SURFACE-WATER ASSESSMENT, TAOS COUNTY, NEW MEXICO

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I. INTRODUCTION

This surface-water assessment for Taos County is completed by the New Mexico Bureau of Mines and Mineral Resources (NMBMMR) under supervision of the New Mexico Interstate Stream Commission (NMISC). The report's content and organization are a result of the joint efforts of the report's author, NMISC engineers and planners, and the region 7 Interstate Stream Commission member. This document is submitted in fulfillment of the reporting requirements under the Intergovernmental Agreement between NMBMMR and NMISC dated June 24, 1996, for completion of a water resources assessment for Taos County, and the Grant Agreement for Regional Water Planning, Amendment No. 1, dated May 12, 1998, wherein the original agreement was amended to require completion of a surface-water assessment for Taos County.

A. Background.

1. Regional Water Resources Assessment

Taos County comprises NMISC water planning region number 7. The county line is coincident with region 7 boundaries. This surface-water assessment for the Taos County planning region was conducted in conformance with the NMISC Regional Water Planning Handbook, (NMISC, 1994b), and the accompanying Checklist of Considerations for Regional Water Planning (NMISC, 1994a), section IV.A, Water Supply. The report follows the format of the NMISC Regional Water Planning Template, and was designed pursuant to NMISC's goal of developing uniform regional planning documents that can be efficiently merged into a single state water plan.

2. Phase I of Surface-Water/Ground-Water Assessment

At the recommendation of NMBMMR and the discretion of NMISC, it was determined that this assessment would focus on the surface-water supply of Taos County. Accordingly, this document constitutes a phase I report that will ultimately contribute a portion of the regional water resources assessment. Assessment of ground-water availability and quality in Taos County will need to be addressed in a related phase II report at some future time. This technical approach was deemed appropriate because most of the water used in the Taos Valley originates as surface water. A thorough documentation of surface-water availability, combined with an understanding of surface-water/ground-water interactions is required prior to an accurate assessment of ground-water availability. Furthermore, the vast amount of existing data and analyses regarding the surface-water supply in Taos County produce a surface-water assessment of considerable volume and magnitude.

3. Conjunctive Use

Although the technical approach of the Taos County water resources assessment is to provide a separate assessment of the surface-water supply and ground-water supply, the concept of conjunctive use is still recognized. Indeed, existing data support that surface water and ground water in Taos County are hydraulically connected (see section II.D.5, River and Stream Losses and Gains by Reach). Diversion of surface-water at key locations can and does affect natural recharge of the regional ground-water aquifers. Likewise, ground-water withdrawal in the vicinity of streams can and does influence surface-water availability at downstream locations. Any future phase II ground-water assessment, as well as the final assessment of water resources in Taos County, should address the concept of conjunctive use. To that end, some results, data and analyses presented in this report should also contribute to and overlap with future ground-water assessment reports.

B. Scope of the Surface-Water Assessment.

In order to fulfill the requirements of a surface-water assessment as set forth in the regional water planning template, the project was divided into three major tasks:

- Task 1 - Review existing data and compile the relevant supporting data required under the surface-water supply section of the Checklist of Considerations for Regional Water Planning (NMISC, 1994a).
- Task 2 - Evaluate the compiled data and any accompanying analyses as to their adequacy for characterizing the surface-water supply, and identify those data sources and analyses that are inadequate in quality or representativeness.
- Task 3 - Identify data requirements and recommend new analyses of existing data that would benefit resource characterization and assessment, and support the evaluation with technical reasoning and/or illustrative test analyses.

The review and compilation of existing surface-water data (Tasks 1 and 2) are presented in Section II, Surface-Water Supply. The identification of data requirements and recommendations for new analyses (Task 3) are presented in Section III, Recommendations and Data Needs.

C. Summary of Data Types and Data Analyses.

The inventory of data presented in this report is based on compilation and analysis of hydrologic and related data from existing published and unpublished sources. In order to achieve the objective of the regional water planning template to ultimately merge data presented here with other regional assessments into a state water plan, this report presents as much information as possible in the form of tables, figures, and maps. Both existing raw data and the results of existing data analyses are compiled. Raw data types include climatic data (precipitation, snow water equivalent, and pan evaporation), streamflow data, reservoir storage, and land and water use data. Raw data are compiled in tables and figures in Appendices A and B. Data interpretation and analysis are presented in Sections II and III, and in supporting figures and tables. Evaluations of existing data analyses were also completed in Section II. In most cases, it was determined that new analyses of the most current existing raw data provided a more accurate, valid, and representative result than reiterating results of previous work completed on smaller and/or older data sets.

D. Assessment Areas for Taos County Region.

At the request of the NMISC, the Taos County planning region was divided into four geographic areas based on physical and legal/political boundaries formed by topographic and watershed divides, and adjudication boundaries. These four assessment areas include Red River, Rio Pueblo de Taos, Embudo Creek, and the Taos Plateau. Water resources data in this report are compiled, presented, and evaluated under these four assessment areas. The areas are described in detail in the following paragraphs, and illustrated on the location map in Figure 1. The relationship between Taos County planning region 7, the assessment areas, and the U.S. Geological Survey (USGS) Hydrologic Units is also discussed.

1. Red River

The Red River assessment area encompasses the northeast portion of Taos County, extending from the Colorado state line south to the Red River/Rio Hondo drainage divide. The area includes the Rio Grande north of Rio Hondo, the portion of the Costilla Creek drainage within Taos County, the Red River drainage, and other small streams and arroyos tributary to the Rio Grande in the northeast of the county.

2. Rio Pueblo de Taos

The Rio Pueblo de Taos assessment area covers the east central portion of Taos County, and includes the area extending east from the Rio Grande to the Colfax county line, south of the Red River/Rio Hondo drainage divide, and north of the Rio Pueblo de Taos/Embudo drainage divide in the Picuris Mountains. The area includes the Rio Hondo and Rio Pueblo de Taos drainages, and the Rio Grande from the Rio Hondo south to Taos Junction.

3. Embudo

The Embudo assessment area includes the southeast portion of Taos County extending from the Rio Pueblo de Taos/Embudo drainage divide in the Picuris Mountains south to the Rio Arriba county line, and from the Rio Grande southeast to the Mora county line. The area envelopes the Rio Grande from Taos Junction south to the county line, and the portion of the Embudo Creek drainage upstream of Canocito.

4. Taos Plateau

The fourth assessment area, the Taos Plateau, encompasses the entire western portion of Taos County extending from the Colorado state line south to the county line with Rio Arriba County, and from the western Taos county line, east to the west bank of the Rio Grande. The plateau contains small ephemeral streams and dry arroyos that drain the west side of the county and flow east to the Rio Grande, and the small portion of the Rio Ojo Caliente that traverses the southwest corner of Taos County prior to joining the Rio Chama.

5. Relation to USGS Hydrologic Units

The USGS has organized the United States into hydrologic or hydrographic units that provide a standard geographic framework for detailed water and land-use planning (U.S. Geological Survey, 1976). Each hydrologic unit represents part or all of a surface drainage basin or distinct hydrologic feature, and is identified by an 8-digit number. Taos County planning region 7 is almost entirely included within USGS hydrologic unit 13020101. This hydrologic unit represents the upper Rio Grande basin from Costilla Creek south to Otowi Bridge. Small portions of two other hydrologic units are included in the Taos County planning region. Hydrologic unit 13010002, which represents a portion of the upper Rio Grande north of Costilla Creek, envelopes small areas in northwest and northeast Taos County. Hydrologic unit 13020102 represents the Rio Chama drainage, and includes a small portion of southwest Taos County contributing to the Rio Ojo Caliente. This surface-water assessment deals entirely with the northern half of hydrologic unit 13020101.

II. SURFACE WATER SUPPLY

Over 93 percent of water withdrawals in Taos County in 1995 originated from surface-water sources (Wilson and Lucero, 1997). Surface water flows from 11 perennial streams and rivers fed primarily with precipitation falling on the Sangre de Cristo Mountains which occupy the eastern third of the county. The Rio Grande, the only through-flowing perennial river, originates in Colorado and flows through Taos County from north to south. Perennial streams tributary to the Rio Grande originate in the Sangre de Cristo Mountains and flow from east to west. Numerous other ephemeral streams and arroyos flow primarily during precipitation events. Diversion of surface water occurs from 125 acequias and ditches in Taos County (Saavedra, 1987). An inventory of 53 springs is included here, and numerous other undeveloped or undocumented springs are known to exist. Two storage reservoirs are located in Taos County, Costilla Reservoir and Cabresto Reservoir. Numerous small alpine lakes occur in the higher elevations in the eastern part of the county, and small ephemeral lakes form in natural depressions during runoff events in lower elevations of the central and western regions of the county.

This chapter provides a general description and inventory of surface-water features and related data within Taos County with a focus on drainage basins and watersheds, climate data, streamflow data, surface-water yields and uses, and water supply facilities.

A. Drainage Basins and Watersheds

The drainage patterns of streams and arroyos in the region are controlled,by a combination of basin geology, topography, and climate. Previous works (Upson, 1939; Wilson et al., 1978; Garrabrant, 1993) have logically divided the San Luis Valley of Taos County into three physiographic regions based on topographic and geologic characteristics. These physiographic regions are shown in Figure 2 together with general geologic data, and include: (1) the Sangre de Cristo Mountains, which extend from the mountain crest at the eastern border of the County to the mountain base on the west, and occupy about 40% of the total land area; (2) the piedmont at the foot of the Sangre de Cristo Mountains, known as the Costilla Plains, which slopes gently from the mountain front west to the Rio Grande gorge, and occupies about 25% of the land area; and (3) the Taos Plateau, a gently eastward sloping lowland dotted with volcanic peaks that extends from the western border of the county east to the Rio Grande Gorge. The basic drainage patterns in each of these physiographic regions are characteristic of the rock units, structures, and landforms that dominate the regions. Table 1 summarizes the drainage patterns associated with each region and their geologic significance. The drainage patterns follow regional structural trends and indicate that drainage geometry is controlled largely by geologic features.

The perennial streams and rivers within Taos County occupy large to intermediate drainage basins on the western face of the Sangre de Cristo Mountains. As the perennial streams enter the piedmont terrain, they tend to spread out on the alluvial fans and lose flow to infiltration in the coarse alluvial gravels. Ephemeral streams and dry arroyos are concentrated primarily on the Taos Plateau, but are also common on the piedmont where minor streams lose their entire flow to infiltration. Wetlands, springs, and seeps occur at the head of the piedmont and the base of the Sangre de Cristo Mountains where topographic and hydraulic gradients change rapidly. Geologic conditions and structural features at the transition between mountains and piedmont also affect stream hydraulics and stream/aquifer interactions.

The drainage basins and watersheds are described for each assessment area in downstream sequence in the following paragraphs. Figure 3 shows the location of the major basins, subbasins, and watersheds, Table 2 summarizes basin and watershed statistics, Table 3 inventories the ditches and acequias in each drainage basin, and Table 4 inventories cold and thermal springs. Basin areas were calculated at 1:100,000 scale using GIS ARC/INFO GRID, and reflect areas of the entire basin or subbasin above the tributary confluence or above some other designated reference point, such as a gage station.

1. Red River Assessment Area

The Red River assessment area covers 675 mi^2 and contains five drainage basins and watersheds. Each basin and watershed is described in the following subsections.

a. Costilla Creek. The Costilla Creek drainage basin above Costilla encompasses 221 mi^2, all but about 8 mi^2 of which are in Taos County. An additional 32.4 mi^2 in basin area lie below Costilla on the plains adjacent to the Colorado border. The basin contains the towns of Costilla and Amalia. The upper Costilla basin captures runoff from the northern Sangre de Cristo Mountains, and the Culebra Range. Elevations range from 12,870 ft at State Line Peak in the upper basin, to 7900 ft at the Costilla gage station, and 7380 ft at the Rio Grande. Major tributaries (and subbasin areas) are Comanche Creek (42.6 mi^2), Latir Creek (19.6 mi^2), and Ute Creek (17.2 mi^2).

Costilla Reservoir is located in the upper Costilla basin. The contributing watershed lies entirely within the Sangre de Cristo land grant, and has a catchment area of 56.5 mi^2, 48.8 mi^2 of which are located in Taos County. The mountain streams contributing to the reservoir include upper Costilla Creek, Casias Creek, and Santistevan Creek. Costilla Creek enters the Rio Grande at river mile 1711.6 near the New Mexico/Colorado state line after flowing through Jaroso County Colorado for about 13 miles. Twelve acequias and ditches divert surface flow from the Rio Costilla to irrigate approximately 1600 acres in New Mexico (Table 3) and to deliver surface flow to Colorado. Six acequias divert additional surface flow from Ute Creek to irrigate over 320 acres in the Amalia area.

b. Sunshine Valley. The Sunshine Valley is a large lowland watershed covering 107 mi^2 southwest of Costilla. The valley captures runoff from small ephemeral streams and dry arroyos draining Ute Mountain and the northern ridges of Latir Peaks. Elevations in the watershed range from 10,370 ft in the Sangre de Cristo Mountains to 7300 ft at the Rio Grande. Surface flow from Cedro Canyon and Jaroso Canyon join the Rio Costilla Association Ditch to irrigate fields in the region. No significant perennial streams occur in the watershed. The ephemeral streams all drain internally to the Sunshine Valley or directly to the Rio Grande.

c. Latir Creek and the Cerro/Guadalupe watershed. Latir Creek is a small drainage basin encompassing 35.3 mi^2 that drains the north and west sides of Latir Peaks and contains the village of El Rito. The basin is often referred to as West Latir Creek to distinguish it from the Latir Creek that drains the eastern face of Latir Peaks in the Costilla Creek basin. West Latir Creek is perennial in its upper reach. The perennial portion of the basin above the USGS stream gage covers 11 mi^2. Elevations in the Latir basin range from 12,730 at Venado Peak to 7,250 at the Rio Grande. At the base of the mountain front surface flow is diverted into the Acequia Madre de Cerro de Guadalupe (Cerro Community Ditch) (Table 3) which irrigates 1764 acres in the vicinity of El Rito, Buena Vista, and Cerro. The Cerro Community Ditch also captures flow from Rito del Medio, which would otherwise be a perennial tributary of Latir Creek. The remainder of the Cerro/Guadalupe watershed outside of the Latir Creek basin covers an additional 40 mi^2, with elevations ranging from 12,450 ft at Cabres Peak to 7110 at the Rio Grande. This area contains primarily ephemeral streams draining the southwest portion of Latir Peaks and the north half of Guadalupe Mountain. One perennial stream in the watershed, Rito Primero, is also diverted into the Cerro Community Ditch.

d. Red River. The Red River basin covers 188 mi^2 and drains a significant portion of the Sangre de Cristo and Taos Mountains at elevations up to 13,161 ft at Wheeler Peak. The basin contains the towns of Red River and Questa, in addition to the Molycorp molybdenum mine. The Red River enters the Rio Grande west of Questa at mile 1686.0, and an elevation of 6600 ft. The main tributary to the Red River, Cabresto Creek, has a subbasin area of 39.5 mi^2. The Lake Fork tributary of Cabresto Creek contains Cabresto Reservoir. Two acequias, the Cabresto Lake Irrigation Association and the Llano Irrigation Community Ditch, divert water from Cabresto Creek for irrigation of over 2250 acres (Table 3) near Questa and Cerro. Red River also contributes surface flow to two acequias, the Questa Citizens Ditch and the El Rito de la Loma, that irrigate about 840 acres. Numerous springs are located along the lower reach of the Red River (Table 4), which result in a significant stream gain between the Red River State Fish Hatchery and the mouth of the Red River.

e. Garrapata and San Cristobal Creeks. A small watershed situated between the Red River and Rio Hondo contains ephemeral streams that drain Garrapata and San Cristobal Canyons at the southern end of the Taos Mountains. These canyons, together with adjacent small drainages, encompass a watershed approximately 36 mi^2 in area that drains directly into the Rio Grande. Elevations range from 11,800 ft at the head of San Cristobal Canyon to 6550 ft at the Rio Grande. Runoff from San Cristobal Canyon (12 mi^2) is diverted into five ditches and acequias for irrigation of over 400 acres (Table 3).

2. Rio Pueblo de Taos Assessment Area

The Rio Pueblo de Taos assessment area covers 531 mi^2 and includes two major drainage basins, the Rio Hondo and the Rio Pueblo de Taos. Each basin and watershed is described in the following subsections.

a. Rio Hondo. The Rio Hondo, a basin of intermediate size at the northern end of the Rio Pueblo de Taos assessment area, drains 75 mi^2 including the northwest portion of Wheeler Peak and the southern Taos Mountains. The basin contains the towns of Twining, Valdez, Kiowa Village, and Arroyo Hondo, and also includes the Taos ski area. Elevations range from over 13,000 ft at Wheeler Peak to 6470 ft at the Rio Grande. Eleven acequias divert surface water below Valdez to irrigate about 2870 acres in the Arroyo Hondo area (Table 3). The Rio Hondo enters the Rio Grande at mile 1677.5. Several thermal and cold springs discharge along the Rio Grande and the Rio Hondo in the region of the confluence (Table 4).

b. Rio Pueblo de Taos. The Rio Pueblo de Taos is the largest drainage basin in Taos County. The basin encompasses 418 mi^2 and drains the southern half of Wheeler Peak, the Sangre de Cristo Mountains, the Fernando Mountains, and the northern half of the Picuris Mountains. The basin contains most of the county's population, including Taos, Taos Pueblo, Ranchos de Taos, and Los Cordovas. The major tributaries are the Rio Lucero, the Rio Fernando de Taos, the Rio Grande del Rancho, and Arroyo Seco. Each subbasin and watershed is briefly described below.

(1) Rio Pueblo de Taos basin above the Rio Lucero covers 78.6 mi^2 and drains the southeast portion of Wheeler Peak, Capulin Peak, Palo Encebado Peak, and the Taos Mountains. This upper portion of the basin is contained almost entirely on Taos Pueblo. Elevations range from over 13,000 ft at Old Mike Peak to 6880 ft at the confluence with the Rio Lucero. The lower Rio Pueblo de Taos basin, below Arroyo Seco, covers 63.4 mi^2, and includes the Arroyo del Alamo and numerous other small arroyos that drain the northwestern end of the Picuris Mountains. Streams in the Arroyo del Alamo watershed are ephemeral, and are tributary to the Rio Pueblo de Taos below Los Cordovas. Elevations in this watershed range from 10,800 ft at Picuris Peak to 6500 ft at the Rio Pueblo de Taos. The contribution of surface flow to the Rio Pueblo de Taos via Arroyo del Alamo appears relatively insignificant, although one acequia diverts flow in the canyon to irrigate about 75 acres. Nine other acequias divert surface flow directly from the Rio Pueblo de Taos for irrigation of an additional 1330 acres (Table 3). The Rio Pueblo de Taos enters the Rio Grande at mile 1659.7, approximately 0.3 miles above Taos Junction bridge, at an elevation of 6080 ft.

