporting area. The Aspinall Unit (including Blue Mesa and Morrow Point reservoirs, for this purpose) evaporation is not included in this reporting area because its evaporation remains undistributed by state and is reported separately along with two other major reservoirs noted in the sections above and below.

During the reporting period (2021 – 2024) and excluding any share of undistributed state reservoir evaporation, irrigation consumptive use accounted for about 56 percent of the water use in the Upper Main Stem reporting area and approximately 35 percent was exported to serve agricultural and municipal needs on the eastern slope of the Continental Divide in Colorado. Approximately 458,800 acres of land were irrigated on average during the reporting period.

2.3. San Juan - Colorado (Colorado, New Mexico, Utah, and Arizona)

The San Juan reporting area is drained by the Colorado River and its tributaries below the mouth of the Green River and above Lee Ferry, Arizona. The largest of the tributary streams is the San Juan River which originates on the western slope of the Continental Divide in southwestern Colorado. Principal tributaries of the San Juan River are the Mancos, Piedra, Los Pinos, Animas, and La Plata Rivers. The other main tributaries in the basin are the Dirty Devil, Escalante, and Paria Rivers, which drain a portion of the eastern slope of the Wasatch Plateau in Utah. The reporting area includes about 38,600 square miles in portions of Utah, New Mexico, Arizona, and Colorado.

The largest towns are Durango and Cortez in Colorado, Monticello and Blanding in Utah, Farmington in New Mexico, and Page in Arizona.

Navajo Reservoir in Colorado and New Mexico and Lake Powell in Utah and Arizona are the major impoundments in the reporting area. Lake Powell evaporation is not reported in this reporting area because its evaporation remains undistributed by state and is reported separately along with three other major reservoirs noted in the sections above.

Irrigation accounts for the largest use of water in the reporting area. During the reporting period (2021 – 2024) and excluding any share of undistributed state reservoir evaporation, irrigation consumptive use accounted for about 75 percent of the total water use in the San Juan reporting area and approximately 10 percent was exported outside of the UCRS. Approximately 266,000 acres of land were irrigated on average during the reporting period.

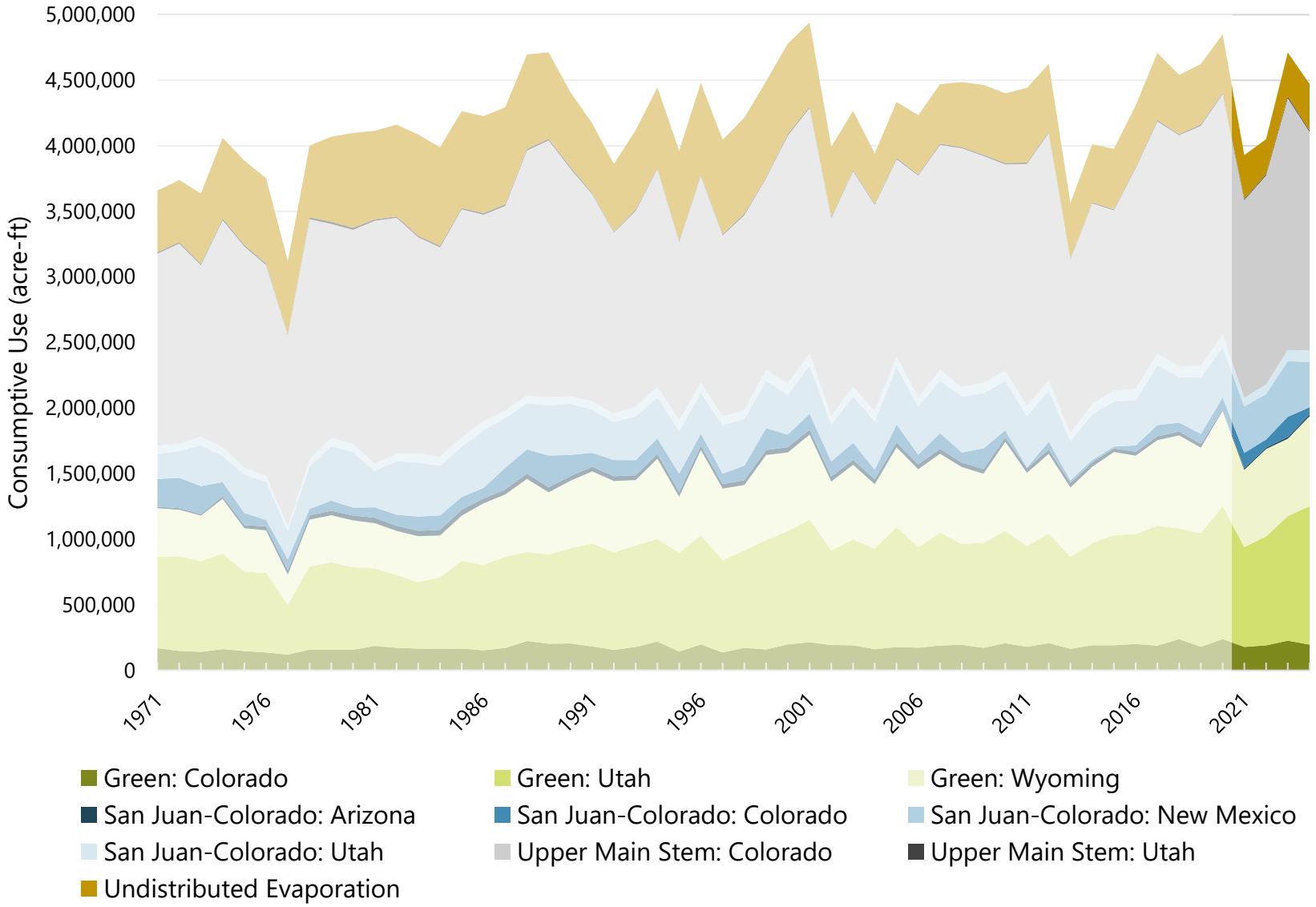


Figure 2. Upper Colorado River System consumptive uses and losses per state and major tributaries area chart for each year from 1971 to 2024.

3. Terminology

The Colorado River is not only one of the most highly controlled rivers in the world but is also one of the most institutionally encompassed. A multitude of legal documents, known collectively as the "Law of the River," effect and dictate its management and operation. Major documents include:

- Colorado River Compact—1922
- Boulder Canyon Project Act—1928
- California Limitation Act—1929
- California Seven Party Agreement—1931
- Mexican Water Treaty—1944
- Upper Colorado River Basin Compact—1948
- Colorado River Storage Project Act—1956
- United States Supreme Court Decree in *Arizona vs. California*—1964
- Colorado River Basin Project Act—1968
- Minute 242 of the International Boundary and Water Commission,
- United States and Mexico—1973
- Colorado River Basin Salinity Control Act—1974, amended 1984, 1995, and 1996

The Colorado River System is defined in the Colorado River Compact of 1922 as ". . . that portion of the Colorado River and its tributaries within the United States," whereas the Colorado River Basin is defined as ". . . all of the drainage area of the Colorado River System and all other territory within the United States of America to which waters of the Colorado River System shall be beneficially applied." The compact divided the Colorado River Basin into two subbasins—the "Upper Basin" and the "Lower Basin," with Lee Ferry as the division point on the river. Lee Ferry, Arizona is a point in the main stem 1 mile below the mouth of the Paria River. For the purpose of this report, the Great Divide Basin, a closed basin in Wyoming, the Wilcox Playa, a closed basin in Arizona, and the Animas Valley, a closed basin in New Mexico are considered as part of the Colorado River System since surface water inflow or outflow are limited or do not reach the Colorado River. Transbasin diversions are considered herein as exports or imports and have not been classified by types of use.

Beneficial consumptive use is normally construed to mean the consumption of water brought about by human endeavors and in this report includes use of water for municipal, industrial, irrigated agriculture, power generation, export and import, and other purposes, along with the associated losses incidental to these uses.

Reservoir evaporation loss is a consumptive use associated with the beneficial use of water for other purposes. For this report, reservoir evaporation for Flaming Gorge, Blue Mesa, Morrow Point, and Lake Powell are undistributed by state and excluded from state totals but included in Upper System totals. Their evaporation will be reported separately in Upper System Table UC-1.

Channel losses within the system are construed to be the consumptive use by riparian vegetation along the stream channel (or conveyance route) and the evaporation from the stream's water surface and wetted materials. Seepage from the stream normally appears again downstream or reaches a groundwater aquifer where it may be usable again. A decided lack of data, along with the intermittent flow characteristics of many southwestern streams, combine to make a reasonable determination of channel loss difficult. Channel losses have not been estimated for this report within the Upper System.

4. Methodology and Data Adequacy

In this report, direct measurements of water use were used wherever available, but most categories are theoretically calculated. In the tributary reporting areas of the upper system, records of diversions and return flows are not complete enough to allow direct calculation of consumptive water use. Theoretical and indirect methods of estimating consumptive use must then be relied upon. For the Arizona, Colorado, New Mexico, Utah, and Wyoming portions of the Upper Colorado River System, the annual consumptive use of water was estimated using the methodologies described in this section. Greater detail for these methods is provided in Upper Colorado River System Consumptive Uses and Losses Methods Manual 1991 – 2025 (Reclamation, 2025).

4.1. Agriculture

The methods used to estimate irrigated agriculture consumptive use (CU_{irr}) and Net Consumptive Use (Net CU) in the Upper Colorado River System rely on advanced remote sensing and modeling tools. CU_{irr} represents the amount of irrigation water used by crops over the calendar year, excluding incidental losses. It is calculated by subtracting effective precipitation in the root zone from the actual evapotranspiration (ET_a), which is estimated using the earth engine Mapping EvapoTranspiration at high Resolution with Internalized Calibration (eeMETRIC) remote sensing model at a high spatial resolution. Effective precipitation is derived from the gridMET gridded precipitation dataset (Abatzoglou, 2013) and the ET Demands model, which uses weather data to estimate how much rainfall is available to meet crop water needs. To ensure accuracy, only actively irrigated fields are included in the analysis, based on annual irrigation status maps developed using satellite imagery and vegetation indices. Net CU builds on CU_{irr} by including incidental water use, which accounts for the incidental use of irrigation water by phreatophytes and evaporation during conveyance in canals and laterals from the diversion at the river to the head of the field. Detailed method descriptions can be found in Pearson et al. (2024).

To estimate CU_{irr} in the UCRS, it’s essential to first identify where irrigation occurs. This begins with creating a comprehensive dataset of maximum irrigated areas using field boundary data. A maximum irrigated extent dataset was developed by compiling and merging agricultural field boundary Geographic Information System (GIS) data from the four Upper Division States, using sources such as historical field surveys, water rights, and remote sensing imagery. For northern

Arizona, historically irrigated field shapefiles and Normalized Difference Vegetation Index (NDVI) analysis of recent aerial imagery were used, drawing from U.S. Geological Survey (USGS) and U.S. Department of Agriculture (USDA) datasets to identify both current and historical irrigated areas.

Once the maximum extent of irrigated land was established, the Harmonized Landsat Sentinel NDVI method was used to determine whether fields were actively irrigated, which combines data from Landsat-8 and Sentinel-2 satellites to classify fields into four categories: fallow, shorted, irrigated, or wet soil. These classifications are based on how vegetation changes throughout the growing season. For example, fields that show strong, sustained plant growth are marked as irrigated, while those with little or no growth are considered fallow. Wet soil areas, which might be misclassified due to low vegetation signals, are identified using a combination of NDVI and another method called the Fraction of Reference ET (EToF).

The final irrigation status for each field was assigned based on the majority classification of 30-meter pixels within its boundary. Only fields classified as irrigated, shorted, or wet soil were included in CU_{irr} estimates, while fallow fields were excluded.

Total irrigated acreages used in the preparation of this report are listed in Table UC-7 in Section 5.3. Agricultural Irrigated Acreage. Estimates of total shortage water volumes are displayed in Table UC- 9 in Section 5.5. Agricultural Water Shortages.

4.2. Observed Precipitation Data

Gridded weather data from the Gridded Surface Meteorological (gridMET) dataset was used to represent weather and evaporative demand throughout the UCRS for the irrigated agriculture consumptive use computations. However, an observed precipitation dataset is used for the other categories, specifically reservoir and stock pond evaporation. The precipitation dataset for these categories is built by retrieving monthly observed precipitation data from National Weather Service (NWS) Cooperative Observer Program (COOP) stations in the UCRS and aggregating stations to the HUC8 level for reservoir evaporation or averaging station data for stockpond evaporation. Overall, 146 stations in the UCRS were used to build the precipitation dataset back to 1971. Missing data in the station record was filled in with an estimate based on the average of prior observations during the same month.

4.3. Reservoir Evaporation

Reservoir evaporation in the UCRS is classified into two categories: Major Reservoir Evaporation and Minor Reservoir Evaporation. Classification is based on data availability for each reservoir. For Major Reservoirs monthly surface area data is available i.e., they are measured, where Minor Reservoir monthly surface area data is not available, i.e., they are unmeasured.

All reservoir evaporation volumes are reported as net evaporation, meaning pre-reservoir evaporation or precipitation has been removed from gross evaporation.

Major Reservoirs are UCRS reservoirs in which monthly surface area is known (measured) through daily or monthly measurement. Major Reservoirs are divided into two groups, Major Reservoirs (Method 1) and Major Reservoirs (Method 2). Major Reservoirs (Method 1) have site-specific evaporation rates along with monthly surface area. Major Reservoirs (Method 2) do

not have a site-specific evaporation rate but do have monthly surface area. For Major Reservoirs (Method 2), annual free water surface (FWS) evaporation rates (NOAA, 1982) are distributed monthly based on an average basin monthly distribution and are used to estimate reservoir evaporation.