(2) Rio Lucero drains the southwest portion of Wheeler Peak and Pueblo Peak and enters the Rio Pueblo de Taos west of Taos at mile 9.3. The subbasin covers 31.5 mi^2, and is contained entirely on Taos Pueblo and the Antoine Leroux Land Grant. Seven acequias divert surface flow for irrigation of over 2400 acres (Table 3).

(3) Rio Fernando de Taos drains the south sides of Palo Encebado and Capulin Peaks, and the north side of the Fernando Mountains, and enters the Rio Pueblo de Taos below Lower Ranchito at mile 7.9. Elevations range from 10,830 ft at Osha Mountain to 6755 ft at the confluence with the Rio Pueblo de Taos. The stream parallels state highway 64 for most of its course. The subbasin covers 68.3 mi^2. Five acequias divert surface water for the irrigation of over 650 acres on the south side of Taos (Table 3).

(4) Arroyo Seco drains Lucero Peak and South Fork Peak in the western edge of the Wheeler Peak wilderness area. Arroyo Seco is ephemeral over most of its length, and joins other small arroyos to form a watershed 16.2 mi^2 in area. The arroyo enters the north side of the Rio Pueblo de Taos below Ranchito at mile 6.8. Elevations range from 11,980 ft at South Fork Peak to 6710 ft at the confluence with the Rio Pueblo de Taos. Ten acequias and ditches divert surface water below the village of Arroyo Seco to irrigate about 1730 acres (Table 3).

(5) Rio Grande del Rancho, with its tributaries the Rio Chiquito, the Rito de la Olla, and Arroyo Miranda, drains the south side of the Fernando Mountains and the north side of the Picuris Mountains. The tributary includes a fairly large subbasin, 150 mi^2 in area, that is mostly coincident with the Rancho del Rio Grande land grant, and administered by the Carson National Forest. Elevations range from 11,940 ft at Cerro Vista to 6710 ft at the confluence with Rio Pueblo de Taos. The area includes the towns of Talpa and Llano Quemado. The Rio Grande del Rancho enters the Rio Pueblo de Taos at mile 6.7 at Los Cordovas. Diversion of surface flow below Talpa through 19 acequias and ditches provides irrigation for more than 3380 acres (Table 3). Numerous springs are reported by the USFS (1998) on the Carson National Forest (Table 4) in the Fernando Mountains and Picuris

Mountains. The well known Ponce de Leon Spring discharges at the mouth of Miranda Canyon, along the Miranda fault zone.

3. Embudo Assessment Area

The Embudo assessment area covers 264 mi^2 and contains the Pilar watershed and the Embudo Creek drainage basin. Each basin and watershed is described in the following subsections.

a. Pilar watershed. Several small adjacent canyons, totaling 33.4 mi^2 in area, drain the northwest side of the Picuris Mountains and are direct tributaries to the Rio Grande. These include Arroyo Hondo (8.8 mi^2), an ephemeral stream, which enters the Rio Grande below Taos Junction bridge at about mile 1658, and Agua Caliente Canyon (18.2 mi^2) which enters the Rio Grande near Pilar. Ephemeral for most of its length, Agua Caliente Canyon has about a two-mile perennial reach at its headwaters that is fed by Warm Springs (Table 4). Elevations in Agua Caliente Canyon range from 9400 ft in the Picuris Mountains to 6020 ft at Pilar. Other significant springs discharge along the east side of the Rio Grande gorge north of Pilar, including Rio Grande Spring (Table 4). Two acequias in Agua Caliente Canyon, and one ditch in Hondo Canyon divert surface flow for the irrigation of about 140 acres in the Pilar area.

b. Embudo Creek. The Embudo Creek drainage covers 320 mi^2, 230 mi^2 of which are in Taos County. The creek drains the Sangre de Cristo Mountains, the southern side of the Picuris Mountains, and the northern side of Truchas Peaks. Embudo Creek enters the Rio Grande in Rio Arriba County at mile 1645.1, about four Rio Grande miles downstream of the Taos County line. The drainage contains the Picuris Pueblo and numerous small towns including Penasco, Rodarte, Trampas, Vadito, and Tres Ritos. The Embudo Creek drainage has three tributaries within Taos County, the Rio Pueblo de Picuris, the Rio Santa Barbara, and Chamizal Creek, and also incorporates a small portion of the Rio de las Trampas. Each subbasin is briefly described below.

(1) Rio Pueblo de Picuris drains the Picuris and Sangre de Cristo Mountains and contains Picuris Pueblo. The Rio Pueblo subbasin covers 142 mi^2 with elevations ranging from 12,470 ft at Truchas Peaks to 7160 ft at the confluence with the Rio Santa Barbara. Ten acequias and ditches, including one in Telephone Canyon, divert surface flow for the irrigation of over 820 acres in and around Vadito and Picuris Pueblo (Table 3).

(2) Rio Santa Barbara drains the northern Truchas Peaks, and contains the towns of Llano, Rodarte, and Penasco. The subbasin covers 66 mi^2 in area, 44.3 mi^2 of which are in Taos County. Elevations range from 12,840 ft at Chimayosos Peak to 7160 ft at Embudo Creek. The Rio Santa Barbara joins the Rio Pueblo at mile 11.8 of Embudo Creek. Surface flow is diverted through 13 acequias and ditches to irrigate approximately 4740 acres (Table 3).

(3) Chamizal Creek subbasin covers 9.3 mi^2, almost all of which is in Taos County. The subbasin drains Cebadilla Canyon, and includes the villages of Ojito and Chamisal. Chamizal Creek is ephemeral through its lower length, and joins Embudo Creek on the south bank, between Rio Lucio and the county line. Elevations range from 9840 ft at Upper Ojo del Oso spring at the head of the canyon (Table 4), to 7070 ft at Embudo Creek.

(4) Rio de las Trampas subbasin includes about 42 mi^2, only 16 mi^2 of which are within Taos County. The Rio de las Trampas enters Embudo Creek at mile 7.3 just upstream from the Taos County line. Elevations range from 12,800 ft at North Truchas Peak to 6600 ft at Embudo Creek. Five acequias diverting flow from the Rio de las Trampas irrigate a total of 525 acres in Taos County (Table 3).

4. Taos Plateau Assessment Area

The Taos Plateau assessment area covers 737 mi^2, and includes the western one-third of the county extending from the Colorado state line south to Rio Arriba County. The area encompasses three fairly large drainage basins and numerous unnamed small watersheds. The streams and arroyos in the area are typically dry, conveying only intermittent flow during precipitation events, and much of the land surface drains to small closed playas. Hence, the area contributes only negligible surface flow to the Rio Grande either in the form of direct runoff or spring discharge, and no acequias exist in the area. The major drainage basins in the area are described briefly in the following subsections.

a. Arroyo Punche. Arroyo Punche drains an area of 97 mi^2 on the northwestern plateau, most of which is in Taos County, and includes the region north of Cerro de la Olla. Elevations range from 10,890 ft at San Antonio Mountain to 7140 ft at the Rio Grande. The basin is an immature, poorly integrated drainage system. It is unlikely that the drainage contributes any appreciable surface flow to the Rio Grande.

b. Unnamed tributary. An unnamed tributary, labeled Brushy Mountain on Figure 3, encompasses an area of 71 mi^2, and drains the highlands of No Agua Peaks, Cerro de la Olla, Cerro Montoso, and Brushy Mountain on the west-central plateau. Elevations range from 8860 ft at No Agua Peaks to 6890 ft at the Rio Grande. The tributary enters the Rio Grande at mile 1689.5, about 3.5 miles upstream of the confluence with Red River. This basin has not been addressed in previous studies. It is included here because it drains the highest elevation on the west-central plateau, with roughly one-fifth of its area above 8200 ft, and has a well-developed, integrated drainage system. Although no data exist to quantify surface runoff, it is likely that this basin contributes some surface flow, albeit minimal and transient, to the Rio Grande.

c. Arroyo Aquaje de la Petaca. The Arroyo Aquaje de la Petaca is a large basin covering approximately 243 mi^2 in area, 138 mi^2 of which are in Taos County. The basin comprises most of the western edge of Taos County, and a portion of Rio Arriba County, including the Tusas Ridge, San Antonio Mountain, and Comanche Rim. Elevations range from 9840 at Broke Off Mountain to 6060 at the Rio Grande. The basin contains Tres Piedras and the defunct Carson Reservoir. Although the arroyo captures runoff from a fairly large area, it is typically dry where it enters the Rio Grande, about three miles upstream from Pilar. Based on the well-integrated, deeply incised character of the arroyo, however, it is apparent that the basin can contribute a significant surface flow to the Rio Grande during intense, localized precipitation events.

d. Rio Ojo Caliente. The Rio Ojo Caliente traverses a short distance across the southwest corner of Taos County before entering the Rio Grande through the Rio Chama drainage. Only an insignificant area on the southwest plateau contributes surface runoff to the river. No statistics are compiled for the Rio Ojo Caliente. The well known Joseph's Hot Springs

(Table 4) are located about one mile upstream of the village of Ojo Caliente, off the west bank of the river.

B. Climatic Data

Climatic data were compiled for 24 weather and snow course stations in and adjacent to Taos County. The recording stations, station locations, and available parameters are summarized in Table 5, and illustrated in Figure 4. Station remarks and parameter summaries are compiled in Appendix A. Precipitation data, evaporation data, and regional and long-term variability of precipitation, are summarized in the following paragraphs.

The climate data recording stations include four currently active National Oceanic and Atmospheric Administration (NOAA) weather stations in Taos County, Cerro, Red River, Taos and Tres Piedras, and three discontinued NOAA stations, Penasco, Ojo Caliente, and Skarda. Additionally, seven active and discontinued NOAA stations adjacent to Taos County (Black Lake, Eagle Nest, Chacon, Abiquiu Reservoir, El Vado Reservoir, Conejos 3 NNW, and Platoro) were included, primarily for evaluation of regional evaporation data. Black Lake and Chacon stations were included to provide additional data on precipitation variability in the Embudo assessment area. Precipitation and evaporation data from NOAA stations for years 1949 and later were compiled from the Hydrosphere environmental database (Hydrosphere, 1996a), National Climatic Data Center (NCDC) summary of the day. Because pre-1949 digital data are not available from the NCDC, evaporation and precipitation data prior to 1949 were compiled from NMSEO Technical Reports Nos. 5 and 6 (NMSEO, 1956a, 1956b). Statistical summaries for NOAA weather station parameters in Appendix A are derived from Hydrosphere (1996a), and reflect characteristics of post-1949 data.

The Natural Resources Conservation Service (NRCS) maintains eight snow survey stations within Taos County for the measurement of snow water equivalent. Snow data are compiled for all active NRCS snow data measurement stations, and one discontinued station. The data were retrieved from NRCS digital files in March and May, 1997, and from the NRCS Taos field office data logging sheets (NRCS, 1997). Snow course measurements are typically made within four days of the first of February, March, April and May of each year, and data are recorded as both snow depth, and snow content (snow water equivalent). The snow depth and water content listed in the tables of Appendix A are averages of all individual samples taken on a snow course on the particular day.

1. Precipitation Data

Total annual precipitation and mean monthly precipitation data are compiled for each NOAA precipitation station described in Table 5. Annual precipitation data are compared to average annual amounts based on a mean for the period of record, and where data are available, are also compared to NOAA's "normal" annual precipitation values, which are derived from an averaging period of 1961 to 1990. Period of record means are very close in magnitude to the NOAA normal precipitation values, with the relative percent difference varying randomly from +0.07 to -0.034, and with no apparent trends due to variation in averaging period. Graphs of annual precipitation and mean monthly precipitation are included in Appendix A, and average annual values are summarized for each station and assessment area in Table 6.

April 1 snow water equivalent data are compiled for each NRCS station described in Table 5. April data were chosen over snow data measured in other months because April data reflect a maximum, or close to maximum, snow water equivalent for the season at all stations. Graphs of April snow water equivalent are included in Appendix A, and average April values are summarized for each station and assessment area in Table 6.

a. Geographic and regional variability of precipitation. Geographic and regional variability of precipitation in this intermontane region are governed primarily by topography and orographic effects, and to a lesser degree by regional storm patterns. Elevation varies dramatically across Taos County, from about 6000 ft at the Rio Grande in the southern extreme of the county, to over 13,000 ft at Wheeler peak in the eastern mountains. The Taos Plateau has a much lower and more uniform relief, with elevations ranging from 10,000 ft near San Antonio Mountain to 6000 ft at the Rio Grande. Gradients in climatic parameters occur with changes in elevation. Generally speaking, precipitation amounts increase with increasing elevation, and temperature and evaporation rates decrease, resulting in a dramatic increase in available water at higher elevations. The regions of the county with the largest amounts of available water are the Red River, Rio Pueblo de Taos and Embudo assessment areas. Previous water assessment studies for Taos County (Wilson et al., 1978) have proposed linear elevation/precipitation relationships of three inches per 1000 ft for elevations below about 8000 ft, and six inches per 1000 ft for elevations above 8000 ft. This previous analysis was based on precipitation data from all Taos County weather stations regardless of location or period of record. The following analysis examines the validity of this approach to determining geographic and regional variability of precipitation.

In Figure 5a, both mean annual precipitation and mean April snow water equivalent are compared with station elevations for all precipitation and snow stations with more than 10 years of record. The graph also shows linear regression lines for the two variables, and 95% confidence intervals. Some general observations and interpretations can be made from Figure 5a.

1. The r^2 value for the mean annual precipitation regression is 0.66, and for the snow water equivalent regression is 0.73. Although a fairly good correlation exists, the relationship is definitely affected by the influence of other complex physical factors, the limitations of sampling a spatially variable parameter, and time variation of the data.
2. Precipitation stations on the Taos Plateau, specifically Skarda and Tres Piedras, exhibit anomalous precipitation gradients compared with stations located throughout the eastern mountains. This is due to being situated in a rain shadow of the Tusas Mountains to the west, and in an area of overall lower, more uniform, relief.
3. Snow courses in the Costilla assessment area, North Costilla and Red River Pass, exhibit anomalously light snow water equivalents compared with snow course data in the more southern Sangre de Cristo Mountains, possibly due to variation in regional storm patterns. Without postulating the cause, it is relevant here to note that the Costilla assessment area will have a unique precipitation/elevation relationship for winter precipitation.
4. In order to limit the effects of regional differences and time variation in the data, elevation/precipitation relationships should be derived using a base period of data common to all stations, and using only stations from geographic areas exhibiting similar climatic and orographic characteristics. When evaluating orographic precipitation, it is common to divide the study region into zones for which parameters other than elevation are believed to be reasonably constant.

Based on the regression relationships depicted in Figure 5a, and the observations and interpretations discussed above, a second regression analysis was completed comparing mean annual precipitation and mean April snow water equivalent to station elevations for select, climatically similar stations with coincident years of record. For the elevation/precipitation regression, the Cerro, Red River, Taos, and Black Lake stations were used with a base period of record extending from 1948 to 1995. Data from Skarda, Tres Piedras, and Ojo Caliente were eliminated on the basis of being representative of a dissimilar climatic area, and data from Penasco and Chacon were eliminated to achieve a common base period of record. For the elevation/snow water equivalent regression, the Tres Ritos, Gallegos Peak, Palo Flechado, Taos Canyon, Taos Powderhorn, and Alamitos stations were used with a base period of record extending from 1978 to 1996. Data from North Costilla and Red River Pass were eliminated on the basis of being representative of a unique snow pack area dissimilar from the rest of the southern Sangre de Cristo Mountains, and Cordova was eliminated to maintain consistency with the 1978 to 1996 base period. Mean annual precipitation and mean snow water equivalents for these base periods of record are also summarized in Table 6. The results of this analysis are illustrated in Figure 5b.

An excellent regression relationship is defined for mean April snow water equivalent versus elevation according to the following equation:

$$SWE = 9.95e^{-3} * Elevation - 84 \; [r^2 = 0.943] \qquad \text{[Equation 1]}$$

This equation is applicable to winter snow packs in the southern Sangre de Cristo Mountains in Taos County, specifically the Rio Pueblo de Taos and Embudo assessment areas, and indicates an increase of 9.95 inches of snow water equivalent per 1000 ft increase in elevation. Although data for the Red River assessment area are limited to two stations at North Costilla and Red River Pass, these points provide for an increase of 6.5 inches of snow water equivalent per 1000 ft increase in elevation for the Red River and Costilla regions.

The regression relationship for mean annual precipitation versus elevation is also improved over that derived using all stations, and results in the equation:

$$MAP = 5.52e^{-3} * Elevation - 27 \; [r^2 = 0.818] \qquad \text{[Equation 2]}$$

This equation is applicable to annual rainfall in the eastern third of the county, specifically the Red River, Rio Pueblo de Taos and Embudo assessment areas, and indicates an increase of 5.5 inches of precipitation per 1000 ft in elevation.

Although the variance of the elevation/mean annual precipitation regression is reduced by using select stations, the 95% confidence interval for the regression is expanded significantly with the removal of data from Chacon and Penasco to maintain a common base period. In order to evaluate the impact of using data from different averaging periods, a third regression analysis was completed that utilizes all data from climatically similar regions regardless of period of record. The results of this test are illustrated in Figure 5c, and indicate that, in this case, the regression relationships are not changed appreciably by incorporating data outside the base period, but the confidence interval is reduced significantly across the elevation range of the data (approximately 7000 ft to 9000 ft). The slope and variance remain virtually the same, with only minor deviation in the y-intercept.