Minor Reservoirs do not have site specific evaporation rates or monthly surface water area available (unmeasured). A comprehensive list of Minor Reservoirs has been developed using lists from historical Reclamation Consumptive Uses and Loses (CUL) datasets, input from the Upper Division States and UCRC, and the National Inventory of Dams database. For a reservoir to be classified as a Minor Reservoir, information needed includes location (latitude/longitude), elevation, maximum water surface area, reservoir type, and pre-reservoir evaporation rate (if available). Minor Reservoir evaporation is computed similarly to Major Reservoirs (Method 2), except on an annual timestep and using a "fullness factor" to estimate the average annual surface area. Fullness factors are determined by the type (e.g. recreation, irrigation) of reservoir and its expected normal pool elevation. FWS evaporation rates, as described above for Major Reservoirs (Method 2), along with the average annual surface area are used to estimate reservoir evaporation.

Net evaporation is ultimately reported for all reservoirs. Net evaporation is reservoir evaporation in which the lessor of pre-reservoir evaporation (formerly termed salvage) or precipitation has been removed. Annual precipitation, described in Section 4.2, and an annual pre-reservoir evaporation rate are determined for each reservoir. The annual pre-reservoir rates, along with fullness factors, were developed in the 1971 Comprehensive Framework Study (Upper Colorado Region State-Federal Inter-Agency Group for the Pacific Southwest, Inter-Agency Committee Water Resources Council, 1971) supporting information.

4.4. Stockpond Evaporation

Stockponds are small ponds used for cattle and other livestock consumption of water. Stockpond consumptive use is assumed to be the evaporation from stockponds and is computed in the same manner as Minor Reservoirs described in Section 4.3. The stockpond surface areas are taken from Livestock Water Use (Soil Conservation Service, 1975) for the Upper Colorado Region for all states except northern Arizona. The aggregated subareas stockpond surface areas were subdivided to state major tributary using the Type I study livestock water use proportions presented in the 1976-80 Consumptive Uses and Losses Report Technical Appendix (Reclamation, 1980). The total aggregated surface area for each state major tributary area is treated as a single unmeasured reservoir. Annual surface area is estimated by multiplying the stockpond surface area by a fullness factor. For northern Arizona, the stockpond surface areas were last taken from a Bureau of Indian Affairs (BIA) report (BIA, 1985) and a 30% fullness factor was assumed.

Each state major tributary area is assigned a representative latitude, longitude, elevation, and average FWS gross evaporation rate (NOAA, 1982). An annual precipitation rate, as described in Section 4.2, and an annual pre-reservoir evaporation rate, as described in Section 4.3, was determined for each state major tributary area. The net stockpond evaporation rate is the gross rate minus the lesser of annual precipitation and the annual pre-reservoir evaporation rate. The annual net evaporation rate is then multiplied by the estimated annual surface area to determine an annual evaporation volume.

The net annual stockpond evaporation rates by state major tributary were distributed to the HUC8 level using the average 1986-1995 distributions from the livestock state major tributary to HUC8 level consumptive use distributions.

4.5. Livestock

Livestock consumptive use is estimated as the headcount of livestock in the basin multiped by the livestock use rate in gal/head/day. Livestock head count is taken from population data published in the USDA Census of Agriculture. The data is published every 5 years on the 2nd and 7th years of the decade. Livestock population data includes cattle, milk cows, horses, hogs, sheep, goats, and chickens. Consumption rates for the various livestock were derived from "Method of Estimating Water Withdrawals for Livestock in the United States, 2005" (Lovelace, 2009). Data privacy concerns impact head count data availability, as publishing a particular value could identify an operation. When livestock data was not reported due to privacy concerns, the population was estimated based on the last census year or on the number of farms reported for a county and their corresponding size if available. If farm size was not reported, it was assumed to be equal to the number of farms reported.

4.6. Mineral Resources

The Upper System uses water in the extraction and production of numerous minerals in addition to energy related materials such as coal, oil, and natural gas. Estimates of annual CU volumes for mineral resources are estimated by applying consumptive use coefficients to withdrawal and delivery volumes sourced from USGS studies. These estimates were made at the HUC8 scale.

Historically, estimates of the water consumptively used in the production of minerals were based largely on phone surveys conducted by the USGS and summarized in "Estimated Use of Water in the United States" reports published every 5 years. These data were last reported at a HUC8 scale in 1995 (Solley et al., 1995). These reports have not included consumptive use estimates at a HUC8 scale since 1995. Recently a "Colorado River Basin Focus Area Study" report provided 5-year total water use estimates from 1985-2010 (Maupin et al., 2018). The data provided in this study included water supply withdrawal and delivery totals but did not provide estimates of CU.

For this reason, water use efficiency coefficients were calculated from the past 1985, 1990, and 1995 "Estimated Use of Water in the United States" reports which had included consumptive use estimates. These efficiency coefficients were applied to the new withdrawal and delivery totals from the "Colorado River Basin Focus Area Study" report to estimate consumptive use volumes.

4.7. Thermal Electric Power

The net use of water for the production of thermal electric energy from the UCRS was collected from electronic records maintained by the State of Colorado and Utah or reported directly by the States of New Mexico and Wyoming. For northern Arizona, estimates were reported directly from the Salt River Project (SRP).

4.8. Municipal and Industrial

Municipal and Industrial (M&I) consumptive use is determined as population multiped by usage rate in acre-feet/year/person. The basis for estimating M&I uses is the population within the

reporting areas. A continuous timeseries of annual, county scale population was constructed using U.S. Census Bureau data products, and a GIS method to distribute county populations to State-HUC8 scale (the portion of a HUC8 within a given state). Further detail on the GIS method that was utilized is provided in Upper Colorado River System Consumptive Uses and Losses Methods Manual 1991 – 2025 (Reclamation, 2025).

Historically, M&I consumptive uses were collected by the USGS and summarized in the "Estimated Use of Water in the United States" reporting series (published every 5 years) at a State-HUC8 scale (Solley et al., 1998). Similar to Mineral Resources consumptive use estimates, these reports have not included consumptive use estimates at this scale since the 1995 estimated water use report, as such the same procedure as described in Section 4.7 is applied to estimate M&I consumptive uses. The categories included in these estimated volumes are a composite of the domestic, commercial, industrial, and public supply use categories from these USGS reports. A composite consumptive per-capita use rate unique to each State-HUC8 was derived by dividing the estimated consumptive use volumes by the State-HUC8 populations published in the "Colorado River Basin Focus Area Study". Then, estimated annual M&I consumptive use volumes were computed at a State-HUC8 scale based on the composite consumptive per-capita use rate multiplied by the annual U.S Census based populations described previously.

4.9. Transbasin Diversions

Transbasin diversions include water exported and imported between basins in the Colorado River System, and water exported to or imported from basins outside the Colorado River System. Nearly all the transbasin diversions both out of and into the Colorado River System were measured and reported by state agencies, USGS, or local water commissioners and users. The remainder were estimated based on past records and capacity of facilities. Consumptive use volumes from transbasin diversions are typically measured at the outlet of the conveyance structure that carries flows out of the Colorado River Basin; however, there are exceptions where circumstances warrant.