In summary, the results of this analysis should emphasize the following points:

1. The application of regression relationships in evaluating geographic variability of precipitation should be approached using data from climatically similar regions. The application of the regression equation will ultimately be made on a drainage basin scale, not a county-wide scale, and care should be taken not to develop a relationship that has no meaning at the scale on which it is applied.
2. The application of regression relationships should also utilize data from a common base period of record, where sufficient data are available.
3. The existing data are sufficient to support a regression relationship for April snow water equivalent versus elevation in the Rio Pueblo de Taos and Embudo assessment areas with a high degree of confidence (Equation 1), and define an increase of 9.95 inches in snow water equivalent per 1000 ft increase in elevation. Limited data for the Red River assessment area indicate an increase of 6.5 inches of snow water equivalent per 1000 ft increase in elevation for that area.
4. A regression relationship for mean annual precipitation versus elevation is developed for the Red River, Rio Pueblo de Taos, and Embudo assessment areas (Equation 2), and indicates an increase of 5.5 inches of precipitation per 1000 ft increase in elevation. The relationship is not affected by using data outside the base period of record.

b. Seasonal variability of precipitation. The seasonal variability of precipitation is evaluated using mean monthly precipitation data, which are compiled for each NOAA precipitation station described in Table 5. Both graphs and tabulations of mean monthly precipitation by station are included in Appendix A. Figure 6 summarizes the seasonal distribution of precipitation by station, and Figure 7 illustrates the monthly distribution of precipitation by geographic area. Figures 6 and 7 indicate that most of the annual rainfall in Taos County, 73% on average, falls during the irrigation season of April through October, with much of this precipitation (28% to 37%) occurring during the summer monsoon months of July and August. For all stations in and around Taos County, July and August are the wettest months of the year. For most stations, the cold winter months of November through February are relatively dry, and produce only a uniform baseline of minimum precipitation. Precipitation during the spring months of March, April, May and June is variable throughout the county. Most stations reflect some increase in precipitation during these spring months, but in the western and southern areas surrounding Tres Piedras, Skarda, Ojo Caliente, and Penasco, little increase in precipitation is observed until July. May is the wettest month of the spring season for all areas.

Snow water equivalent data (Table 6, Appendix A) also exhibit a seasonal trend that is a function of elevation. Snow survey stations generally record maximum or close to maximum values for snow water equivalent during the April 1 survey, with a few exceptions due to relative elevation. Palo Flechado, with the lowest elevation of 7920 ft, records a maximum snow water equivalent in the month of March, and then declines rapidly by April 1. Snow survey sites at intermediate elevations, Alamitos (9320 ft), Taos Canyon (9100 ft), and Tres Ritos (8600 ft), also register maximum snow water equivalents in March, but values remain at or near maximum levels through April 1. High elevation sites, greater than or equal to 9800 ft, record maximum snow water equivalents in April, with the exception of Taos Powderhorn (11,250 ft) which reaches a maximum in May.

c. Long-term variability of precipitation. Annual or long-term variability of precipitation is evaluated using a five-year moving average of total annual values. The moving average behaves as a smoothing factor for the precipitation curve, eliminating or "smoothing" random variation so long-term trends in the data are more easily observed. Plots of the five-year moving average for precipitation at each NOAA precipitation station, which are included with the annual precipitation graphs in Appendix A, show general cycles of wet and dry periods relative to the period of record mean. The graphs illustrate the following observations:

1. All data from stations with long-term records (Cerro, Red River, Taos and Tres Piedras) show a long-term cycle of wet and dry conditions operating on a period of about 70 to 80 years. Data from Red River show the sinusoidal trend most dramatically, but records from other stations also exhibit similar characteristics. These curves indicate that above normal precipitation occurred early in this century prior to entering an extended period of dry conditions in the early 1940's. This period of below normal precipitation remained until the early 1980's, after which the area has again generally experienced precipitation above the long-term mean.
2. Interpretations of data from stations with shorter periods of record (Skarda, Ojo Caliente, and Chacon) are limited because the data do not represent long-term variation.
3. Shorter term, smaller-scale variations also occur on the order of every 8 to 12 years.

In order to eliminate minor geographical differences and evaluate long-term variation in precipitation over the entire region of Taos County, the five-year moving average annual precipitation data from stations at Black Lake, Cerro, Penasco, Red River, Taos and Tres Piedras, were averaged to produce a single (temporally and spatially averaged) data set. Data prior to 1911 from Taos and Tres Piedras were eliminated in order to maintain a common averaging period and avoid skewing the early data toward unrepresentative low values. The result is illustrated in Figure 8 as a single precipitation curve with a mean of 15.55 inches. The curve dramatically shows the same long-term cycle of wet and dry conditions for the entire region. In the early part of the century the area experienced above normal precipitation. This period was followed by an abrupt change to dry conditions in 1944 when precipitation dropped to about 80% of normal and remained at this level for about 10 years before gradually climbing to sustained average values by about 1980. Precipitation has generally remained above normal since 1980.

2. Evaporation Data

No evaporation data are available from NOAA weather stations located in Taos County. In order to evaluate evaporation, mean monthly pan evaporation data were compiled from five NOAA stations and one U.S. Bureau of Reclamation (USBOR) station surrounding Taos County. These stations (and elevations) include Abiquiu Dam (6380 ft), El Vado Dam (6740 ft), and Heron Reservoir (7240 ft) in Rio Arriba County, Conejos 3 NW (7900 ft) and Platoro Dam (9840 ft) in Conejos County, Colorado, and Eagle Nest Dam (8260 ft) in western Colfax County. Evaporation data are compiled in tables in Appendix A. The highest measured evaporation rates occur in June, with average monthly values ranging from 0.27 to 0.38 day-inches. Mean monthly pan evaporation rates, irrigation season pan evaporation rates, and irrigation season lake evaporation rates are summarized in Table 7 by station. No data are available for evaporation rates during November through March for most northern New Mexico stations, therefore annual evaporation estimates are based on measured partial year data and a monthly distribution of shallow reservoir evaporation (Table 8) (Hale et al., 1965).

Currently, estimates of evaporation rates used in water balance calculations originate from data compiled in New Mexico State Engineer Office Technical Report 31 (Hale et al., 1965). Estimates of annual lake evaporation rates at NOAA and USBOR evaporation station locations derived from Technical Report 31 are also included in Table 7 and compared to period of record averages for surrounding stations. In all cases except for the lowest elevation site at Abiquiu Reservoir, evaporation estimates based on period of record averages are greater, sometimes significantly, than those derived from Technical Report 31. The greatest deviation occurs for sites at higher elevations.

C. Streamflow Data and Statistics

The USGS has maintained numerous streamflow gage stations on all the major streams and rivers flowing through Taos County over the last century, beginning with the Embudo station on the Rio Grande in 1889. The following paragraphs summarize the existing streamflow records, the standard statistical summaries and methods of analysis for streamflow data, the annual and monthly streamflow data by station, and the published streamflow analyses.

1. Streamflow Records

The USGS Daily Streamflow Values (Hydrosphere, 1996b) provides a compilation of monthly and daily stream flow data and statistics for all existing and discontinued streamflow gage stations in and immediately adjacent to Taos County. The data, which originate from both USGS and USBOR stream gages, are compiled in Appendix B of this report through end of water year 1994 (September 1994) for stations in Taos County and adjacent localities in Conejos County, Colorado, and Rio Arriba County, New Mexico.

a. Gage station locations. Streamflow entering New Mexico in the Rio Grande is monitored near Lobatos, Colorado. Historic data also exist for a gage located at the New Mexico-Colorado state line. Currently gaged streams in the Red River assessment area include Costilla Creek, Red River, and the Rio Grande, and historic records exist for Latir Creek. In the Rio Pueblo de Taos assessment area, the Rio Grande, the Rio Hondo, the Rio Pueblo de Taos and its tributaries the Rio Lucero and Rio Grande del Rancho are currently gaged, and historic data exist for the Rio Fernando de Taos and the Rio Chiquito. The Rio Santa Barbara, the Rio Pueblo, and Embudo Creek are currently gaged in the Embudo assessment area. Streamflow is also monitored on the Rio Grande as it leaves Taos County at the Embudo gage. The locations of 35 active and discontinued USGS surface water gage stations on streams and rivers in Taos County are shown in Figure 9 and described in Table 9. All active gage stations and those discontinued stations with 10 or more years of record are included in the inventory presented in Appendix B.

Detailed station remarks, available for 25 gaging stations, are contained with the records in Appendix B. The remarks describe several aspects of the gage station, including:

1. LOCATION. Latitude and longitude, township/range/section, County, nearby physical landmarks, and river mile location where applicable.
2. DRAINAGE AREA. Total drainage area in square miles and any portion of noncontributing area.
3. PERIOD OF RECORD. Description of record of data including data gaps.
4. REVISED RECORDS. Publication of revised records.
5. GAGE. Description of gage type, vertical elevation, and history of changes affecting gage.

6. REMARKS. Contains any added notes concerning estimated data, data quality (e.g., estimated or actual) and effects of upstream diversions, storage reservoirs, ground-water withdrawals, and return flows.
7. AVERAGE and EXTREME DISCHARGES. Provides notes concerning average discharge for a stated period of record, maximum and minimum discharges over period of record and dates of occurrence, any extreme discharge outside period of record and origin of information, and extreme discharges for current year.

For the 15 stations lacking detailed remarks, a minimum of station information is presented, including the station name and identification code, county and state of location, latitude and longitude, elevation, period of record, and average, maximum and minimum stream flows.

b. Periods of record. Figure 10 is an index of stream gage records by water year, and describes the periods of record for all active and discontinued gage stations in Taos County with more than 5 years of record.

c. Quality of existing streamflow records. Taos County is fortunate to have had an extensive network of stream gage stations established at critical locations in all major drainage basins. Gage station coverage (Figure 9) is adequate in that either current or historic data exist for all major streams above points of diversion, and/or above entrance of the stream into the basin. With only a few minor exceptions (Rio Fernando de Taos, Rio Pueblo, and Rio Santa Barbara) these stations also provide more than 20 years of record, generally considered an adequate period for determining streamflow characteristics. Specific gage stations that are critical for characterizing drainage basins are summarized in Table 10.

The most apparent deficiency in existing data is that the records are often incongruent in time or stations have changed location over time. Consequently, estimates of basin yield based on these records reflect a higher level of uncertainty than may generally be recognized. This uncertainty can be minimized or eliminated by extending daily discharge records from each major drainage basin to a common, representative base period using index stations or regression relationships with other similar gaged drainages prior to evaluating summary statistics, probability distributions, or other flow characterization methods.

2. Annual and Monthly Streamflow Data by Station

Stream flow data from USGS and USBOR gage stations are presented in Appendix B for each station, active and discontinued, with more than 10 years of record. Annual and monthly stream flow data (Tables B-1 through B-86) include the mean monthly instantaneous flow (cfs) for each month of the period of record, together with the total annual discharge in acre-feet for the water year. Data are compiled based on water year because this presentation is most applicable for evaluating regional water supply. A compilation and statistical summary of annual discharges by calendar year may be more pertinent for other objectives such as compact deliveries. Monthly statistical summaries of stream flow data are also tabulated by month for the period of record. This compilation includes daily statistics (number of days, average daily value, maximum daily value, minimum daily value), period statistics (number of months, standard deviation month, skew month, minimum month, maximum month), and exceedance probabilities (calculated using the Weibul plotting position formula). The data are also presented in graphical form (Figures B-1 through B-120) by station. These graphs include: (1) an historic annual discharge curve showing mean annual discharge and standard deviation; (2) a mean monthly discharge curve with standard deviation; and (3) box plots of the median, 10th, 25th, 75th, and 90th percentiles of mean monthly discharge.

a. Red River assessment area. The two primary drainage basins in the Red River assessment area, the Costilla and Red River drainages, currently have active stream gage stations. Ten years of historic streamflow data also exist for Latir Creek. The data are summarized in Tables B-1 through B-54 and Figures B-1 through B-78. Current data from station 5550, Costilla Creek near Costilla, and historic data from station 6300, Latir Creek near Cerro, are critical in characterizing yields from the Costilla and Latir drainages (Table 10). Yields from the Red River drainage above Cabresto Creek are estimated with data from station 6500, Red River near Questa. The contribution of Cabresto Creek to the lower Red River can be quantified by combining data from stations 6600 (Cabresto Creek near Questa) and 6550 (Llano Ditch near Questa).

b. Rio Pueblo de Taos assessment area. The two drainage basins comprising the Rio Pueblo de Taos assessment area, Rio Hondo and Rio Pueblo de Taos, both have currently active stream gage stations as well as historic streamflow data. The data are summarized in Tables B-55 through B-76 and Figures B-79 through B-111. Natural basin yield and flow characteristics in the Rio Hondo drainage are estimated using current data from station 6750, Rio Hondo near Valdez. Historic data from station 6850, Arroyo Hondo at Arroyo Hondo, reflect impaired stream conditions, but are useful in estimating baseflow, stream gains and losses in the lower reach, and the contribution of the Rio Hondo to the Rio Grande. All five upper tributaries of the Rio Pueblo de Taos (upper Rio Pueblo, Rio Lucero, Rio Fernando de Taos, Rio Grande del Rancho, and Rio Chiquito) have historic and/or existing gage data on which to evaluate yields and flow characteristics. Estimates of stream gains and losses in the lower reach and contribution to the Rio Grande can be evaluated with the two records from discontinued station 7600 and active station 7630 near Los Cordovas. The records from these two stations can be combined based on seven years of overlap (1958 to 1965) to form a reliable record covering 83 years.

c. Embudo assessment area. The Embudo drainage has three currently active stream gage stations; however, gages on the Rio Pueblo de Picuris and the Rio Santa Barbara have only been operational since the early 1990s and the record is not yet adequate for streamflow interpretation. Data from station 7900, Embudo Creek at Dixon, reflect impaired conditions, but are useful in estimating basin yield, flow characteristics, and contribution to the Rio Grande. The data are summarized in Tables B-77 through B-86, and in Figures B-112 through B-120.

3. Summary of Existing Streamflow Data Analyses

A number of previous workers have completed analyses of streamflow data from Taos County (Reiland and Haynes (1963), U.S. Bureau of Reclamation (1971), Reiland (1980), Waltemeyer (1986), Hearne and Dewey (1988), Waltemeyer (1989), and Waltemeyer (1996)). Tables 11a and 11b summarize the types of data analyses that have been completed and published for specific stations. A general discussion of statistical summaries and methods of analysis for evaluating streamflow data is included in Appendix C. The results of published analyses of Taos County streamflow data are discussed briefly in the following paragraphs.

a. Reiland and Haynes (1963) presents statistical summaries of flow characteristics of selected streams in New Mexico and southwestern Colorado, including data from 18 stations monitoring stream flow in or adjacent to Taos County through water year 1959 (Tables 11a, 11b). All records representing natural flow conditions are included, in addition to some additional records affected by regulation and diversion. The report includes statistical summaries of flow duration, high flow, and low flow data in tabular format.

b. U.S. Bureau of Reclamation (1971) determined natural flow available above all diversions on the Rio Fernando de Taos, the Rio Chiquito, and the Rio Grande del Rancho, as part of their hydrologic evaluation of the Taos irrigation unit of the San Juan-Chama Project. The hydrologic assessment of the Rio Fernando relied on four years of recorded discharge from station 7500 (1963-1966) plus 27 years of discharge data derived by linear correlation with the Rio Pueblo de Taos near Taos (1936-1962). Similarly, streamflow availability in the Rio Grande del Rancho was based on 14 years of data (1953-1966) extended by correlation with the Rio Pueblo de Taos. Available flow from the Rio Chiquito was determined from nine years of discharge data from station 7560 (1958-1966) plus 22 years of discharge data derived by multiple regression with stations 7600, 6750, and 6850 on the Rio Pueblo de Taos and Rio Hondo. Estimates of yield are based on extremely limited records and are inferior to those published at later dates (e.g. Reiland, 1980; Waltemeyer, 1989) and those presented in this report.

c. Reiland, L. J. (1980) presents flow duration tables developed from USGS daily streamflow records collected at 23 gaging stations in or adjacent to Taos County (Table 11a, 11b). The report compiles flow duration data for the period of record through water year 1973, and for a standard base period of October 1930 through September 1973.

d. Waltemeyer (1986) presents flood frequency estimates for 17 gaging stations in Taos County (Table 11a, 11b) using streamflow data through 1982. The report estimates peak discharges for exceedance probabilities of 0.50, 0.20, 0.10, 0.04, 0.02, and 0.01 for unregulated streams, using a log-Pearson Type III probability distribution. The report also develops flood-frequency regression equations for physiographic regions in the state, including Taos County, using multiple regression techniques relating peak discharges for the various exceedance probabilities to basin and climatic characteristics. The regression relationships are discussed in more detail in sections D.3, Predictive Relationships for Surface Water Yield, and D.6.b, Flood frequency analysis.

e. Hearne and Dewey (1988) used multiple linear regression models to estimate water yield from the Sangre de Cristo Mountains onto the Costilla Plains, and from the Taos Plateau to the Rio Grande. The models rely on average discharge from gaged basins in New Mexico and Southern Colorado, eight of which are distributed among the Red River, Rio Pueblo de Taos and Embudo assessment areas for the period 1950 through 1980. The models, a multiple linear regression of mean annual water yield versus drainage area and mean winter precipitation, are discussed in detail in section D.3, Predictive Relationships for Surface Water Yield.

f. Waltemeyer (1989) presents statistical summaries of streamflow data collected at 22 gaging stations in Taos County (Table 11a, 11b), including mean monthly and mean annual discharge, low-flow frequency, high-flow frequency, and flow duration information, based on streamflow data through 1985. The frequency analysis was performed using a log-Pearson Type III distribution.

g. Waltemeyer (1996) presents updated flood frequency estimates for 15 gaging stations in Taos County (Table 11a, 11b) based on annual peak discharge data through 1993, and a log-Pearson Type III frequency distribution. In a similar approach as used in Waltemeyer (1986), the report also develops regional maximum peak discharge equations based on regression techniques, that relate peak discharge for various recurrence intervals to drainage area, mean basin elevation, and maximum precipitation intensity of a storm of 24-hour duration with a recurrence interval of 25 years. The report also develops a general regression equation for small basins less than 10 mi^2 in area, and below 7500 ft in mean basin elevation.

D. Surface Water Yields

The streamflow data presented in the previous section can be interpreted using various statistical summaries and methods to predict surface water yields (see also Appendix C, Statistical Summaries and Methods of Analysis for Evaluating Streamflow Data). The following sections specifically discuss the existing data and results of analyses describing annual and seasonal variability of stream discharge, return flows, river and stream losses and gains, and flood flows.

1. Annual Surface Water Yields and Variability of Stream Discharge

The annual variability of stream discharge is evaluated using summary statistics of mean, median, maximum, and minimum discharge for select gage stations, as well as published results of flow duration analyses (Reiland, 1980). Annual surface water yields are derived from median and quartile discharge data and compared to results from regression models (Hearne and Dewey, 1988), and other runoff estimates (Wilson et al., 1978). Historic flow changes and long-term trends and cycles in stream discharge are also discussed.

a. Average year, dry year, wet year. The annual variability of stream discharge in Taos County is summarized in Tables12a and 12b, using period of record mean, median, maximum, minimum, and 10^{th}, 25^{th}, 75^{th}, and 90^{th} percentile annual discharges for select gage stations. An "average" annual discharge can be approximated using either the traditional mean annual value, or the median value, which is a more representative "average" value for positively skewed data such as stream discharge. A comparison of mean and median values (Table 12a) illustrates that the median value is consistently lower than the mean, and is a more conservative and probably more accurate estimate of average flow. Also presented are base period flow duration data (Reiland, 1980) calculated for many Taos County gage stations for the period 1931 to 1973. The "base discharge" value (Table 12a) reflects the average flow derived either from the actual period of record, where that period is consistent with the base period, or from a step integration of the base period flow duration curve. For stations where the existing period of record is shorter than Reiland's base period (1931-1973), this value is probably a more representative "average" than the period of record mean, and also possibly a better estimate than the period of record median discharge value. Both a qualitative and quantitative sense of the fluctuation of stream discharge about the mean is gained through the graphs of mean annual discharge presented in Appendix B (Figures B-1 through B-120).

"Dry year" and "wet year" stream discharge values can be constrained using the minimum and maximum values, respectively, for the periods of record. However, as these values represent extreme events, for stations with long periods of record the maximums and minimums are not truly representative of a discharge expected in normal fluctuations between wet and dry years. For planning purposes, an alternative value that more accurately represents a typical dry year or wet year is needed. For sake of comparison, Table 12a also presents results of flow duration data for base period discharges equaled or exceeded 10% of the time and 90% of the time (Reiland, 1980). Depending on the planning objectives, discharge values reflected by the 25th and 75th percentiles (Table 12b) are fairly representative of "dry" and "wet" years respectively. The variability of annual discharge for Rio Grande gage stations in Taos County is presented in this format in Figure 11. Additional (10th and 90th) percentile discharge values for most Taos County gage stations are also summarized in Table 12b.

Estimates of average annual surface water yield for the major drainage basins in Taos County, based on median stream discharges for the period of record through 1994, are compiled in Table 13. "Average" yields are compared to yield estimates for "dry" and "wet" years derived from 25 percentile and 75 percentile discharges, respectively. Based on median stream discharges, an estimated 238,000 acre-feet of surface water originates from the major drainage basins in Taos County each year. Previous estimates have proposed annual yields of 281,600 acre-feet (Wilson et al., 1978, 1980) and 238,200 acre-ft (Hearne and Dewey, 1988). Average surface discharge is expected to vary from about 187,000 acre-feet in a "dry" year to as much as 342,000 acre-feet in a typical "wet" year.

The accuracy and representativeness of "average", "dry year" and "wet year" discharge estimates are significantly affected by the period of record. Characterization of drainage basin yield should be based on statistical analysis of records extended to a common, representative base period. The only existing streamflow data analysis completed for a common base period is that of Reiland (1980) for the period 1931 to 1973. Flow duration data for Taos County stations, calculated for period of record through 1985, are also presented by Waltemeyer (1989), and are very similar to values of Reiland (1980) for the 1931 to 1973 base period. Base period data of Reiland (1980) were used by Lee Wilson & Associates, Inc. (1983) in a surface water inventory completed for Taos Pueblo and the U.S. Bureau of Indian Affairs. Wilson (Lee Wilson & Associates, Inc., 1983) determined that these data were a valid measure of historic flow, and accurate to within plus or minus 10 to 20 percent.

b. Historic changes and long-term variability of stream flow. In order to effectively develop surface water as a sustainable resource over decades of time, an understanding of the character and magnitude of long-term trends and cycles in stream discharge is also important. Based on the last 80 years of stream discharge data for the Rio Grande station at Embudo, an evaluation of stream flow variability on a decadal scale was completed. A five-year running average smooth was applied to both annual discharge for the Rio Grande at Embudo and to annual precipitation averaged from weather stations at Red River, Cerro, and Taos (Figure 12), in order to highlight trends and patterns in the time series data. Deviations in stream discharge and precipitation from "normal" or median values were evaluated using the median absolute deviation (MAD) to help classify climatic episodes as above or below normal. (The MAD is computed by first listing the absolute value of all differences between each observation and the median; the median of these absolute values is then the MAD.)

Based on these records, it is apparent that "average" precipitation and streamflow conditions are the exception rather than the rule. Only one decadal interval occurred, from approximately 1927 to 1939, wherein stream discharge varied continuously within one MAD of the median. In general, historic discharge fluctuates between periods of above normal (+1 MAD) and below normal (-1 MAD) discharge, separated by short periods of transition. The most severe dry conditions occurred between 1950 and 1964, wherein annual discharge for this 15-year period averaged only 341,200 ac-ft or 56% of the median. Below average discharge actually prevailed for another 14 years through 1978, resulting in a 30-year average discharge that was 64% of the period of record median. In comparison, the highest discharge periods occurred between 1914 and 1929, and between 1983 and 1987. For the 16-year period beginning in 1914, annual stream discharge at Embudo averaged nearly 1 million ac-ft, or 150% of the median. Discharges of a similar magnitude occurred during the strong El Nino events of the mid-1980's, resulting in a 5-year average flow that was 177% of the median.

The precipitation record is generally similar to the stream discharge record, with precipitation highs occurring in the early 1920s and 1980s, and lows occurring between the mid-40s and the mid-50s. The two records are not directly correlative, as the magnitude of stream discharge is controlled through the complex interaction of a number of basin and climatic factors (some of which are influenced by hysteretic effects), including basin area, elevation, and geologic characteristics, stream aquifer interactions, precipitation amount and intensity, and runoff-precipitation ratio. In addition, the magnitude of variability of precipitation over time is, by comparison, much less than for stream discharge. For example, highest precipitation occurred during the period 1985 to 1995, when median annual precipitation was 19.0 inches, or 130% of normal. During the drought of the 1950s, rainfall averaged 13.3 inches, or 91% of normal, for the period 1950 to 1964.

2. Seasonal Variability of Stream Discharge

The seasonal variability of streamflow is evaluated using median monthly discharge data. Figures 13 through 18 illustrate the monthly and seasonal distribution of stream discharge in the Red River, Rio Pueblo de Taos and Embudo assessment areas. Seasonal streamflow patterns are fairly uniform throughout Taos County, with minor variation between drainages. The streamflow patterns and pattern variability are controlled by the geologic, watershed, and water storage characteristics of each drainage. Seasonal discharge estimates are summarized in Table 14 for spring (April, May, June), summer (July, August, September, October), and winter (November, December, January, February, and March) periods, each of which respectively reflect snow melt, monsoonal precipitation, and low baseflow conditions.

In all areas, the largest stream discharges occur during the peak snow-melt months of May and June, when between 50 and 65% of annual discharges are measured. The combined spring and summer periods (April through October), which correspond to the irrigation season in Taos County, contribute 70 to 90% of annual stream discharges. The lowest discharge months occur during December, January and February. Minimum discharge values during this low-flow period can provide an estimate of mean annual baseflow for the reach of stream above the station. Annual baseflow values are estimated from the minimum average monthly discharge for the months of December through February using period statistics compiled in Appendix B (Hydrosphere, 1996b). Minimum month period statistics reflect the minimum average value for all monthly values in the entire data record.

a. Red River assessment area. The largest percentage of runoff occurs during the spring months of May and June (Figures 13 and 14). In the upper Costilla drainage above Costilla Dam, 61% of the gaged discharge on stations 5250, 5300, and 5350 occurs during the spring snow melt months of April, May, and June. On lower Costilla Creek near Costilla (station 5550), spring discharge is reduced to 48% of annual due to reservoir storage. Baseflow constitutes about 8.5% of annual flow at the Costilla gage (Table 14). Cabresto Creek in the Red River drainage peaks in May, but maintains a relatively strong flow throughout the spring and summer months, also as a result of reservoir storage. The upper Red River peaks in the month of

June, with 50 to 59% of annual discharge occurring as a result of spring runoff. Winter streamflow varies from less than 1% to 22% of annual at impaired stations (6682, 6500, and 5400), and from 10 to 19% on unimpaired or slightly impaired stations (5550, 6300, 6600, and 6400). Baseflow on the Red River varies from about 9.6% of annual discharge at Questa to 33% at the fish hatchery station (Table 14). The only unimpaired stations representing natural flow conditions, Latir Creek (6300) and Red River near Red River (6400), have relatively similar streamflow patterns with only slight differences in magnitude. Both streams peak in June and show similar seasonal discharge distributions and baseflows.

b. Rio Pueblo de Taos assessment area. The Rio Pueblo de Taos and Rio Hondo reflect similar runoff patterns as Red River. Peak discharge on the Rio Hondo occurs in the month of June, with 50 to 56% of annual discharge occurring as spring snow melt. Winter discharge (baseflow) varies significantly on the Rio Hondo between Valdez (station 6750) and Arroyo Hondo (station 6850). During the winter months, the station at Arroyo Hondo measures over 1100 acre-feet more than the station at Valdez, primarily as a result of ground-water accretion along this reach of the stream.

Most streams in the Rio Pueblo de Taos drainage peak in the month of May, with the one exception of the Rio Lucero, which peaks in June. The seasonal distribution of discharge also varies significantly on the different tributaries of the Rio Pueblo de Taos, primarily as a function of watershed characteristics. Spring discharge ranges from 59% of annual on the Rio Lucero to 71% of annual on the Rio Fernando de Taos. The Rio Lucero has the highest mean basin elevation (10, 800 ft) of drainages in the area, whereas the Rio Fernando de Taos has the lowest elevation (8870 ft). The proportion of summer discharge at unimpaired stations (6900, 7100, and 7560) varies moderately from 17% on the Rio Pueblo de Taos near Taos to 27% on the Rio Lucero. Winter discharge is fairly uniform for all tributaries of the Rio Pueblo de Taos, varying from 13% to 18% of annual. Estimates of annual baseflow vary from a low of 1.0% on the Rio Fernando de Taos to moderate values of 10 to 17% on the remaining tributaries, and a high of 30% on the Rio Pueblo de Taos near Los Cordovas.

c. Embudo assessment area. As with other drainages, the largest percentage of annual discharge for Embudo Creek occurs during the spring. Spring snow melt constitutes 67% of the annual discharge of Embudo Creek, with a total volume of over 34,000 acre-feet. Summer discharge accounts for 22% of annual at the unimpaired station (7850) on the Rio Santa Barbara. At Dixon, an impaired station, summer rainfall runoff constitutes 15% of annual. Winter discharge varies depending on location within the watershed. At Dixon, 18% of annual discharge occurs during the winter months, whereas the station near Penasco on the Rio Santa Barbara measures only 10%. Baseflow estimates are similar for both streams, however, at 12 to 13% of annual discharge.

3. Predictive Relationships for Surface Water Yields.

In order to predict the probability of various surface water yields for regional ungaged drainages or stream reaches, correlation between observed flows and basin and climatic characteristics is used to geographically extend historical streamflow records. This approach of regional streamflow analysis uses multiple or simple regression techniques to relate relevant basin and climatic characteristics to stream discharge. Applicable variables are generally specific to physiographic regions with unique topography and climate. The most common variables pertinent to estimating yield in mountainous and semi-arid regions include (Riggs, 1973):

drainage area, mean channel slope, mean annual precipitation, mean annual runoff, T-year 24-hour rainfall, elevation, runoff-precipitation ratio, and mean winter precipitation. Two previous hydrologic analyses (Hearne and Dewey (1988), Waltemeyer (1986, 1996)) have calculated regression models of surface water yields in Taos County.

Waltemeyer (1986) used multiple regression techniques to develop flood frequency regression equations for several physiographic regions in New Mexico, including a region encompassing the northern New Mexico mountains and Taos County. He determined that the basin and climatic characteristics significant to flood response in the Taos region were drainage area, mean basin elevation, and maximum precipitation intensity for 24-hour storms of various return periods. The regression relationship is intended to provide a best estimate of flood discharge for select exceedance probabilities on unregulated drainages and ungaged stream reaches. The equations are presented in section D.6.b, Flood frequency analysis.

Hearne and Dewey (1988) developed two multiple linear regression models, one to estimate surface water yield from the Sangre de Cristo mountains onto the Costilla Plains, and a second to estimate water yield from the Taos Plateau to the Rio Grande. The Sangre de Cristo water yield model was calculated from a regression model of 16 basins in or adjacent to the study area that had measured, unregulated streamflow for most of the period 1950 to 1980. The model was a multiple linear regression of mean annual water yield against mean winter precipitation and drainage area. The regression equation is:

$$Q = 7.62 * 10^{-5} A^{0.977} P^{3.596} \qquad \text{[Equation 3]}$$

where Q = mean annual water yield (ft^3/sec);
A = area of the basin (mi^2); and
P = mean winter precipitation (in).

Estimates of drainage basin water yield derived from this regression model are summarized in Table 13, and compared to other basin yield estimates. Although the model estimate of total yield for Taos County agrees extremely well with the yield estimate in this report, differences in individual basins are significant. With the exception of Costilla Creek, all estimates of basin yield calculated from the Hearne and Dewey (1988) model are significantly less (by 10 to 40%) than estimates based on historic gage data. The probable reason for this discrepancy is that the Sangre de Cristo water yield model relies on average stream discharge for the period 1950 to 1980. As previously discussed (section D.1.b, Historic changes and long-term variability of stream flow), the average discharge for this 30-year period is 64% of the period of record median. Annual precipitation during much of this time was also below normal. As a result, the model produces water yield estimates that fall significantly below long-term average discharges measured for the region.

A second regression model was similarly developed (Hearne and Dewey, 1988) to estimate water yield from the Taos Plateau to the Rio Grande. This model was based on 16 arid and semi-arid basins in New Mexico that "resemble" the Taos Plateau. The model had two inherent assumptions: (1) recharge to ground water was negligible, and (2) surface water constituted the entire water yield of the basin. The model was a multiple linear regression of mean annual water yield against mean winter precipitation, slope, and drainage area. The regression equation is:

$$Q = 1.074 * 10^{-5} A^{1.216} P^{2.749} S^{0.535} \qquad \text{[Equation 4]}$$

where Q = mean annual water yield (ft^3/sec);
A = area of the basin (mi^2);
P = mean winter precipitation (in); and
S = slope of the basin (ft/mi).

The flow calculated by the Taos Plateau water yield model was 28 ft^3/sec (20,270 ac-ft/yr). This small flow constitutes about 2% of the 1950-1980 mean streamflow measured at the Embudo station (7950). However, because the modeling assumptions were not verified, the authors had minimal confidence in the estimate. Indeed, it is believed that most of the water yield from the Taos Plateau may leave the basin as ground-water outflow (Hearne and Dewey, 1988).

Regardless of the specific hydrologic objective, the basin characteristics most relevant to a predictions of surface water yield are mean basin elevation and drainage area. Figure 19 illustrates the results of a simple linear regression between basin yield, in acre-feet per square mile, and mean basin elevation. Values for these regression parameters are compiled in Table 9 for most gage stations in the county. Several important observations and interpretations are illustrated in Figure 19.

1. The r^2 value for the regression of basin yield versus elevation is 0.36. Although a correlative relationship does exist between surface water discharge, drainage area, and basin elevation, a considerable amount of variability is generated by differences in geologic conditions, climatic conditions, and non-homogeneous data.

2. Data falling above the regression line are derived entirely from watersheds composed of fractured crystalline rocks, and generally represent stream reaches with relatively high baseflows. These hydrogeologic conditions result in relatively high surface water yields.

3. Data falling below the regression line are derived largely from watersheds composed of Paleozoic sedimentary rocks, and generally represent stream reaches with relatively low baseflows. These hydrogeologic conditions result in relatively low surface water yields. Other stations reflecting low basin yields are Latir Creek (station 6300) and Costilla Creek above the reservoir (stations 5250, 5300 and 5350). These data are either generated from a short period of record during drought years of the 1950s and 1960s in the case of Latir Creek, or are generated from a partial year record in the case of the upper Costilla Creek data.

The regression relationship illustrated in Figure 19 relates stream discharge, drainage area, and mean basin elevation according to the following equation:

$$\text{Basin Yield [ac-ft/mi}^2\text{]} = 0.06 * \text{Mean Basin Elevation [ft]} \qquad \text{[Equation 5]}$$

The y-intercept, calculated to be 2.4×10^{-4}, is reduced to zero. Care should be taken when generating and applying any predictive relationship with data derived from geologically different watersheds, from different periods of time, and from impaired stations. Stations impaired by upstream diversion generate discharge data during the irrigation season that are not representative of natural flow conditions or natural basin yields.

4. Return Flow

A quantification of return flow, the amount of surface water returned to a stream channel after diversion for a beneficial use, is necessary in order to accurately assess the quantity and quality of water available to downstream users. Data regarding the amount of surface water return in each of nine water use categories are presented below in section E on water use. Of a total of 103,406 acre-feet of surface water withdrawals each year in Taos County, 63,374 acre-feet, or 61% of withdrawals are returned to the drainage system (Wilson and Lucero, 1997). No existing data are compiled and published that address the location, volume, or quality of specific surface water return flows, and existing data on return flows are not apportioned as to drainage basin or assessment area.

Previous studies by the U.S. Bureau of Reclamation (e.g., U.S.B.O.R., 1971) have relied on a general estimate that return flow equals 30% of the diversion. However, based on the water use data compiled for Taos County (Wilson, 1992; Wilson and Lucero, 1997), it is clear that return flows are actually much higher. It is also important to note that compilations of return flow are based on computational derivations of water withdrawals and depletions, and that nowhere in Taos County are return flows actually measured. Withdrawals for irrigated agriculture, which is by far the largest water use category in Taos County, are estimated as a function of the consumptive irrigation requirements (CIR), irrigated acreage, on-farm irrigation efficiency, off-farm conveyance efficiency, and conveyance losses in canals and laterals between the stream or reservoir and the farm headgate, all variables which rely on theoretical computation. Depletions are likewise a function of CIR, depletion factors and irrigated acreage. Some historic streamflow data do exist for several ditches and canals in the county, but these data measure diversions, not returns, and are limited in time and extent.