4.10. Groundwater

Currently, all water consumed from groundwater pumping is counted as consumptive use from the Colorado River System unless there is specific geologic information to demonstrate that the water source is not connected to the Colorado River System.

Currently, the Arizona portion of the Upper System is the only part of the basin that reports separately the portion of consumptive use served via groundwater pumpage (see the corresponding report for the Arizona portion of the Upper Colorado River System Consumptive Uses and Losses Reports). For groundwater pumped in the Upper Division States, the use is quantified in the category for which the water is consumed. For example, domestic well pumping is quantified in the M&I category.

5. Beneficial Consumptive Uses and Losses

A summary table of the Upper Colorado River System total annual water uses, 2021 - 2025, by states is included in the Foreword. Water use within the selected reporting areas is discussed in

this section. Summaries of estimated reservoir evaporation undistributed by state as well as annual consumptive uses and losses in the Upper Colorado River System broken down by State, reporting area, and type of use, agricultural irrigated acreage, population, and agricultural water shortage are presented in the tables and figures in the sections that follow.

The subtotals and totals may not add appropriately because totals were computed before rounding all values to 100 acre-feet. Totals were computed before rounding to ensure values reported, including subtotals and totals, are representative of the values used to compute natural flow in the Upper Colorado River System .

5.1. Reservoir Evaporation Undistributed by State

Estimated reservoir evaporation undistributed by state is shown in Table UC-1. Pursuant to the 1948 Upper Colorado River Basin Compact, Article V, the Upper Colorado River Commission designates which reservoirs built prior to signing the 1948 Compact have evaporation losses charged to each state and which have losses that remain undistributed by state. Reservoirs listed in Table UC-1 are those presently assumed to be undistributed by state. These reservoir evaporation losses amount to about 7.5 percent of all Upper System losses average across the reporting period (2021 - 2024).

Table UC-1. Upper Colorado River System Estimated Reservoir Evaporation Undistributed by State

(1,000 acre-feet)

Reservoir[1]	2021	2022	2023	2024	2025	Average
Flaming Gorge	75.8	69.1	76.5	76.9		74.6
Blue Mesa	6.1	5.8	8.0	8.1		7.0
Morrow Point	0.8	0.8	0.8	0.8		0.8
Lake Powell	251.5	192.1	249.6	270.7		241.0
TOTAL	334.2	267.8	334.9	356.6		323.4

[1] Undistributed by Upper Division States. Evaporation is determined using reservoir-specific evaporation rates.

5.2. Upper Colorado River Basin Consumptive Use

Table UC-6 list the estimated water use by states, major tributaries, and types of use by year. These tables show provisional data. The consumptive use data shown in this reporting period will be finalized once Reclamation publishes a joint Upper and Lower Colorado River System report. Upper Basin consumptive use averaged 4.3 million acre-feet per year for the reporting period
2021 - 2024. Agricultural uses accounted for about 62.8 percent of the total Upper Basin consumptive uses and losses (including reservoir evaporation undistributed by state), averaged across the reporting period. Variation in consumptive use during the reporting period was largely due to year-to-year changes in climatic conditions and irrigated acreages.

Transbasin exports, the second largest Upper Basin use, varied by year and accounted for an average of approximately 17.7 percent of Upper Basin total use during the reporting period. Water lost through reservoir evaporation averaged 570,000 acre-feet per year, which represents an average of 13.3 percent of consumptive use in the Upper Basin during the reporting period. Figure 3 summarizes consumptive use trends over the period of record. Figure 4 shows the trends over the past 5 years.

PROVISIONAL Upper Colorado River System
Consumptive Uses and Losses 2021 - 2025

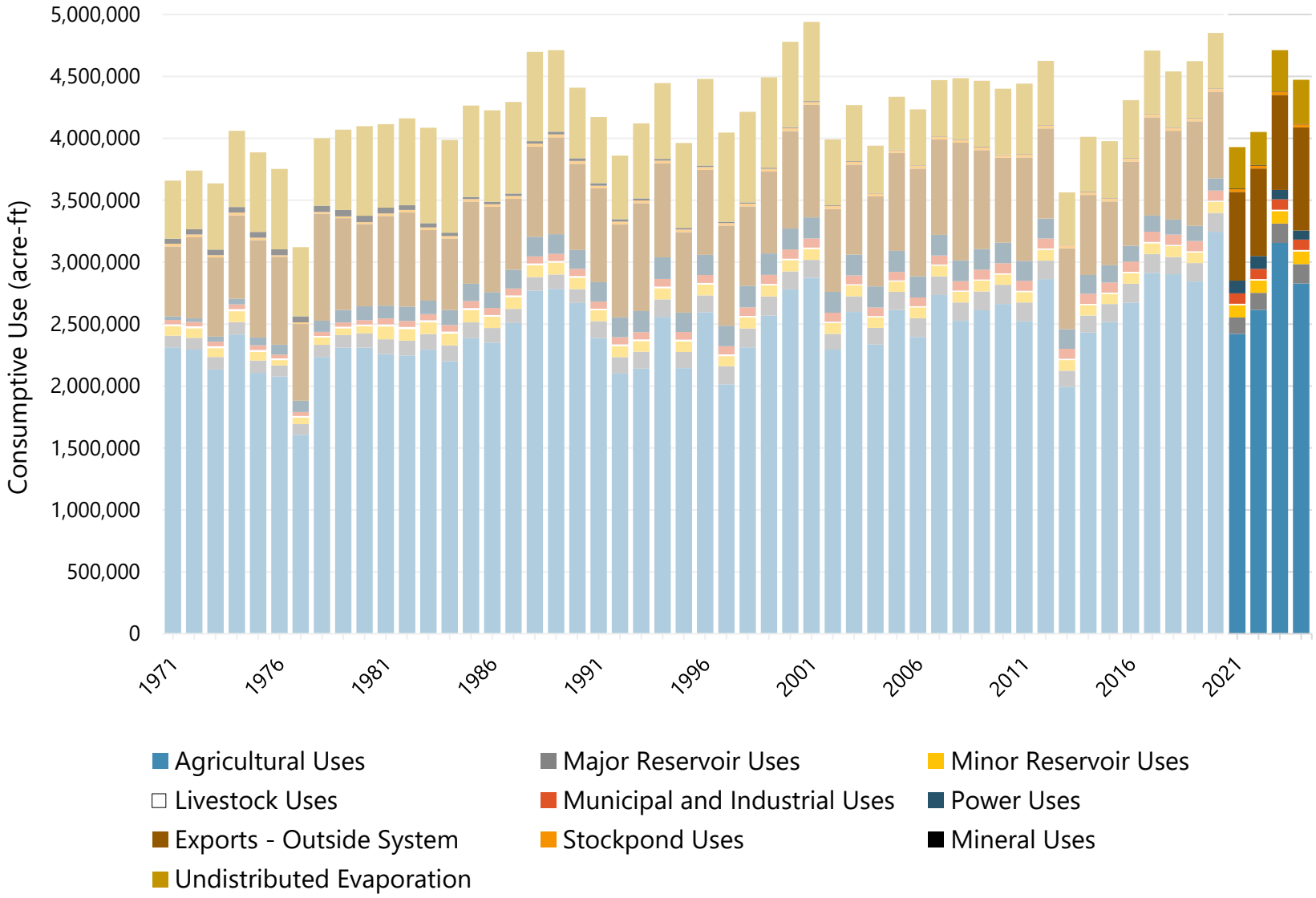


Figure 3. Upper Colorado River System Consumptive Uses and Losses bar chart for each year from 1971 to 2024.

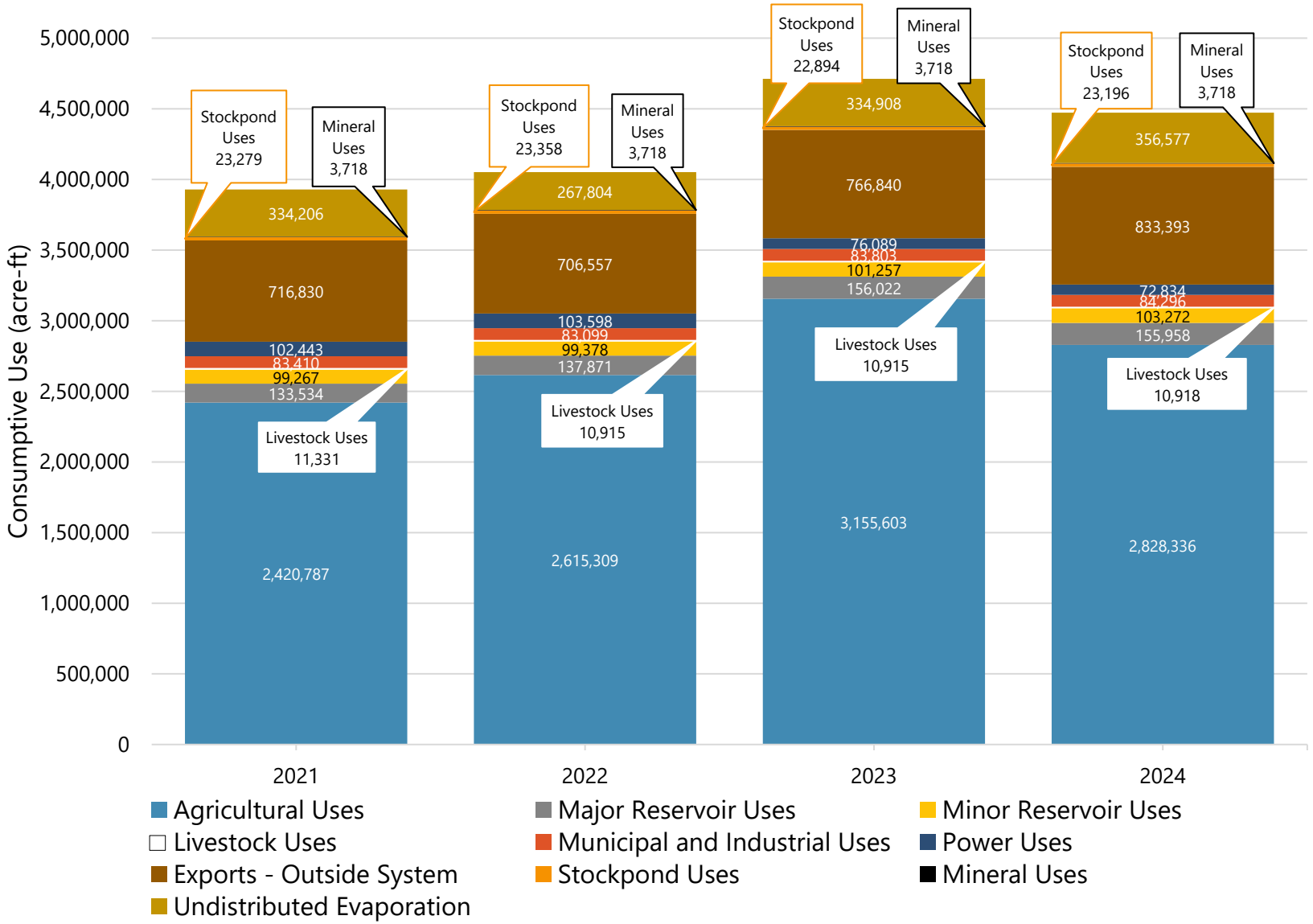


Figure 4. Upper Colorado River System Consumptive Uses and Losses bar chart for the years of 2016 to 2024.

Table UC- 2. Upper Colorado River System Estimated Water Use within States, by Major Tributaries and Types of Use
2021 - Provisional data (subject to change)

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation[1]	Irrigated Agriculture	Stockpond Evaporation & Livestock	M&I - Mineral Resources	M&I - Thermal Electric Power	M&I - Other[2]	Export Outside System	Export Within System	TOTAL
Arizona	**San Juan - Colorado Rivers**	3.6	0.1	1.9	0.0	0.1	5.3	0.0	0.0	10.9
Colorado	**Green River**	9.7	146.9	3.6	0.3	15.6	2.9	0.0	0.0	179.1
Colorado	**Upper Main Stem**	69.5	772.9	6.8	1.5	0.0	32.3	512.5	112.9	1,508.3
Colorado	**San Juan - Colorado Rivers**	9.6	202.8	5.8	0.3	0.0	9.2	2.1	(112.9)	116.8
Colorado	**TOTAL**	88.8	1,122.5	16.2	2.1	15.6	44.4	514.5	0.0	1,804.3
New Mexico	**San Juan - Colorado Rivers**	24.5	234.3	2.1	0.1	26.6	10.8	56.3	0.0	354.6
Utah	**Green River**	76.6	494.5	4.7	0.8	33.3	12.2	139.0	0.0	761.0
Utah	**Upper Main Stem**	1.4	4.6	0.2	0.0	0.0	1.4	0.0	0.0	7.6
Utah	**San Juan - Colorado Rivers**	7.9	56.3	4.1	0.0	0.0	2.3	(4.7)	0.0	65.9
Utah	**TOTAL**	85.9	555.4	9.0	0.9	33.3	15.8	134.3	0.0	834.5
Wyoming	**Green River**	30.0	508.5	5.4	0.6	26.9	7.1	11.7	0.0	590.3
Upper Basin	**Green River**	116.3	1,149.9	13.7	1.7	75.8	22.2	150.7	0.0	1,530.4
Upper Basin	**Upper Main Stem**	70.8	777.5	7.0	1.5	0.0	33.7	512.5	112.9	1,515.9
Upper Basin	**San Juan - Colorado Rivers**	45.6	493.3	13.9	0.4	26.6	27.6	53.7	(112.9)	548.3
Upper Basin	**TOTAL**	232.8	2,420.8	34.6	3.7	102.4	83.4	716.8	0.0	3,594.6

[1] Excludes reservoir evaporation from reservoirs listed in Table UC-1.

[2] Includes domestic, commercial, industrial, and public supply uses.