5. River and Stream Losses and Gains by Reach

The Rio Grande as well as some stream reaches along the western front of the Sangre de Cristo Mountains are known to either gain or lose water due to ground-water accretion or to channel bed infiltration. Winograd (1959) and Bliss (1928) addressed gains and losses along the Rio Grande and Red River. No data exist for other drainages in the county. Estimates of stream gains for the Rio Grande, Rio Hondo, Red River, and the Rio Pueblo de Taos based on intervening flow from time normalized discharge data and baseflow estimates previously presented (section D.2, Seasonal Variability of Stream Discharge, and Table 14) are developed here and summarized in Table 15. Stream gains and losses along these stream reaches are discussed in the following sections.

a. The Rio Grande. The Rio Grande was reported by Winograd (1959) to gain 100 ft^3/sec (72,000 ac-ft/yr) between the stations at Lobatos and Embudo, ninety percent of which (65,000 ac-ft/yr) was attributed to the reach between Lobatos and a mile above the confluence with the Red River. These values were derived from a series of seepage runs completed by Bliss (1928). Winograd attributed most of the gain in flow (56% or 36,000 ac-ft) along the Rio Grande to ground-water discharge from the Sunshine Valley along a 12-mile stretch of river between Ute Mountain and the Cerro gage station. An additional 29,000 ac-ft (44% of gain) was attributed to the 6-mile reach between the Cerro gage and one mile above the Red River. Intervening flows, calculated by subtracting the upper gage flow from the lower gage flow for coincident periods of record, are used to estimate an annual stream gain due to ground-water accretion of 81,000 ac-ft for the Rio Grande between Lobatos and Taos Junction. Estimates of stream gain along each gaged reach of the Rio Grande are summarized in Table 15.

b. Red River. Based on a seepage run along a 7-mile stretch of the Red River upstream from its mouth by Bliss (1928), Winograd (1959) further estimated a gain of 31 ft^3/sec (22,400 ac-ft/yr) for the lower Red River. An estimate of ground-water accretion based on mean annual discharges for stations 6500, 6682, and 6700 is 19,200 ac-ft/yr (Table 15). The surface water gain along this reach of the Red River is attributed to the numerous springs that discharge along the north and south banks. Winograd (1959) proposes that at least half of this discharge originates from the Sunshine Valley aquifer.

c. Rio Hondo and Rio Pueblo de Taos. The simple estimates based on intervening flows compiled in Table 15 provide a basis for evaluating whether or not stream gains or losses occur, and how significant those gains/losses may be to the total stream discharge. These estimates indicate that minor stream gains do occur across the upper piedmont terrain in the Rio Hondo and Rio Pueblo de Taos drainages, but the methodology and data are not adequate to reliably quantify the gains. A reconnaissance level water assessment completed by the U.S. Bureau of Reclamation (1990) for the town of Taos also indicates that average intervening flows during the winter months show that all reaches of the Rio Hondo and Rio Pueblo de Taos have flow accretions. It is important to note that stream losses are also observed to occur along specific reaches of these drainages, for example along the Rio Lucero in section 33 of T. 26 N., R. 13 E.

It is clear that stream gains and losses are controlled by a combination of channel permeability and local hydraulic gradients. It is not as clear, however, what specific physical characteristics ultimately control these hydrologic variables. The geologic structures and aquifer units underlying various stream reaches, together with the structural geometry of the basin margin, ultimately control which stream segments gain or lose surface discharge and at what rates, but the nature of these geologic controls are not well understood. Based on the high degree of hydraulic interconnection between streams and aquifers, the potential also exists for surface water depletions due to the impact of ground-water pumping in close proximity to streams.

6. Flood Flows

Flood flows for Taos County rivers and streams are evaluated using peak discharge data and results of flood frequency analyses.

a. Historic floods. A summary of peak discharges for the period of record for most Taos County gage stations, together with anecdotal comments regarding pre-record floods, is presented in Table 16. The Rio Grande commonly flooded in the early part of this century before natural flow was altered by regulation, most often as a result of excessive spring snow melt. The major recorded floods (and approximate discharges) occurred in June 1903 (approximately 14,000 cfs at Taos Junction and 16,200 cfs at Embudo), September 1904 (unknown discharge), and June 1905 (greater than 10,000 cfs at Taos Junction and about 14,000 cfs at Embudo). A discharge of 14,000 cfs at Taos Junction and 16,000 cfs at Embudo has approximately a 50-year recurrence interval. Discharges of 10,000 cfs at Taos Junction and 14,000 cfs at Embudo represent about a 25-year flood. No flows greater than 10,000 cfs have been recorded at or above Taos Junction since the early 1920s. Pre-record floods of unknown magnitude occurred on the Rio Grande in 1828 and 1888. Peak discharges on the Rio Grande since regulation have been on the order of 7000 cfs at Arroyo Hondo (June 1985), 9700 cfs at Taos Junction (June 1948), and

9700 cfs at Cerro (June 1949). These post-regulation, peak recorded flows represent 25- to 50-year floods. Recurrence intervals are approximated from tabulations of probability distributions of annual peak discharges (Waltemeyer, 1989), and could be determined with greater accuracy by graphing high-flow frequency curves for each station.

Flooding on Rio Grande tributaries occurs as a result of both spring snow melt and intense summer rainstorms. Pre-record floods occurred on the Costilla drainage in 1886 and 1909. The major flood of record on Costilla Creek occurred in May of 1942 with a discharge greater than 1000 cfs. This discharge, resulting from a combination of greater than average snow melt and a wet spring, represented a 50- to 100-year flood. The Red River and Cabresto Creek drainages were affected by the same flood conditions. The major floods of record for the Rio Hondo and Rio Pueblo de Taos occurred the previous spring in 1941, with over 500 cfs recorded at Valdez, and more than 1800 cfs measured at Los Cordovas. These discharges represent approximately a 100-year flood. The largest discharge recorded on Embudo Creek occurred in August 1977 with a magnitude of 4200 cfs, and represented more than a 100-year recurrence interval.

b. *Flood frequency analysis.* Recent flood frequency analyses have been completed by Waltemeyer (1996, 1989, 1986). Waltemeyer (1989) provides simple statistical summaries of streamflow for Taos-area stream gages, including results of a high-flow frequency analysis derived from a log-Pearson Type III fit of annual series flow data. Flood-frequency regression equations applicable to Taos County were first developed by Waltemeyer (1986) for 22 Taos-area gage stations based on drainage area, mean basin elevation, and maximum precipitation intensity for T-year, 24-hour storms. Waltemeyer (1996) updates the frequency analysis and regression results for 15 area stations using annual peak stream discharge data through 1993. The most recent regional flood frequency equations for various return periods are summarized in Table 17. The equations are applicable to drainage basins of 0.63 to 2,850 mi^2 in area, to mean basin elevations of 7,810 to 11,400 ft, and to maximum 24-hour precipitation events of 2.00 to 4.45 inches at 25-year recurrence intervals.

E. Uses of Surface Water

The most recent water use inventory, NMSEO Technical Report 49 (Wilson and Lucero, 1997), tabulates water withdrawal and depletion in Taos County in 1995 for nine water use categories. These categories are: (1) public water supply, which includes public and private water utilities that have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year; (2) self-supplied domestic, which includes self-supplied single-family homes or multiple housing units with less than 25 occupants; (3) irrigated agriculture, which includes all diversions of water for the irrigation of crops grown on farms, ranches, and wildlife refuges; (4) livestock, which includes all water used to raise livestock, maintain self-supplied livestock facilities, and provide for on-farm processing of poultry and dairy products; (5) self-supplied commercial, which includes water used by any public or private self-supplied business or institution involved in providing goods and services (e.g. motels, restaurants, schools, hospitals, greenhouses, nurseries, off-stream fisheries); (6) self-supplied industrial, which includes water used by enterprises engaged in the processing of raw materials, the manufacture of goods, or the construction of highways, subdivisions, or other projects; (7) self-supplied mining, which includes water used by enterprises engaged in the extraction of naturally-occurring minerals; (8) self-supplied power, which includes water used by self-supplied power generating facilities; and (9) reservoir evaporation, which includes net evaporation from man-made reservoirs with a storage capacity of approximately 5,000 ac-ft or more. Technical Report 49 provides detailed descriptions of the procedures used to quantify withdrawals and depletions in each water-use category, as well as an accounting of withdrawals, depletions, and returns of surface water by category.

Two additional surface water uses not addressed in Technical Report 49 deserve a brief mention in terms of future planning. One is in-stream flow requirements for endangered species. The second includes non-consumptive recreational uses such as rafting and fishing that are important to the local economy but do not affect the surface water balance. The U.S. Department of the Interior, Fish and Wildlife Service (USDOI/FWS), the federal agency responsible for administering the Endangered Species Act of 1973, maintains a list of threatened and endangered species, and species of concern. Several such species that rely on a healthy aquatic system and riparian community are present in Taos County, including the Southwestern Willow Flycatcher, the Harlequin Duck, Whooping Crane, and Flathead Chub. The USDOI/FWS views the maintenance of instream flows as a positive step toward the management of threatened and endangered species, and also toward the improvement of overall ecosystem health (USDOI/FWS, 1997).

Surface water sources have contributed 93.5% of all water used in Taos County since 1990. A summary of surface water use by category in Taos County in 1995, taken from Technical Report 49, is presented in Table 18. Irrigated agriculture is by far the largest surface water use category, constituting 99% of surface water withdrawals and 98.3% of surface water depletions. A total of 29,500 acres of land are irrigated in Taos County, 28,410 or 96% of which are irrigated by flood irrigation from surface water sources. Table 19 summarizes surface water withdrawals and depletions for irrigated agriculture by assessment area. An inventory of acequias in Taos County is previously presented in Table 3. No data are published regarding points of diversion for surface water withdrawals, and withdrawals are not measured at the point of diversion. Some historic streamflow data do exist for several ditches and canals in the county, but these data are limited in time and extent. Values for withdrawals are calculated based on estimates of consumptive irrigation requirements, irrigated acres, irrigation efficiency, conveyance efficiency, and depletion factors. Other use categories that rely on surface water sources include livestock, commercial, mining and reservoir evaporation. At present, no surface water withdrawals in the county are used for public water supply, domestic supply, self-supplied industrial, or power.

F. Water Supply Facilities

Two water supply facilities are located within Taos County, Costilla Reservoir and Cabresto Reservoir. Both reservoirs were built for irrigation storage. A description of each reservoir, including storage capacity, reservoir operations, evaporation, and sedimentation, is presented in the following paragraphs.

1. Costilla Reservoir

Costilla Dam is located on Costilla Creek near the New Mexico-Colorado border, about 15 miles southeast of the town of Costilla. The contributing watershed for the reservoir lies entirely within the Sangre de Cristo land grant. The Costilla Dam is an homogeneous earth fill dam constructed during the period of 1916 to 1920 by private interests (U.S. Bureau of Reclamation, 1994), and is owned and operated by the Rio Costilla Cooperative Livestock Association for the purpose of irrigation storage and delivery.

The Costilla Dam originally had a structural height of 123 feet with a crest length of 625 feet, and a crest elevation of 9420. The original design capacity of the reservoir was 15,800 acre-feet at a water surface elevation of 9406. After its construction, seepage problems in the upper embankment restricted storage to approximately 10,900 acre feet at elevation 9393 (U.S. Bureau of Reclamation, 1994). In August 1989 the reservoir was drained while the U.S. Bureau of Reclamation rehabilitated the river outlet works and reconstructed the upper portion of the dam embankment. The designed capacity of the modified dam is 15,739 acre-feet up to elevation 9406, with an additional surcharge of 14,669 acre-feet up to elevation 9436. The dam has a new structural height of 138 feet with a crest length of 780 feet at elevation 9436. (U.S. Bureau of Reclamation, 1994). Current area-capacity relationships for Costilla Reservoir are compiled in Table 20 (New Mexico State Engineer Office, 1990). The area-capacity curve reflecting the modified design is shown in Figure 20.

Under the Costilla Compact, the calendar year is divided into irrigation and storage seasons. The irrigation season is defined as the period of each calendar year from May 16 to September 30, inclusive, and the storage season is defined as the period of time extending from October 1 of one year through May 15 of the following year. Under the compact, New Mexico is apportioned 62.8% of reservoir storage, and Colorado is apportioned 37.2%. Colorado's portion is delivered through the Eastdale Canal to the Eastdale Reservoir in early spring. Delivery usually commences in mid- to late-March each year. The annual water allocation between New Mexico and Colorado is usually based on the May 15 reservoir content. However, reallocation may occur later in the irrigation season based on a maximum content if there are substantial storage gains during the irrigation season. Daily reservoir content records have been reported by the Costilla Creek watermaster for each irrigation season, and are compiled by the U.S. Geological Survey and published each water year (Ortiz et al., 1998). Maximum annual reservoir contents, and carry-over storage based on the September 30 reservoir content, are plotted for each water year since 1965 (Figure 21).

No evaporation studies or sedimentation studies have been conducted specifically for Costilla Reservoir, and there is no prediction as to the useful life of the reservoir. Evaporation data, including lake evaporation estimates, are compiled for the entire Taos region, and have been discussed previously (section II.B.2, Evaporation Data).

2. Cabresto Reservoir

The Cabresto Dam and Reservoir are located on Lake Fork Creek, a tributary of Cabresto Creek, about 7 miles northeast of the village of Questa, in Taos County. The reservoir, built between the years of 1922 and 1933, occupies a natural lake basin with a bottom elevation of 9410 ft. The reservoir is used for irrigation storage and delivery by the Cabresto Lake Irrigation Company and the Llano Irrigation Company.

Cabresto Dam was originally constructed as an earth-fill structure with a concrete core, and an embankment height of about 46 feet (NMSEO, 1958). About 1951 or 1952, the dam was raised approximately 6 feet, with loose fill placed on top of the old embankment. The spillway and outlet works were also rehabilitated. The reservoir was originally designed to impound 732 acre-feet of water, of which 517.4 acre-feet (70.7%) were for the Llano Irrigation Company, and the remaining 214.6 acre-feet (29.3%) were for the Cabresto Lake Irrigation Company. In June 1957, flood waters on Lake Fork Creek filled the reservoir to depths of about 2 feet above the spillway elevation. As a result of excessive erosion at the downstream end of the spillway and seepage through the loose embankment, the structure failed. The dam was subsequently rehabilitated and repaired. The capacity of the modified reservoir is 1110 acre-feet at an elevation of 9486 feet. Area-capacity relationships for the reservoir, based on a 1958 topographic survey by the State Engineer Office, are compiled in Table 21 and illustrated in Figure 22.

No evaporation or sedimentation studies have been conducted specifically for Cabresto Reservoir, and there is no prediction as to the useful life of the reservoir. Evaporation data, including lake evaporation estimates, are compiled for the entire Taos region, and have been discussed previously (section II.B.2, Evaporation Data).

III. RECOMMENDATIONS AND DATA NEEDS

In the previous sections, I have reviewed the existing surface water supply data, compiled data relevant to assessing the quantity of surface water in Taos County, and evaluated the data and accompanying analyses as to its adequacy for precisely quantifying surface water availability. My evaluation of these data and analyses are presented throughout the report, and significant findings are summarized below. Also in this section are specific recommendations for the use of existing data and additional data collection that will permit a better quantification of surface water availability in Taos County.

1. Frequency analysis of median annual discharge using extended records. The data critical to quantifying surface water availability are stream and spring discharge data (sections II.C and II.D). As mentioned previously, Taos County is fortunate to have fairly extensive, high quality discharge data for all major drainage basins. Gage station coverage is generally adequate, and with only a few minor exceptions (Rio Fernando de Taos, Rio Pueblo, and Rio Santa Barbara), provides data sets with at least 20 years of record. One significant deficiency in existing discharge data is that the records are incongruent in time and often span a period of measurement that is skewed by long-term fluctuations in climate (for example the extremely dry period from about 1950 to 1980). As a result, these discharge data and any analyses relying on these data are also commonly skewed, providing estimates of yield that are typically low when compared with long-term "averages". The estimates of surface water yield presented in this report rely on median annual discharges, and are an improvement over previous estimates based on summary statistics of mean discharges. However, these estimates of yield could be improved by completing the following analyses of existing raw data:

(a) Existing discharge data in the Costilla Creek, Latir Creek, Red River, and Rio Hondo drainages are adequate for quantifying yield from these basins. Existing data from the upper Rio Pueblo de Taos, Rio Fernando de Taos, Rio Chiquito, Rio Pueblo, and Rio Santa Barbara need to be extended to a common base period using an index station approach and/or regression techniques.
(b) Additional frequency analysis of annual and irrigation season discharge data needs to be completed using probability distributions of existing and extended data.

2. Evaluation of stream losses and gains. An evaluation of stream losses and gains is completed in section II.D.5. This evaluation, based on a simple comparison of annual intervening discharges, clearly shows that certain reaches of the Rio Grande, Rio Hondo, Rio Pueblo de Taos, and Red River gain flow due to ground-water accretion. A quantification of stream/ground water interaction is necessary to understand both the ground-water and surface-water systems, and to quantify ground-water and surface-water availability. Identification of critical stream reaches that are subject to infiltration or accretion will improve estimates of water balance components and help validate ground-water model results. These data can be obtained by completing the following data collection and analysis:

(a) Estimate gains and losses between intervening gage stations by analyzing existing **daily** discharge data. Estimates derived from daily discharge data will be more accurate and informative than estimates derived from annual discharge data, and will help guide identification of critical stream reaches requiring additional study.
(b) Conduct seepage runs at various low to intermediate discharges along critical reaches of the Rio Hondo, Rio Pueblo de Taos, and Red River. Seepage runs, which

consist of measuring discharge at intervals along a channel reach during a period of low or base flow, will identify if and where significant channel losses or gains occur, and will quantify surface-water/ground-water exchanges. Discharge measurements should be accompanied by measurements of specific conductance and temperature to extend usefulness of the data and confidence in interpretations. Because seepage runs can give different results at different times, seasonal or even monthly measurements should be taken.

3. Rigorous evaluation of basin yield. Evaluations of basin yield have been completed in two previous studies, and new estimates are derived in this report (sections II.D.1.a and II.D.3). However, all basin yield estimates derived to date are inadequate in some respect. Given the legal, political, social, and economic urgency of quantifying surface water availability from the drainage basins in Taos County, and the need to have reliable estimates that foster confidence in the various interested parties, it is prudent to re-evaluate basin yield. A rigorous evaluation of basin yield for each of the drainage basins in Taos County could be completed based on results of the data collection and analysis described above in paragraphs 1 and 2. Other techniques including regional precipitation-runoff analyses and salt balances could also be implemented for the sake of comparison and to ensure completeness and confidence.