Table UC-3. Upper Colorado River System Estimated Water Use within States, by Major Tributaries and Types of Use
2022 - Provisional data (subject to change)

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation[1]	Irrigated Agriculture	Stockpond Evaporation & Livestock	M&I - Mineral Resources	M&I - Thermal Electric Power	M&I - Other[2]	Export Outside System	Export Within System	TOTAL
Arizona	**San Juan - Colorado Rivers**	3.5	0.4	2.0	0.0	0.2	4.6	0.0	0.0	10.7
Colorado	**Green River**	8.8	156.7	3.6	0.3	16.7	2.9	0.0	1.3	190.3
Colorado	**Upper Main Stem**	71.8	797.9	6.5	1.5	0.0	32.3	503.3	181.1	1,594.4
Colorado	**San Juan - Colorado Rivers**	10.2	217.7	5.8	0.3	0.0	9.4	1.3	(182.4)	62.3
Colorado	**TOTAL**	90.7	1,172.3	15.9	2.1	16.7	44.5	504.6	0.0	1,847.0
New Mexico	**San Juan - Colorado Rivers**	22.2	218.9	1.9	0.1	29.5	10.7	63.8	0.0	347.3
Utah	**Green River**	77.8	579.0	4.7	0.8	29.6	12.4	126.8	0.0	831.2
Utah	**Upper Main Stem**	1.4	4.9	0.2	0.0	0.0	1.4	0.0	0.0	8.0
Utah	**San Juan - Colorado Rivers**	8.4	63.1	4.1	0.0	0.0	2.3	(4.7)	0.0	73.3
Utah	**TOTAL**	87.6	647.1	9.0	0.9	29.6	16.1	122.2	0.0	912.4
Wyoming	**Green River**	33.2	576.6	5.4	0.6	27.6	7.1	16.0	0.0	666.4
Upper Basin	**Green River**	119.7	1,312.3	13.8	1.7	73.8	22.4	142.8	1.3	1,687.9
Upper Basin	**Upper Main Stem**	73.2	802.9	6.8	1.5	0.0	33.6	503.3	181.1	1,602.4
Upper Basin	**San Juan - Colorado Rivers**	44.4	500.2	13.8	0.4	29.8	27.0	60.5	(182.4)	493.6
Upper Basin	**TOTAL**	237.2	2,615.3	34.3	3.7	103.6	83.1	706.6	0.0	3,783.8

[1] Excludes reservoir evaporation from reservoirs listed in Table UC-1.

[2] Includes domestic, commercial, industrial, and public supply uses.

Table UC-4. Upper Colorado River System Estimated Water Use within States, by Major Tributaries and Types of Use
2023 - Provisional data (subject to change)

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation[1]	Irrigated Agriculture	Stockpond Evaporation & Livestock	M&I - Mineral Resources	M&I - Thermal Electric Power	M&I - Other[2]	Export Outside System	Export Within System	TOTAL
Arizona	**San Juan - Colorado Rivers**	4.8	0.4	2.0	0.0	0.1	5.0	0.0	0.0	12.3
Colorado	**Green River**	8.9	198.1	3.6	0.3	12.5	2.9	0.0	0.4	226.7
Colorado	**Upper Main Stem**	78.5	1,071.3	6.5	1.5	0.0	32.3	499.6	230.9	1,920.7
Colorado	**San Juan - Colorado Rivers**	10.1	356.9	5.8	0.3	0.0	9.4	3.1	(231.3)	154.3
Colorado	**TOTAL**	97.6	1,626.3	15.9	2.1	12.5	44.6	502.7	0.0	2,301.7
New Mexico	**San Juan - Colorado Rivers**	27.3	236.3	2.0	0.1	17.3	10.7	130.5	0.0	424.3
Utah	**Green River**	80.6	702.3	4.5	0.8	22.3	12.5	127.3	0.0	950.3
Utah	**Upper Main Stem**	1.5	10.1	0.2	0.0	0.0	1.4	0.0	0.0	13.1
Utah	**San Juan - Colorado Rivers**	7.8	76.2	4.0	0.0	0.0	2.3	(4.7)	0.0	85.7
Utah	**TOTAL**	89.8	788.6	8.8	0.9	22.3	16.2	122.6	0.0	1,049.1
Wyoming	**Green River**	37.8	504.0	5.2	0.6	23.9	7.1	11.0	0.0	589.6
Upper Basin	**Green River**	127.3	1,404.5	13.3	1.7	58.7	22.6	138.3	0.4	1,766.7
Upper Basin	**Upper Main Stem**	80.0	1,081.3	6.8	1.5	0.0	33.7	499.6	230.9	1,933.8
Upper Basin	**San Juan - Colorado Rivers**	50.0	669.8	13.8	0.4	17.4	27.5	128.9	(231.3)	676.6
Upper Basin	**TOTAL**	257.3	3,155.6	33.8	3.7	76.1	83.8	766.8	0.0	4,377.1

[1] Excludes reservoir evaporation from reservoirs listed in Table UC-1.

[2] Includes domestic, commercial, industrial, and public supply uses.

Table UC-5. Upper Colorado River System Estimated Water Use within States, by Major Tributaries and Types of Use
2024 - Provisional data (subject to change)

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation[1]	Irrigated Agriculture	Stockpond Evaporation & Livestock	M&I - Mineral Resources	M&I - Thermal Electric Power	M&I - Other[2]	Export Outside System	Export Within System	TOTAL
Arizona	**San Juan - Colorado Rivers**	4.4	0.9	2.0	0.0	0.0	5.1	0.0	0.0	12.4
Colorado	**Green River**	8.8	167.8	3.6	0.3	13.0	2.9	0.0	0.2	196.6
Colorado	**Upper Main Stem**	76.5	812.9	6.5	1.5	0.0	32.6	507.8	228.4	1,666.2
Colorado	**San Juan - Colorado Rivers**	10.5	254.8	5.8	0.3	0.0	9.4	2.3	(228.5)	54.5
Colorado	**TOTAL**	95.8	1,235.4	15.9	2.1	13.0	44.9	510.1	0.0	1,917.3
New Mexico	**San Juan - Colorado Rivers**	26.4	220.0	2.0	0.1	18.0	10.8	68.1	0.0	345.4
Utah	**Green River**	82.9	680.4	4.5	0.8	21.7	12.7	252.4	0.0	1,055.4
Utah	**Upper Main Stem**	1.4	6.9	0.2	0.0	0.0	1.4	0.0	0.0	9.9
Utah	**San Juan - Colorado Rivers**	8.4	78.7	4.0	0.0	0.0	2.4	(4.7)	0.0	88.7
Utah	**TOTAL**	92.7	765.9	8.8	0.9	21.7	16.4	247.7	0.0	1,154.0
Wyoming	**Green River**	39.8	606.1	5.5	0.6	20.2	7.1	7.4	0.0	686.8
Upper Basin	**Green River**	131.6	1,454.2	13.7	1.7	54.9	22.7	259.8	0.2	1,938.8
Upper Basin	**Upper Main Stem**	77.9	819.7	6.8	1.5	0.0	33.9	507.8	228.4	1,676.1
Upper Basin	**San Juan - Colorado Rivers**	49.7	554.4	13.7	0.4	18.0	27.6	65.7	(228.5)	501.0
Upper Basin	**TOTAL**	259.2	2,828.3	34.1	3.7	72.8	84.3	833.4	0.0	4,115.9

[1] Excludes reservoir evaporation from reservoirs listed in Table UC-1.