4. Inventory of springs and spring discharges. The U.S. Department of Interior, Bureau of Land Management, and the U.S. Forest Service have undergone considerable effort to locate and inventory all springs on federal lands in Taos County. The results of their efforts are included in section II.A, Table 4. However, the inventory is not complete on federal land, and no such inventories exist for state or private lands. Springs mark locations of significant ground-water discharge to the surface water system. Identifying the location and magnitude of spring discharges is important for understanding and quantifying both ground-water and surface water availability. A complete inventory of significant springs and spring discharges needs to be completed, including springs on private property (if possible).

5. Mapping of irrigation diversion, conveyance and return flow. Whereas considerable data exist that quantify the amount of surface water available above points of diversion, very little or no data exist concerning the amount of surface water actually diverted, used, and returned to the surface water system. A quantification of return flow (the amount of surface water returned to a stream channel after diversion for a beneficial use) is necessary in order to accurately assess the quantity and quality of surface water available to downstream users. At present, neither surface water withdrawals (for irrigated agriculture), depletions, or return flows are directly measured. The following data are required to quantify how, where, and how much surface water is used and needed for agricultural purposes:

(a) Complete, precise documentation of the network of irrigation diversions, conveyance canals, and points of return is needed.
(b) Direct measurement of the amount and quality of surface water diverted for agricultural purposes and the amount and quality of irrigation water returned to the surface system is required to ensure water availability and suitability to downstream users.

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TABLES

Table 1. Basic drainage patterns associated with the physiographic regions of Taos County and their geologic significance (after Howard, 1967).

Physiographic Region	Dominant Stream Type	Drainage Pattern①	Geologic Significance
Sangre de Cristo Mountains	Major and minor perennial streams	Rectangular	Crystalline rocks with joints and/or faults at right angles; streams and divides lack regional continuity
		Angulate	Crystalline rocks with joints and/or faults at other than right angles
		Compound rectangular-angulate	Crystalline rocks with multiple joint sets and/or faults and both right angles and other than right angles
		Subdendritic	Uniformly resistant crystalline rocks with a minor, secondary structural control
Piedmont/Costilla Plains	Gaining and losing perennial streams; ephemeral streams	Parallel	Parallel elongate alluvial fans with moderate slopes
		Radial	Volcanic peaks
Taos Plateau	Ephemeral	Contorted	Contorted, coarsely layered, resistant volcanic rocks with lack of regional order and discontinuity of valleys and ridges
		Radial	Volcanic peaks

① In order of prevalence

Table 2. Drainage basins of Taos County.

Assessment Area	Basin or Catchment *Subbasin*	Area (mi^2)	Elevation Range (ft)	Irrigated Acres①	Gage Stations
RED RIVER	Costilla Creek above Costilla	221 (213 in Taos County)	12,870-7900		5A, 2D
	Costilla Ck above Reservoir	56.5	12,870-9400	0	3A
	Comanche Ck	42.6	11,220-8920	0	0
	Latir Ck	19.6	12,700-8740	0	0
	Ute Ck	17.2	12,880-8100	320	1D
	Costilla Creek below Costilla	32.4	7900-7380	1600	1A, 1D
	Sunshine Valley	107	10,370-7300	U	0
	West Latir Creek	35.3	12,730-7250	1764	1D
	Cerro/Guadalupe	40	12,450-7110	U	0
	Red River	188	13,160-6600	838	4A, 3D
	Cabresto Ck	39.5	12,630-7340	2253	2A
	Garrapata and San Cristobal	36	11,800-6550	400	0
RIO PUEBLO DE TAOS	Rio Hondo	75	13,160-6470	2870	1A, 1D
	Rio Pueblo de Taos	418			4A, 4D
	Upper Rio Pueblo de Taos	78.6	13,110-6880	1330	0
	Rio Lucero	31.5	13,110-6880	2400	1A
	Rio Fernando de Taos	68.3	10,830-6755	650	1D
	Arroyo Seco	16.2	11,980-6710	1730	0
	Rio Grande del Rancho	150	11,940-6710	3380	1A, 1D
	Lower Rio Pueblo de Taos	63.4	10,600-6200	75	0
EMBUDO	Pilar	33.4			
	Arroyo Hondo	8.8	10,600-6060	30	0
	Agua Caliente	18.2	9400-6020	108	0
	Pilar Cliffs	6.5	7500-5900	0	0
	Embudo Creek	320 (230 in Taos County)	12,800-6600		3A, 1D
	Rio Pueblo de Picuris	142	12,470-7160	823	1D
	Rio Santa Barbara	66 (44.3 in Taos County)	12,840-7160	4741	1A
	Chamizal Ck	9.3	9840-7070	U	0
	Rio de las Trampas	42 (16 in Taos County)	12,800-6600	525	0
TAOS PLATEAU	Arroyo Punche	97	10,890-7140	0	0
	Brushy Mountain	71	8860-6890	0	0
	Arroyo Aquaje de la Petaca	243 (138 in Taos County)	9840-6060	0	0

① From Saavedra, 1987
U = Unknown ; A = Active; D = Discontinued

Table 3. Acequias in Taos County (Saavedra, 1987) (Page 1 of 4)
Note: This table lists 122 of the 125 acequias inventoried in SEO Report TDDC-87-2. Their is insufficient information to locate by drainage basin the three remaining acequias, which include Lopez Spring Ditch, Arroyo Grande Aquitas Calientas, and Rio Grande Acequia de la Isla.

Assessment Area	Subbasin or Watershed	Acequia	Total Irrigated Acres
	Cabresto Creek	1. Cabresto Lake Irrigation Assn	1030
		2. Llano Irrigation Community Ditch	1223
	Red River	3. Questa Citizens Ditch	593.5
		4. El Rito de la Loma	244.2
	Rio Costilla	5. Acequia Madre de Rio Costilla (Cordillera D)	451.5
		6. Cerritos Ditch #1	184
		7. Cerritos Ditch #2	238.5
		8. Rio Costilla Assoc. Ditch	U
		9. J.J. Santistevan Ditch	219.6
		10. Barela Ditch	17
		11. Acequia del Lado Norte	66.2
		12. Ballejos-Martinez	51.2
		13. Ballejos-Martinez #4	53.4
Red River		14. Penasquito Ditch Assoc.	304
		15. Acequia J.D. Lovato	U
		16. Acequia Plaza de Arriba	U
	San Cristobal Creek	17. Drainage Ditch	19
		18. Trujillo-Cordova Ditch	3.5
		19. Middle Ditch	207.9
		20. Highland Ditch	40.7
		21. Acequia Madre de San Cristobal	140.5
	Ute Creek	22. Madriles Ditch	114.1
		23. Arcadia Lucero Ditch #1	40.5
		24. Arcadia Lucero #2	18.5
		25. Jose Angel Martinez #1	39.7
		26. Miera	109
		27. Madril and Lucero Ditch	U
	West Latir Creek	28. Acequia Madre de Cerro de Guadalupe	1764
	Arroyo del Alamo	1. Byron Whitt Ditch	75
	Arroyo Seco	2. Temporales Ditch	89.7
Rio Pueblo de Taos		3. Torreon Ditch	195.6
		4. Alamitos Ditch	185.6
		5. Espinosa Ditch	137.3
		6. El Rito Ditch	7.4
		7. Acequia de la Plaza	44.1
		8. Lower Arroyo Seco Ditch	8.5
		9. Manuel Andres Trujillo Ditch	610.6

Table 3. Acequias in Taos County (Saavedra, 1987) (Page 2 of 4)

Assessment Area	Subbasin or Watershed	Acequia	Total Irrigated Acres
		10. Juan Manuel Lucero Community Ditch	224.8
		11. Jose Manuel Lucero Community Ditch	223.6
	Miranda Canyon	12. Canoncito Ditch	U
	Rio Chiquito	13. Acequia Madre del Rio Chiquito	265
	Rio Fernando de Taos	14. Acequia del Sur del Canon	384.7
		15. Vigil & Romo Ditch	45.2
		16. Jose Venito Martinez Ditch	79.2
		17. Anderson Ditch	9.8
		18. Acequia del Norte del Canon	137
	Rio Grande del Rancho	19. Acequia Madre del Rancho Grande	25.7
		20. Acequia del Finado Francisco Martinez	555.5
		21. Acequia en Medio los Rios	59.1
		22. Acequia Abajo de la Loma	51.2
		23. Saucito Ditch	68.7
		24. Talpa Reservoir Ditch	2.5
		25. Acequia Madre del Rio Chiquito	789.5
		26. Acequia del Monte	305.6
		27. Acequia Antonio Marie Graham	23.3
		28. Acequia Lucero	7.7
		29. Pueblito Ditch	54.9
		30. Acequia Madre del Rio Grande	296
		31. Jarosa Ditch	82.6
		32. Acequia en Medio (Hart Ditch)	91.3
		33. Acequia de Tio Gerbacio	131.1
		34. Los Cordovas Ditch #1	395.5
		35. Los Cordovas Ditch #2 (Acequia Marano)	174.3
	Rio Hondo	36. Rebalse Ditch	556.3
		37. Des Montes Ditch	390.7
		38. Acequia del Llano	227.9
		39. Mariposa Ditch	201.3
		40. Acequia de San Antonio	172.6
		41. Prando Ditch	49.6
		42. Canocito North and South Ditch	22.4
		43. Acequia de Atalaya	323.9
		44. Acequia Madre del Llano	640.1
		45. Acequia de la Plaza	105.9
		46. Hawk Ditch	180
	Rio Lucero	47. Acequia Madre del Rio Lucero/Arroyo Seco	633.4
		48. Acequia Madre del Prado	951.1
		49. Acequia del Medio del Prado	218.4
		50. Don Archuleta Ditch	2.5

Table 3. Acequias in Taos County (Saavedra, 1987) (Page 3 of 4)

Assessment Area	Subbasin or Watershed	Acequia	Total Irrigated Acres
		51. Cortez & Sisneros Ditch	25.3
		52. McClure Ditch	61.4
		53. Acequia Madre de la Loma, South la Loma	510.9
	Rio Pueblo de Taos	54. Acequia Madre de Pueblo	580.5
		55. Acequia la Loma Abajo	61.9
		56. Acequia de los Archuletas	56.8
		57. Molino Ditch	62.8
		58. Acequia de los Sanchez	58.7
		59. La Acequia de los Lovatos	279.2
		60. Acequia de los Molinos #2	45
		61. Pacheco Community Ditch	85.1
		62. San Francisco de Assisi Ditch	99.8
Embudo Creek	Madre de Penasco	1. Acequia del Medio	200
	Agua Caliente Canyon	2. Pilar Community Ditch	62.3
		3. Acequia de los Ojos de la Agua Caliente	46
	Hondo Canyon	4. Short Ditch	30
	Rio Pueblo de Picuris	5. Acequia de los Alamitos	40.5
		6. Spring Ditch	22.7
		7. Vadito North Side Ditch #2	130
		8. Lower Vadito South Side Ditch	183
		9. Los Mochas Ditch	50
		10. Abelino Archuleta Ditch	40
		11.Acequia de Placitas del Sur Vadito	215
		12. Acequia de la Otra Banda	133.3
		13. Acequia de Rio Pueblo (Lena Pesada)	U
	Rio Santa Barbara	14. Acequia del Norte de Rio Lucio	166
		15. Acequia del Medio de Rio Lucio	165
		16. Rio Lucio Southside Ditch	183
		17. Acequia Madre de Penasco	323
		18. Acequia de Abrieu	38
		19. Acequiacita de Penasco	68
		20. Acequia de Penasco del Camino	158
		21. Acequia Sur de Rodarte	175
		22. Acequia Madre de Santa Barbara	825
		23. Acequia Madre del Llano Largo	150
		24. Acequia Madre del Llano San Juan	890
		25. Chamisal-Ojito Ditch	700
		26. Acequia del Llano de la Llegua	700

Table 3. Acequias in Taos County (Saavedra, 1987) (Page 4 of 4)

Assessment Area	Subbasin or Watershed	Acequia	Total Irrigated Acres
	Rio Trampas	27. Acequia Sur de las Trampas	100
		28. Acequia Norte de las Trampas	110
		29. Acequia Abajo de el Valle	85
		30. Acequia Arriba de el Valle	110
		31. Acequia del Llano de San Miguel	120
	Telephone Canyon	32. Telephone Canyon East & West Ditches	9

Table 4. Inventory of springs in Taos County (page 1 of 4).

Assessment Area	Spring No.	Latitude-Longitude	Location	Name	Topographic Location	Estimated Yield (gpm)	Reference
RED RIVER	1	363624-1054018	27N.12E.04.141	Cedar Springs	In canyon south of Garrapata		Arroyo Hondo 7.5 Min Quad
	2	364130-1053718	28N.12E.01.133	Embargo Spring	Red River		Garrabrant (1993), White and Kues (1992)
	3	364137-1053647	28N.12E.01		Red River		Garrabrant (1993)
	4	364112-1053840	28N.12E.03.441	Lower Spring	Fish Hatchery		Garrabrant (1993), White and Kues (1992)
	5	364104-1054128	28N.12E.05.334		East wall, Rio Grande Gorge	3	USDOI/BLM (1998)
	6	364056-1054112	28N.12E.08.122	Big Arsenic - north	Base of east wall of Rio Grande gorge	200	USDOI/BLM (1998)
	7	364051-1054112	28N.12E.08.124	Big Arsenic - Middle		30	USDOI/BLM (1998)
	8	364043-1054103	28N.12E.08.231	Big Arsenic - South		131	USDOI/BLM (1998)
	9	364056-1054127	28N.12E.08.112		Rio Grande gorge	1	USDOI/BLM (1998)
	10	364056-1054105	28N.12E.08.211		East wall, Rio Grande gorge	30	USDOI/BLM (1998)
	11	364042-1053940	28N.12E.09.241		North bank of Red River	20	USDOI/BLM (1998)
	12	364052-1053934	28N.12E.09.224		North bank of Red River	140	USDOI/BLM (1998)
	13	363957-1054112	28N.12E.17.124	Little Arsenic Spring	East wall of Rio Grande gorge	50	USDOI/BLM (1998)
	14	364618-1054034	29N.12E.05.444		Rio Grange gorge		Garrabrant (1993), White and Kues (1992)
	15	364609-1054022	29N.12E.09.112		East wall of Rio Grande gorge		Garrabrant (1993)
	16	364505-1054026	29N.12E.16.131	Boatero Spg	Base of east wall of Rio Grande	25	USDOI/BLM (1998)

Table 4. Inventory of springs in Taos County (page 2 of 4).

Assessment Area	Spring No.	Latitude-Longitude	Location	Name	Topographic Location	Estimated Yield (gpm)	Reference
RED RIVER	17	364453-1054036	29N.12E.17.422	Fallen Tree Spring	2 Springs; base of east wall of Rio Grande gorge	1 ea	USDOI/BLM (1998)
	18	364447-1054042	29N.12E.17.423		Base of east wall of Rio Grande gorge	1	USDOI/BLM (1998)
	19	364433-1054053	29N.12E.17.434	Chiflo Spring	Base of east wall of Rio Grande gorge	5	USDOI/BLM (1998)
	20	364406-1054105	29N.12E.20.144		Base of east wall of Rio Grande gorge	1	USDOI/BLM (1998)
	21	364420-1054100	29N.12E.20.213		2 Springs; base of east wall of Rio Grande gorge	1 ea	USDOI/BLM (1998)
	22	364420-1054100	29N.12E.20.213		Base of east wall of Rio Grande gorge	5	USDOI/BLM (1998)
	23	364403-1054105	29N.12E.20.322		2 Springs; base of east wall of Rio Grande gorge	1 ea	USDOI/BLM (1998)
	24	364354-1054107	29N.12E.20.324		2 Springs; base of east wall of Rio Grande gorge	2 ea	USDOI/BLM (1998)
	25	364216-1054143	29N.12E.31.422	Felsenmeere Spring	East wall of Rio Grande gorge	300	USDOI/BLM (1998)
	26	364710-1052114	29N.15E.04.220 Carson NF	North Hole Spg	Cabresto Park		Comanche Point 7.5 Min Quad; USFS/Carson N.F. (1998)
RIO PUEBLO DE TAOS	27		22N.13E.01.220	Saloz Spring	At head of Saloz Canyon		USFS/Carson N.F. (1998)
	28		22N.14E.30.130	Tres Ritos Spg			USFS/Carson N.F. (1998)
	29		22N.14E.30.330	Angostura Spg			USFS/Carson N.F. (1998)
	30		23N.12E.13.220	Ojo Sarco Spg	In upper Ojo Sarco Canyon		USFS/Carson N.F. (1998)
	31		23N.13E.09.130	Ranchos Spring			USFS/Carson N.F. (1998)
	32	361452-1053302	23N.13E.10.120	Maestas Spring	At Maestas Park, head of Maestas Canyon		Tres Ritos 7.5 Min Quad; USFS/Carson N.F. (1998)

Table 4. Inventory of springs in Taos County (page 3 of 4).

Assessment Area	Spring No.	Latitude-Longitude	Location	Name	Topographic Location	Estimated Yield (gpm)	Reference
	33	361227-1053427	23N.13E.21.330	Apache Springs	Apache Canyon		Tres Ritos 7.5 Min Quad; USFS/Carson N.F. (1998)
	34	361458-1052736	23N.14E.04.340	Diablo Spring	At head of Diablo Canyon		Cerro Vista 7.5 Min Quad; USFS/Carson N.F. (1998)
	35	361925-1053620	Carson N.F.; Rancho del Rio Grande Grant	Ponce de Leon Spring	At mouth of Miranda Canyon		Garrabrant (1993), White and Kues (1992)
	36	361715-1053137	24N.13E.26.230	Bear Spring	In Bear Wallow Canyon		Ranchos de Taos 7.5 Min Quad; USFS/Carson N.F. (1998)
	37		24N.13E.35.110	No Agua Sp			USFS/Carson N.F. (1998)
	38		24N.13E.36.140	Deer Spring			USFS/Carson N.F. (1998)
	39		24N.13E.36.140	Venado Spring			USFS/Carson N.F. (1998)
RIO PUEBLO DE TAOS	40		24N.14E.31.120	Porky Spring			USFS/Carson N.F. (1998)
	41		25N.13E.27.210	La Vinateria Spring			USFS/Carson N.F. (1998)
	42		25N.14E.27.430	Murphy Springs	South side of Rio Fernando de Taos		USFS/Carson N.F. (1998)
	43		25N.15E.16.340	Salmon Spring			USFS/Carson N.F. (1998)
	44	363030-1054326	26N.11E.12.121Proj Antonio Martinez Gr	Manby Hot Spring	Base of gorge wall, east bank of Rio Grande, south of Rio Hondo		USDOI/BLM (1998)
	45	363215-1054223	27N.12E.31.121	Warmsley Sp	Rio Grande gorge, north of Rio Hondo		Garrabrant (1993)
	46	363201-1054219	27N.12E.31.142	Lower Hondo Spring	Rio Hondo	25	USDOI/BLM (1998)
	47	363151-1054242	27N.12E.31.311		Rio Grande gorge, south of Rio Hondo		Garrabrant (1993), White and Kues (1992)

Table 4. Inventory of springs in Taos County (page 4 of 4).

Assessment Area	Spring No.	Latitude-Longitude	Location	Name	Topographic Location	Estimated Yield (gpm)	Reference
EMBUDO	48	360347-1053936	21N.12E.10.332	Upper Ojo del Oso	At head of Chamizal Crk ~0.5 mi south of Taos County Line		El Valle 7.5 Min Quad; USFS/Carson N.F. (1998)
	49		22N.13E.24.410	Ranchos Tres Ritos Spring	Rio Pueblo		USFS/Carson N.F. (1998)
	50	360615-1052602	22N.14E.27.440	Loring Spring	At head of Raton Canyon		Holman 7.5 Min Quad; USFS/Carson N.F. (1998)
	51	361459-1054338	23N.11E.01.330	Warm Spring	At head of Agua Caliente Canyon		Penasco 7.5 Min Quad
	52	361956-1054422	24N.11E.11.124Proj Gijosa Grant	Rio Grande Spring	East side of RG Gorge ~2000' south of Taos Junction Bridge		Garrabrant (1993), White and Kues (1992)
	53	362002-1054412	24N.11E.11.212Proj Gijosa Grant		N of Rio Grande Spring, ~1000' south of Taos Junction Bridge		Taos SW 7.5 Min Quad
TAOS PLATEAU	54	361816-1060308	24N.8E.24.110	Joseph's Hot Springs	West side of Rio Ojo Caliente ~1mi upstream from village.		Garrabrant (1993), White and Kues (1992) Summers (1976)

Table 5. Climatic data recording stations in Taos County, by assessment area.

Assessment Area	Station Name	Lat	Long	TRS	Parameters Recorded①	Status②
RED RIVER	Cerro③	36:45:00	105:36:00		Tmin,Tmax,P,SD	A
	North Costilla④	37:00:00	105:15:00		SWE,T,P	A
	Red River③	36:42:00	105:24:00		Tmin,Tmax,P,SD	A
	Red River Pass④	36:42:00	105:20:00	28.15.3	SWE,T,P	A
RIO PUEBLO DE TAOS	Gallegos Peak④	36:11:00	105:33:00	23.13.27	SWE,T,P	A
	Palo Flechado④	36:24:00	105:19:00	25.15.10	SWE	A
	Taos③	36:23:00	105:36:00		Tmin,Tmax,P	A
	Taos Canyon④	36:24:00	105:20:00	25.15.10	SWE	A
	Taos Powderhorn④	36:35:00	105:27:00	27.14.9	SWE	A
EMBUDO	Alamitos④	36:04:00	105:27:00	21.14.9	SWE	A
	Cordova④	36:07:00	105:32:00	22.13.22	SWE	D
	Penasco R.S. ③	36:10:00	105:41:00		Tmin,Tmax,P,SD	D
	Tres Ritos④	36:08:00	105:32:00	22.13.23	SWE	A
TAOS PLATEAU	Ojo Caliente③	36:18:00	106:03:00		P,SD	D
	Skarda③	36:46:00	105:58:00		Tmin,Tmax,P,SD	D
	Tres Piedras③	36:40:00	105:59:00		Tmin,Tmax,P,SD	A
OTHER						
Colfax County	Black Lake③	36:18:00	105:17:00		Tmin,Tmax,P,SD	A
Colfax County	Eagle Nest③	36:33:00	105:16:00		Tmin,Tmax,E,T,SD	A
Mora County	Chacon③	36:10:00	105:23:00		Tmin,Tmax,P,SD	D
Rio Arriba Cnty	Abiquiu Reservoir③	36:14:00	106:26:00		Tmin,Tmax,E,T,SD	A
Rio Arriba Cnty	El Vado Reservoir③	36:36:00	106:44:00		Tmin,Tmax,E,T,SD	A
Rio Arriba Cnty	Heron Reservoir⑤	36:42:00	106:40:30		E, T	D
Colorado	Conejos 3 NNW③	37:08:00	106:02:00		Tmin,Tmax,E,T,SD	D
Colorado	Platoro③	37:21:00	106:32:00		Tmin,Tmax,E,T,SD	D

① Tmin: Minimum Temperature;
Tmax: Maximum Temperature;
E: Evaporation; T: Temperature; P: Precipitation;
SD: Snow Depth; SWE: Snow Water Equivalent

② A: Active; D: Discontinued
③ NOAA Station
④ NRCS Station
⑤ USBOR Station

Table 6. Average annual precipitation for NOAA precipitation stations, and April snow water equivalent for NRCS snow survey stations in and around Taos County.

Assessment Area	NOAA/NRCS Station	Elevation (ft)	Period of Record	Mean Annual Precipitation①(in)	NOAA Normal②(in)	Mean April SWE③(in)
RED RIVER	Cerro④	7650	1910-1995	12.53	12.56	na⑥
			1948-1995	12.30		
	North Costilla⑤	10,600	1977-1996	na	na	11.5
	Red River④	8680	1906-1995	20.77	20.94	na
			1948-1995	20.32		
	Red River Pass⑤	9850	1967-1996	na	na	6.6
RIO PUEBLO DE TAOS	Gallegos Peak⑤	9800	1978-1996	na	na	11.5
	Palo Flechado⑤	9300	1972-1996	na	na	8.1
			1978-1996			8.7
	Taos④	6970	1890-1995	12.4	11.96	na
			1948-1995	12.5		
	Taos Canyon⑤	9100	1937-1996	na	na	5.2
			1978-1996			5.6
	Taos Powderhorn⑤	11,250	1974-1996	na	na	28.8
			1978-1996			29.8
EMBUDO	Alamitos⑤	9320	1971-1996	na	na	6.4
			1978-1996			6.9
	Black Lake④⑦	8360	1948-1995	20.61	21.33	na
	Chacon④⑧	8500	1948-1985	19.1	nd⑨	na
	Cordova⑤	9600	1942-1967	na	na	11.2
	Penasco Ranger Station④	7920	1929-1976	14.78	nd	na
	Tres Ritos⑤	8600	1938-1996	na	na	5.2
TAOS PLATEAU	Ojo Caliente④	6290	1944-1982	9.61	nd	na
	Skarda④	8280	1940-1984	13.28	nd	na
	Tres Piedras④	8140	1906-1995	13.57	12.68	na

① Average annual precipitation for period of record
② NOAA normal precipitation based on average for period 1961 to 1990
③ Average April 1 snow water equivalent for period of record
④ NOAA weather station
⑤ NRCS snow survey station
⑥ na: not applicable
⑦ Station located in Colfax County
⑧ Station located in Mora County
⑨ nd: no data

Table 7. Average monthly and irrigation season pan evaporation rates, and mean annual lake evaporation rates for NOAA and USBOR evaporation stations in the Taos region (Hydrosphere, 1996a; NMSEO, 1956a; USBOR, 1997).

Station Name	Elevation (ft)	Mean Monthly Pan Evaporation (in) April	May	Jun	July	Aug	Sept	Oct	I. S. Pan ①	I. S. Lake ②	Mean Annual ③	T.R.31 Annual④
Abiquiu Reservoir	6380	7.80	9.92	11.40	10.85	8.99	7.20	5.27	61.4	43.0	48.9	46
El Vado Dam	6740	5.70	7.44	9.00	8.68	7.13	5.70	4.03	47.7	33.4	38	42
Heron Reservoir	7240	4.50	6.51	8.10	8.06	6.82	5.40	3.41	42.8	30.0	34.1	41
Conejos 3NNW	7900	6.90	7.44	8.10	7.75	7.13	7.20	6.20	50.7	35.5	40.3	42
Eagle Nest	8260	5.10	7.75	8.40	7.44	6.20	5.70	4.65	45.2	31.7	36	42
Platoro	9840	nd	6.20	8.40	6.82	5.58	5.70	3.72	36.4	25.5	29	38

① Irrigation Season Pan Evaporation (in), April through October.
② Irrigation Season Lake Evaporation (in), 0.70 x Pan Evaporation.
③ Mean Annual Lake Evaporation (in), based on mean monthly pan data and seasonal distribution summarized in Table 8.
④ Estimated Annual Lake Evaporation (in), based on Hale et al. (1965), Technical Report No. 31, Figure 6.

Table 8. Monthly distribution of shallow reservoir evaporation (Hale et al., 1965).

Month	% of Annual	Month	% of Annual
January	1	July	16
February	1	August	14
March	5	September	12
April	9	October	6
May	14	November	3
June	17	December	2

Table 9. Active and discontinued stream gage stations in and near Taos County, summary of streamflow data and basin characteristics (Page 1 of 2).

Assessment Area	Station ID	Gage Location	Status ①	Years of Record②	Period of Record	Drainage Area (mi^2)⑦	µQ (ac-ft/yr)⑨	σ (ac-ft/yr)⑨	Mean Basin Elevation (ft)⑩
RED RIVER	8251500	Rio Grande near Lobatos, CO	A	95	1900-pres	4760*	418,333	285,805	nd
	8252000	Rio Grande at CO-NM State Line	D	29	1954-1982	4950*	254,610	156,110	nd
	8252500	Costilla Creek above dam	A		1937-pres③	25.1	3481	2096	11,400
	8253000	Casias Creek near Costilla	A		1937-pres③	16.6	4844	2710	11,100
	8253500	Santistevan Creek near Costilla	A		1937-pres③	2.15	846	404	10,500
	8254000	Costilla Creek below dam	A		1937-pres③④	54.6	14,629	6153	10,693*
	8254500	Costilla Creek near Amalia	D		1949-1981③	152	19,051	7749	nd
	8255000	Ute Creek near Amalia	D		1949-1959③	12	1747	1175	10,700
	8255500	Costilla Creek near Costilla	A	34	1961-pres⑤	195	32,945	14,597	10,100*
	8256000	Acequia Madre at Costilla	D		1966-1992③	na	3529	802	na
	8257500	Cordillera Ditch at Garcia, CO	D		1965-1991③	na	206	186	na
	8258000	Cerro Canal at Costilla	D		1965-1991③	na	16,505	5632	na
	8258600	Cerro Canal Below Association Ditch at Costilla	D		1972-1992③	na	8163	3609	na
	8259500	NM Branch Cerro Canal nr Jaroso	D		1969-1991③	na	883	509	na
	8259600	Cerro Canal at State Ln nr Jaroso	D		1973-1992③	na	6872	2807	na
	8260500	Costilla Creek bel div @ Costilla	D		1965-1986③	197	6117	7976	nd
	8261000	Costilla Creek at Garcia CO	A		1966-pres③	200	5618	7108	nd
	8263000	Latir Creek near Cerro	D	25	1946-1970	10.5	3904	1304	11,500
	8263500	Rio Grande Near Cerro	D	46	1949-1994	5500*	333,490	203,350	nd
	8264000	Red River near Red River	D	14	1944-1964⑥	19.2	11,213	4168	10,800
	8264500	Red River below Zwergle Damsite	D	10	1964-1973	25.7	12,818	4505	10,530
	8265000	Red River near Questa	A	65	1925, 1931-pres⑥	113	33,583	14,781	9930
	8265500	Llano Ditch near Questa	A		1944-pres③	na	1678	1030	na
	8266000	Cabresto Creek near Questa	A	51	1944-pres	36.7	7844	3273	10,184*
	8266820	Red River below Fish Hatchery	A	16	1979-pres	185	63,154	17,287	nd
	8267000	Red River at Mouth near Questa	D	27	1952-1978	190	54,682	13,640	9500
	8267500	Rio Hondo near Valdez	A	60	1935-pres	36.2	25,853	10,097	10,100
	8268500	Arroyo Hondo at Arroyo Hondo	D	67	1913-1985⑥	65.6	19,835	11,046	9730
	8268700	Rio Grande near Arroyo Hondo	A	31	1964-pres	5820*	492,570	234,444	nd

Table 9. Active and discontinued stream gage stations in and near Taos County, summary of streamflow data and basin characteristics (Page 2 of 2).

Assessment Area	Station ID	Gage Location	Status ①	Years of Record②	Period of Record	Drainage Area(mi²)⑦	µQ (ac-ft/yr)⑨	σ (ac-ft/yr)⑨	Mean Basin Elevation (ft)⑩
RIO PUEBLO DE TAOS	8269000	Rio Pueblo de Taos near Taos	A	43	1915, 1941-pres⑥	66.6	21,966	11,896	9500
	8271000	Rio Lucero near Arroyo Seco	A	50	1914-1915, 1935-pres⑥	16.6	16,310	5990	10,800
	8275000	Rio Fernando deTaos near Taos	D	17	1964-1980	71.7	4139	3781	8870
	8275300	Rio Pueblo deTaos near Ranchito	D	23	1958-1980	199	22,209	17,230	nd
	8275500	Rio Grande del Rancho near Talpa	A	39	1953-pres⑥	83	15,338	7801	9400
	8275600	Rio Chiquito near Talpa	D	23	1958-1980	37	6090	3453	9350
	8276000	Rio Pueblo de Taos at LosCordovas	D	54	1911-1965⑥	359	42,378	27,812	nd
	8276300	Rio Pueblo deTaos blw LosCordovas	A	37	1958-pres	380	48,076	33,424	nd
EMBUDO	8276500	Rio Grande below Taos Junction	A	68	1927-pres	6790*	548,090	270,020	nd
	8277470	Rio Pueblo near Penasco	A	3	1991-pres	nd	43,333	29,674	9860*
	8278500	Rio Santa Barbara near Penasco	A	7	1953-1957, 1993-pres⑥	39⑧	24,712	10,596	10309*
	8279000	Embudo Creek at Dixon, NM	A	62	1924-pres⑥	305	61,434	36,172	8980
	8279500	Rio Grande at Embudo, NM	A	95	1890-pres⑥	7460*	676,490	319,180	nd

na: not applicable; nd: no data
① A: active, D: discontinued.
② Full water years of record.
③ Partial year records from the irrigation season.
④ Discharge regulated by Costilla Reservoir.
⑤ Streamflow data exist for 1936-1994; data for 1936-1960 unavailable from Hydrosphere (1996b).
⑥ Period of record includes missing years.
⑦ Drainage area from USGS Daily Values (Hydrosphere, 1996b); *: drainage area excludes 2,940 mi² of closed basin in Colorado.
⑧ Drainage area calculated using GIS ARC/INFO software at 1:100,000.
⑨ Mean annual discharge and standard deviation calculated from daily discharge for period of record through 1994, USGS Daily Values (Hydrosphere, 1996b).
⑩ Mean basin elevation values from Waltemeyer (1986, 1996); *: values from New Mexico State Engineer Office internal files (1997).

Table 10. Critical stream gage stations in and near Taos County and evaluation of data usability (page 1 of 2).

Station ID-Description	Period of Record	Yrs of Record	Data Usability
5150-Rio Grande at Lobatos	1900-pres	95	Five Rio Grande gages provide flow characteristics and estimate of stream gain on 4 segments of the Rio Grande, between the State Line and Embudo when adjusted to common base periods; flow data affected by regulation
6350-Rio Grande near Cerro	1949-1994	46	
6850-Rio Grande at Arroyo Hondo	1964-pres	67	
7650-Rio Grande at Taos Junction	1927-pres	68	
7950-Rio Grande at Embudo	1890-pres	95	
5250-Costilla Creek above dam	1937-pres	58	Superposed data from 3 upper gages estimates irrigation season contribution to Costilla Reservoir
5300-Casias Creek near Costilla	1937-pres	58	
5350-Santistevan Creek near Costilla	1937-pres	58	
5550-Costilla Creek near Costilla	1961-pres	34	Estimates basin yield and stream characteristics under current storage conditions, above diversion at Costilla
6100-Costilla Creek at Garcia, CO	1966-pres	29	Quantifies flow in Costilla Creek entering Colorado
6300-Latir Creek near Cerro	1946-1970	25	Estimates basin yield and flow characteristics of upper Latir basin and contribution to Cerro Community Ditch
6500-Red River near Questa	1925-pres	65	Estimates basin yield and flow characteristics above Cabresto Crk
6682-Red River below fish Hatchery	1979-pres	16	Estimates stream gains/losses in lower reach and contribution of Red River to the Rio Grande
6700-Red River at mouth near Questa	1952-1978	27	
6550-Llano Ditch near Questa	1944-pres	51	Superposed data from 2 gages estimates contribution to lower Red River from Cabresto Creek
6600-Cabresto Creek near Questa	1944-pres	51	
6750-Rio Hondo near Valdez	1935-pres	60	Estimates natural basin yield and flow characteristics above diversion

Table 10. Critical stream gage stations in and near Taos County and evaluation of data usability (page 2 of 2).

Station ID-Description	Period of Record	Yrs of Record	Data Usability
6850-Arroyo Hondo at Arroyo Hondo	1913-1985	67	Estimates stream gains/losses in lower reach and contribution of Rio Hondo to the Rio Grande
6900-Rio Pueblo de Taos near Taos	1941-pres	43	Estimates subbasin yields and flow characteristics of upper tributaries, and stream gains/losses across mountain front; extend records for Rio Chiquito and Rio Fernando de Taos
7100-Rio Lucero near Arroyo Seco	1935-pres	50	
7500-Rio Fernando de Taos near Taos	1964-1980	17	
7550-Rio Grande del Rancho at Talpa	1953-pres	39	
7560-Rio Chiquito near Talpa	1958-1980	23	
7600-Rio Pueblo de Taos @ Los Cordovas	1911-1965	54	Estimates stream gains/losses in lower reach and contribution of Rio Pueblo de Taos to the Rio Grande; extend records to common base period
7630-Rio Pueblo de Taos b/l Los Cordovas	1958-pres	37	
7900-Embudo Creek at Dixon	1924-pres	62	Estimates basin yield and flow characteristics under impaired conditions, and contribution of drainage to the Rio Grande

Table 11a. Studies relating to streamflow data from stations in Taos County with more than ten years of record (Page 1 of 2).