[2] Includes domestic, commercial, industrial, and public supply uses.

Table UC-6. Upper Colorado River System Estimated Water Use within States, by Major Tributaries and Types of Use
2025 - Provisional data (subject to change)

(1,000 acre-feet)

State	Tributary	Reservoir Evaporation[1]	Irrigated Agriculture	Stockpond Evaporation & Livestock	M&I - Mineral Resources	M&I - Thermal Electric Power	M&I - Other[2]	Export Outside System	Export Within System	TOTAL
Arizona	San Juan - Colorado Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colorado	Green River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colorado	Upper Main Stem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colorado	San Juan - Colorado Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colorado	TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Mexico	San Juan - Colorado Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utah	Green River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utah	Upper Main Stem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utah	San Juan - Colorado Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utah	TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wyoming	Green River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Basin	Green River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Basin	Upper Main Stem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Basin	San Juan - Colorado Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Basin	TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

[1] Excludes reservoir evaporation from reservoirs listed in Table UC-1.

[2] Includes domestic, commercial, industrial, and public supply uses.

5.3. Agricultural Irrigated Acreage

Table UC-7 shows the agricultural irrigated acreage for the reporting period 2021 - 2025. Agricultural irrigated acreage averaged 1,400,100 acres per year for the period 2021 - 2024.

Figure 5 summarizes agricultural irrigated acreage trends over the period of record.

Table UC-7. Upper Colorado River System Irrigated Acreage 2021 – 2025

(1,000 acres)

State	Tributary	2021	2022	2023	2024	2025
Arizona	**San Juan - Colorado Rivers**	0.1	1.7	0.3	0.8	0.0
Colorado	**Green River**	90.8	105.1	108.1	102.8	0.0
Colorado	**Upper Main Stem**	416.8	450.2	490.7	461.5	0.0
Colorado	**San Juan - Colorado Rivers**	122.8	159.2	173.2	158.1	0.0
Colorado	**TOTAL**	630.4	714.4	772.0	722.4	0.0
New Mexico	**San Juan - Colorado Rivers**	82.3	81.5	80.0	78.7	0.0
Utah	**Green River**	231.2	249.9	289.4	252.7	0.0
Utah	**Upper Main Stem**	3.6	3.9	5.2	3.5	0.0
Utah	**San Juan - Colorado Rivers**	29.6	28.2	35.6	31.9	0.0
Utah	**TOTAL**	264.3	282.0	330.2	288.1	0.0
Wyoming	**Green River**	292.0	320.9	350.4	308.0	0.0
Upper Basin	**Green River**	614.0	675.9	747.8	663.5	0.0
Upper Basin	**Upper Main Stem**	420.4	454.0	495.9	465.0	0.0
Upper Basin	**San Juan - Colorado Rivers**	234.7	270.5	289.2	269.5	0.0
Upper Basin	**TOTAL**	1,269.2	1,400.4	1,532.9	1,398.0	0.0

PROVISIONAL Upper Colorado River System
Consumptive Uses and Losses 2021 - 2025

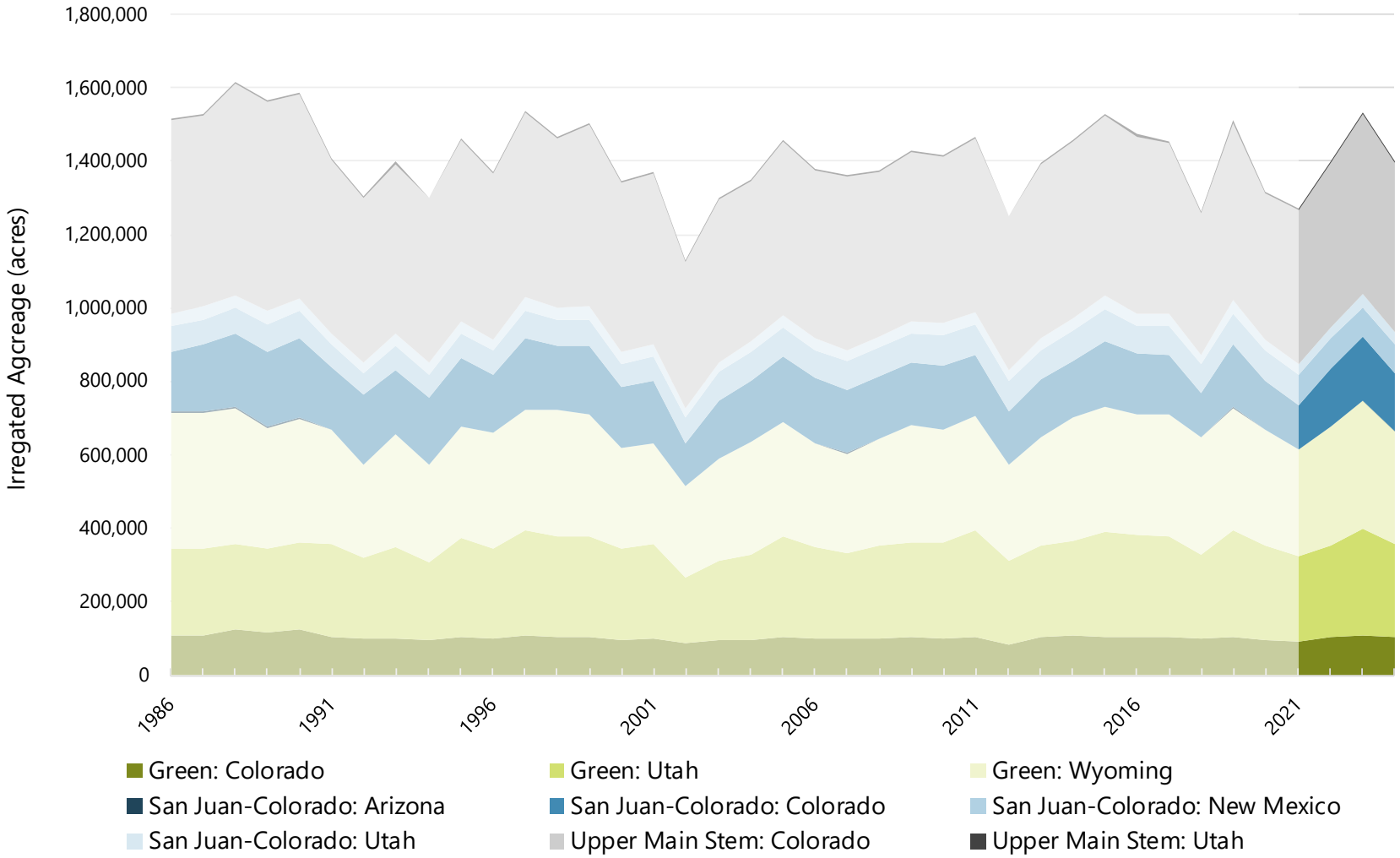


Figure 5. Upper Colorado River System irrigated acreages per State and Major Tributaries area chart for each year from 1971 to 2024.

5.4. Population

Table UC-8 shows population estimates for the reporting period 2021 - 2025. Population averaged 954,800 for the period 2021 - 2024.

Table UC-8. Upper Colorado River System Population Estimate 2021 – 2025

(1,000s)

State	Tributary	2021	2022	2023	2024	2025
Arizona	**San Juan - Colorado Rivers**	45.2	45.4	45.3	45.3	0.0
Colorado	**Green River**	44.6	44.7	44.9	44.9	0.0
Colorado	**Upper Main Stem**	447.8	448.3	449.3	453.0	0.0
Colorado	**San Juan - Colorado Rivers**	97.1	98.0	98.2	98.8	0.0
Colorado	**TOTAL**	589.5	591.0	592.4	596.7	0.0
New Mexico	**San Juan - Colorado Rivers**	137.0	136.3	136.3	136.5	0.0
Utah	**Green River**	87.2	88.7	89.8	90.7	0.0
Utah	**Upper Main Stem**	10.9	11.0	10.9	11.0	0.0
Utah	**San Juan - Colorado Rivers**	19.1	19.2	19.2	19.4	0.0
Utah	**TOTAL**	117.2	118.9	119.9	121.1	0.0
Wyoming	**Green River**	61.3	61.2	61.4	61.3	0.0
Upper Basin	**Green River**	193.1	194.7	196.0	196.9	0.0
Upper Basin	**Upper Main Stem**	458.7	459.3	460.3	464.2	0.0
Upper Basin	**San Juan - Colorado Rivers**	298.5	299.0	298.9	299.9	0.0
Upper Basin	**TOTAL**	950.2	952.9	955.2	961.0	0.0

5.5. Agricultural Water Shortages

Table UC-9 shows agricultural water shortage estimates for the reporting period 2021 - 2025. Agricultural water shortage averaged 1,147,800 acre-feet per year for the period 2021 - 2024

Table UC- 9. Upper Colorado River System Agricultural Water Shortage Estimates 2021 - 2025

(1,000 acre-feet)

State	Tributary	2021	2022	2023	2024	2025
Arizona	**San Juan - Colorado Rivers**	0.2	3.7	0.5	1.1	0.0
Colorado	**Green River**	73.5	68.4	51.1	77.0	0.0
Colorado	**Upper Main Stem**	401.9	399.0	357.2	413.7	0.0
Colorado	**San Juan - Colorado Rivers**	150.6	187.9	166.0	167.9	0.0
Colorado	**TOTAL**	626.0	655.3	574.3	658.6	0.0
New Mexico	**San Juan - Colorado Rivers**	49.1	41.8	46.2	37.2	0.0
Utah	**Green River**	270.3	244.7	171.4	221.4	0.0
Utah	**Upper Main Stem**	5.8	5.4	3.8	3.9	0.0
Utah	**San Juan - Colorado Rivers**	33.7	28.8	27.0	29.4	0.0
Utah	**TOTAL**	309.8	278.9	202.3	254.7	0.0
Wyoming	**Green River**	234.9	180.8	193.1	242.7	0.0
Upper Basin	**Green River**	578.6	493.9	415.6	541.1	0.0
Upper Basin	**Upper Main Stem**	407.7	404.4	361.0	417.6	0.0
Upper Basin	**San Juan - Colorado Rivers**	233.6	262.2	239.7	235.6	0.0
Upper Basin	**TOTAL**	1,219.9	1,160.6	1,016.4	1,194.3	0.0

6. References

Abatzoglou, J. T. (2013). Development of gridded surface meteorological data for ecological applications and modelling. International Journal of Climatology, 33(1): 121-131. https://doi.org/10.1002/joc.3413

Bureau of Indian Affairs (BIA), 1985. 1985 Survey of Irrigated Land in the Arizona Portion of the Upper Colorado River.

Lovelace, John K. (2009). Method for estimating water withdrawals for livestock in the United States, 2005. *U.S. Geological Survey Scientific Investigations Report* 2009–5041. 7 p. https://doi.org/10.3133/sir20095041

Maupin, M.A., Ivahnenko, T., and Bruce, B. (2018). Estimates of water use and trends in the Colorado River Basin, Southwestern United States, 1985–2010. *U.S. Geological Survey Scientific Investigations Report* 2018–504. 61 p. https://doi.org/10.3133/sir20185049

National Oceanic and Atmospheric Administration (NOAA), 1982. "Evaporation Atlas for the Contiguous 48 United States," NOAA Technical Report 33. National Weather Service (NWS). Washington, DC. June 1982. https://hdsc.nws.noaa.gov/hdsc/files25/TR33.pdf.

Pearson, C., Minor, B., Morton, C., Volk, J., Dunkerly, C., Jensen, E., ReVelle, P., Kilic, A., Allen, R., Huntington, J.L. (2024). Historical Evapotranspiration and Consumptive Use of Irrigated Areas of the Upper Colorado River Basin. Desert Research Institute, Publication No. 41304. DOI:10.13140/RG.2.2.31069.63206

Reclamation. (1980). Colorado River System Consumptive Uses and Losses Report 1976-1980 Technical Appendix. U. S. Department of Interior, Bureau of Reclamation.

Reclamation. (2025). Upper Colorado River System Consumptive Uses and Losses Methods Manual 1991 - 2025. U. S. Department of Interior, Bureau of Reclamation

Soil Conservation Service (SCS), 1970. Irrigation Water Requirements Technical Release No. 21 (TR 21). https://archive.org/details/CAT31345344/page/14/mode/2up.

Soil Conservation Service (SCS), 1975. Livestock Water Use.

Solley, W.B., Pierce, H.A., and Perlman, H.A. (1998). Estimated Use of Water in the United States in 1995. *U.S. Geological Survey Circular* 1200. https://pubs.er.usgs.gov/publication/cir1200.

Upper Colorado Region State-Federal Inter-Agency Group for the Pacific Southwest, Inter-Agency Committee Water Resources Council. (1971). Upper Colorado Region Comprehensive Framework Study. Washington D.C. https://www.usbr.gov/lc/region/programs/crbstudy/1971UCRStudy.pdf

U.S. Department of Agriculture (USDA), 2002. Census of Agriculture. https://agcensus.library.cornell.edu/census_year/2002-census/.

U.S. Department of Agriculture (USDA), 2007. Census of Agriculture. https://agcensus.library.cornell.edu/census_year/2007-census/.

U.S. Geological Survey (USGS), 1995. Estimated Use of Water in the United States in 1995. Circular 1200. https://pubs.er.usgs.gov/publication/cir1200.

U.S. Geological Survey (USGS), 2000. Estimated Use of Water in the United States in 2000. https://www.usgs.gov/publications/estimated-use-water-united-states-2000.