Station ID	Gage Location	Reiland and Haynes, 1963①	USBOR, 1971②	Reiland, 1980③	Waltemeyer, 1986④	Hearne and Dewey, 1988⑤	Waltemeyer, 1989⑥	Waltemeyer, 1996⑦
8251500	Rio Grande near Lobatos, CO	X		X				
8252000	Rio Grande at CO-NM State Line							
8252500	Costilla Creek above dam				X			X
8253000	Casias Creek near Costilla				X			X
8253500	Santistevan Creek near Costilla				X			X
8254000	Costilla Creek below dam						X	
8254500	Costilla Creek near Amalia							
8255000	Ute Creek near Amalia				X			
8255500	Costilla Creek near Costilla						X	
8256000	Acequia Madre at Costilla							
8257500	Cordillera Ditch at Garcia, CO							
8258000	Cerro Canal at Costilla							
8258600	Cerro Canal Below Assoc Ditch at Costilla							
8259500	NM Branch Cerro Canal nr Jaroso							
8259600	Cerro Canal at State Ln nr Jaroso							
8260500	Costilla Creek bel div @ Costilla							
8261000	Costilla Creek at Garcia CO							
8263000	Latir Creek near Cerro	X		X	X		X	X
8263500	Rio Grande Near Cerro	X		X			X	
8264000	Red River near Red River	X		X	X		X	X
8264500	Red River below Zwergle Damsite			X	X			
8265000	Red River near Questa	X		X	X	X	X	X
8265500	Llano Ditch near Questa							
8266000	Cabresto Creek near Questa	X		X		X	X	
8266820	Red River below Fish Hatchery							
8267000	Red River at Mouth near Questa	X		X	X		X	X
8267500	Rio Hondo near Valdez	X		X	X	X	X	X
8268500	Arroyo Hondo at Arroyo Hondo	X		X	X		X	X
8268700	Rio Grande near Arroyo Hondo			X			X	
8269000	Rio Pueblo de Taos near Taos	X		X	X	X	X	X

Table 11a. Studies relating to streamflow data from stations in Taos County with more than ten years of record (Page 2 of 2).

Station ID	Gage Location	Reiland and Haynes, 1963①	USBOR, 1971②	Reiland, 1980③	Waltemeyer, 1986④	Hearne and Dewey, 1988⑤	Waltemeyer, 1989⑥	Waltemeyer, 1996⑦
8271000	Rio Lucero near Arroyo Seco	X		X	X	X	X	X
8275000	Rio Fernando deTaos near Taos		X	X	X		X	X
8275300	Rio Pueblo deTaos near Ranchito			X			X	
8275500	Rio Grande del Rancho near Talpa	X	X	X	X	X	X	X
8275600	Rio Chiquito near Talpa		X	X	X	X	X	X
8276000	Rio Pueblo de Taos at Los Cordovas	X		X			X	
8276300	Rio Pueblo de Taos below Los Cordovas			X			X	
8276500	Rio Grande below Taos Junction Bridge	X		X			X	
8278500	Rio Santa Barbara near Penasco	X		X				
8279000	Embudo Creek at Dixon, NM	X		X	X	X	X	X
8279500	Rio Grande at Embudo, NM	X		X			X	

① Reiland, L.J., and Haynes, G.L., Jr., 1963, Flow Characteristics of New Mexico Streams, Flow-Duration, High-Flow, and Low-Flow Tables for Selected Stations Through Water Year 1959, New Mexico State Engineer Special Report, 342 pp.

② U.S. Bureau of Reclamation, 1971, San Juan Chama Project Indian Camp System Taos Unit, New Mexico. Appendices to Definite Plan Report Volume I of II May 1971 (Revised August 1971), Appendix A - Hydrology, 98 pp.

③ Reiland, L.J., 1980, Flow Characteristics of New Mexico Streams, Part I, Flow Duration, New Mexico State Engineer Special Report.

④ Waltemeyer, Scott D., 1986, Techniques for Estimating Flood-Flow Frequency for Unregulated Streams in New Mexico, U.S. Geological Survey Water-Resources Investigations Report 86-4104, 56 pp.

⑤ Hearne, Glenn A. and Dewey, Jack D., 1988, Hydrologic Analysis of the Rio Grande Basin North of Embudo, New Mexico, Colorado and New Mexico. U.S. Geological Survey Water Resources Investigation Report 86-4113, 244 pp.

⑥ Waltemeyer, Scott D., 1989, Statistical Summaries of Streamflow Data in New Mexico Through 1985, U.S. Geological Survey Water-Resources Investigations Report 88-4228, 204 pp.

⑦ Waltemeyer, Scott D., 1996, Analysis of the Magnitude and Frequency of Peak Discharge and Maximum Observed Peak Discharge in New Mexico, U.S. Geological Survey Water-Resources Investigations Report 96-4112, 79 pp.

Table 11b. Summary of analyses of streamflow data (see notes with Table 11a).

Data Analysis	Reiland and Haynes, 1963①	USBOR, 1971②	Reiland, 1980③	Waltemeyer, 1986④	Hearne and Dewey, 1988⑤	Waltemeyer, 1989⑥	Waltemeyer, 1996⑦
Summary Statistics		X				X	
Flow Duration	X		X			X	
Low Flow Frequency	X					X	
High Flow Frequency	X					X	
Flood Frequency				X			X
Extended Records		X	X				
Regional Analysis				X	X		X

Table 12a. Annual variability of stream discharge reflected by mean, median, maximum and minimum discharge values and flow duration data for select Taos County gage stations, by assessment area (page 1 of 2).

Assessment Area	Station ID①②③	Period of Record	Mean Q (AFY)④	Median Q (AFY)⑤	Base Q (AFY)⑥	Max Q (AFY)⑦	10% Q (AFY)⑥	Min Q (AFY)⑧	90% Q (AFY)⑥
	5150 Rio Grande at Lobatos③	1900-1994	418,330	355,159	298,300	1,494,954 [1907]	622,640	51,209 [1964]	24,250
	6350 Rio Grande at Cerro③	1949-1994	333,490	325,955	329,400	893,051 [1985]	644,360	87,195 [1964]	57,200
	6870 Rio Grande, Arroyo Hondo③	1964-1994	492,570	445,044	448,880	1,101,619 [1987]	839,840	168,441 [1964]	146,970
	5550 Costilla Ck near Costilla②	1961-1994	32,945	28,966	nd	63,234 [1983]	nd	11,990 [1964]	nd
	6300 Latir Creek①	1946-1970	3,904	3,647	4,530	6382 [1957]	9,410	2,095 [1956]	1,450
RED RIVER	6400 Red River near Red River①	1944-1964	11,213	10,904	12,520	18,920 [1952]	32,290	5,565 [1963]	2,620
	6500 Red River near Questa ②*	1931-1994	31,101	29,286	35,770	63,440 [1979]	76,020	8,555 [1971]	4,490
	6700 Red River at Mouth③	1952-1978	54,682	54,371	62,770	86073 [1952]	111,500	34,953 [1977]	34,320
	6682 Red River below Fish Hatchery③	1979-1994	63,154	61,537	nd	93353 [1979]	nd	30,359 [1981]	nd
	6600 Cabresto Creek② and Llano Ditch	1944-1994	9,725	8,775	nd	18,039 [1979]	nd	3,887 [1977]	nd
	7650 Rio Grande at Taos Junction③	1927-1994	548,090	515,131	511,140	1,332,201 [1942]	926,720	196,253 [1964]	170,860
	6750 Arroyo Hondo near Valdez①	1935-1994	25,853	23,392	25,270	50,571 [1942]	60,090	11,291 [1971]	7,310
	6850 Arroyo Hondo at Arroyo Hondo③	1913-1985	19,835	15,316	17,960	47,355 [1916]	32,580	6,934 [1974]	5,580
RIO PUEBLO DE TAOS	7100 Rio Lucero ①	1935-1994	16,310	15,488	15,500	33,807 [1941]	36,920	7,184 [1972]	3,950
	6900 Rio Pueblo de Taos near Taos①	1941-1994	21,966	18,344	19,190	52,348 [1979]	47,060	5,610 [1972]	3,840
	7530 Rio Pueblo near Ranchito③	1958-1980	22,209	17,856	23,460	78,476 [1979]	44,530	6,651 [1972]	2,970
	7500 Rio Fernando de Taos②	1964-1980	4,139	2,735	4,480	14,155 [1979]	9,050	922 [1971]	253

Table 12a. Annual variability of stream discharge reflected by mean, median, maximum and minimum discharge values and flow duration data for select Taos County gage stations, by assessment area (page 2 of 2).

Assessment Area	Station ID①②③	Period of Record	Mean Q (AFY)④	Median Q (AFY)⑤	Base Q (AFY)⑥	Max Q (AFY)⑦	10% Q (AFY)⑥	Min Q (AFY)⑧	90% Q (AFY)⑥
RIO PUEBLO DE TAOS	7560 Rio Chiquito①	1958-1980	6,090	5,346	7,200	15,458 [1979]	15,930	1,892 [1972]	1,470
	7550 Rio Grande del Rancho②	1953-1994	15,338	13,577	18,900	31,865 [1994]	45,760	4,320 [1972]	3,040
	7600 Rio Pueblo at Los Cordovas③	1911-1965	42,378	35,648	38,080	147,644 [1942]	71,680	11,170 [1951]	5,000
	7630 Rio Pueblo b/w Los Cordovas③	1958-1994	48,076	31,492	38,590	139,608 [1994]	71,680	10,455 [1972]	5,940
EMBUDO CREEK	7950 Rio Grande Embudo③	1890-1994	676,490	615,883	572,680	1,503,324 [1942]	1,078,760	223,138 [1977]	185,340
	7850 Rio Santa Barbara①	1953-57, 1993-94	24,712	22,928	29,760	36,574 [1957]	74,570	8,698 [1956]	4,850
	7900 Embudo Creek at Dixon③	1924-1994	61,434	52,229	56,910	170,452 [1941]	143,350	9,253 [1951]	8,110

nd: no data.
① Unimpaired, natural flow.
② Flow slightly impaired by minor diversion and/or regulation; * = values reflect 1966-1994 conditions (after pipeline bypass).
③ Impaired flow.
④ Mean annual discharge calculated from USGS Daily Values (Hydrosphere, 1996b) for period of record through 1994 (includes missing years that could affect mean discharge values).
⑤ Annual median discharge calculated from USGS Daily Values (Hydrosphere, 1996b) for period of record through 1994.
⑥ Average annual flow, flow equaled or exceeded 10% of time, and flow equaled or exceeded 90% of time, calculated from flow duration curves for base period 1931-1973 (Reiland, 1980).
⑦ Maximum annual discharge for period of record and [year of occurrence].
⑧ Minimum annual discharge for period of record and [year of occurrence].

Table 12b. Annual variability of stream discharge reflected by 90th, 75th, 25th, and 10th percentile discharge values for select Taos County gage stations, by assessment area (page 1 of 2).

Assessment Area	Station ID①②③	90th Percentile Q (AFY)④	75th Percentile Q (AFY)④	25th Percentile Q (AFY)④	10th Percentile Q (AFY)④	MAD⑤
RED RIVER	5150 Rio Grande at Lobatos③	846,449	582,956	188,979	103,868	202,962
	6350 Rio Grande at Cerro③	564,363	440,367	175,997	104,321	136,957
	6870 Rio Grande, Arroyo Hondo③	865,255	580,018	302,163	256,120	153,230
	5550 Costilla Ck near Costilla②	56,723	41,134	20,559	15,782	10,346
	6300 Latir Creek①	5,627	5,176	2,998	2,266	1,054
	6400 Red River near Red River①	16,577	13,804	7,754	6,959	3,111
	6500 Red River near Questa①	52,210	44,441	23,470	17,453	11,338
	6700 Red River at Mouth③	73,405	60,836	42,465	40,345	9,588
	6682 Red River below Fish Hatchery③	83,243	75,117	50,402	43,647	12,352
	6600 Cabresto Creek② and Llano Ditch	14,933	12,262	6,855	4,725	3,424
RIO PUEBLO DE TAOS	7650 Rio Grande at Taos Junction③	886,371	688,019	319,589	243,444	190,865
	6750 Arroyo Hondo near Valdez①	40,152	31,108	19,112	13,402	6,457
	6850 Arroyo Hondo at Arroyo Hondo③	39,647	25,357	11,769	8,490	6,356
	7100 Rio Lucero ①	23,296	20,041	12,586	8,309	3,486
	6900 Rio Pueblo de Taos near Taos①	38,433	28,507	13,507	8,901	7,717
	7530 Rio Pueblo near Ranchito③	41,422	25,754	10,618	7,525	7,515
	7500 Rio Fernando de Taos②	10,120	4,653	1,979	1,131	1,210
	7560 Rio Chiquito①	10,417	7,803	4,064	2,228	2,039
	7550 Rio Grande del Rancho②	26,082	21,467	9,582	5,370	6,136
	7600 Rio Pueblo at Los Cordovas③	77,822	54,808	21,304	15,706	16,291
	7630 Rio Pueblo b/w Los Cordovas③	94,757	70,870	23,895	14,350	16,828

Table 12b. Annual variability of stream discharge reflected by 90th, 75th, 25th, and 10th percentile discharge values for select Taos County gage stations, by assessment area (page 2 of 2).

Assessment Area	Station ID①②③	90th Percentile Q (AFY)④	75th Percentile Q (AFY)④	25th Percentile Q (AFY)④	10th Percentile Q (AFY)④	MAD⑤
EMBUDO CREEK	7950 Rio Grande Embudo③	1,111,032	899,011	399,664	292,286	249,502
	7850 Rio Santa Barbara①	35,812	33,924	18,467	12,581	9,617
	7900 Embudo Creek at Dixon③	106,305	87,436	38,775	19,449	25,016

① Unimpaired, natural flow.
② Flow slightly impaired by minor diversion and/or regulation.
③ Impaired flow.
④ 90th, 75th, 25th, and 10th percentiles calculated from USGS Daily Values (Hydrosphere, 1996b) for period of record through 1994 (see notes, Table 12a).
⑤ MAD = Median absolute deviation

Table 13. Annual surface water yield for major drainage basins in Taos County by basin and assessment area (all units are rounded in ac-ft/yr).

Assessment Area	Drainage Basin	Surface Water Yield "Average Year"	Basin Yield [Hearne & Dewey, 1988]	Surface Runoff [Wilson, 1978]	Surface Water Yield "Dry Year"	Surface Water Yield "Wet Year"
RED RIVER	Costilla Creek①	29,000	56,500	36,500	20,300	41,200
	Latir Creek②	3,650	na	na	2,900	5,200
	Sunshine Valley	na	15,200	28,100	na	na
	Cabresto Creek③	8,800	8,000	na	6,900	12,700
	Red River④	49,700	30,400	47,200	43,700	64,900
RIO PUEBLO DE TAOS	Arroyo Hondo⑤	29,000	21,700	24,800	24,700	37,200
	Rio Pueblo de Taos⑥	65,200	58,600	69,800	50,800	93,100
EMBUDO	Embudo⑦	52,200	47,800	53,200	37,600	87,500
	Other	na	na	22,000	na	na
	TOTAL	237,550	238,200	281,600	186,900	341,800

na = not assessed

① Estimates of annual yields are based on median discharge ("average" year), 25 percentile discharge ("dry" year), and 75 percentile discharge ("wet" year) for station 5550, Costilla Creek near Costilla.

② Estimates of annual yields are based on median discharge ("average" year), 25 percentile discharge ("dry" year), and 75 percentile discharge ("wet" year) for station 6300 Latir Creek

③ Estimates of annual yields are based on median discharge ("average" year), 25 percentile discharge ("dry" year), and 75 percentile discharge ("wet" year) for stations 6600 Cabresto Creek and 6550 Llano Ditch.

④ Estimates of annual yields are based on median ("average" year), 25 percentile ("dry" year), or 75 percentile ("wet" year) discharges for station 6500, Red River near Questa, plus baseflow discharge from station 6682, Red River below Fish Hatchery (see Table14).

⑤ Estimates of annual yields are based on median ("average" year), 25 percentile ("dry" year), or 75 percentile ("wet" year) discharges for station 6750, Arroyo Hondo near Valdez, plus baseflow discharge from station 6850, Arroyo Hondo near Arroyo Hondo (see Table 14).

⑥ Estimates of annual yields are based on median ("average" year), 25 percentile ("dry" year), or 75 percentile ("wet" year) discharges for stations 6900 (Rio Pueblo de Taos near Taos), 7100 (Rio Lucero), 7500 (Rio Fernando de Taos), 7550 (Rio Grande del Rancho), and 7560 (Rio Chiquito), plus baseflow discharge from station 7630 (Rio Pueblo de Taos below Los Cordovas) (see Table 14).

⑦ Estimates of annual yields are based on median discharge ("average" year), 25 percentile discharge ("dry" year), and 75 percentile discharge ("wet" year) for station 7900, Embudo Creek at Dixon.

Table 14. Seasonal discharge and estimates of baseflow for select Taos County gage stations (all units in ac-ft).

Assessment Area	Station ID①②③	Annual Q (ac-ft)④	Spring Q (ac-ft)⑤	Summer Q (ac-ft)⑥	Winter Q (ac-ft)⑦	Baseflow⑧ (ac-ft) [% of Annual Q]
RED RIVER	5550 Costilla Ck near Costilla②	28,621	13,579	12,087	2,955	2,447[8.5]
	6300 Latir Creek①	3,511	1,687	1,142	682	420[12]
	6400 Red River near Red River①	10,902	6,482	3,033	1,387	1,709[16]
	6500 Red River near Questa③	29,364	16,082	8,277	5,004	2,809[9.6]
	6550&6600 Cabresto Creek②	8,195	4,312	2,475	1,407	1,665[20]
	6682 Red River below Fish Hatchery③	61,165	30,723	16,889	13,553	20,410[33]
RIO PUEBLO DE TAOS	6750 Arroyo Hondo near Valdez①	22,776	12,868	6,289	3,619	4,366[19]
	6850 Arroyo Hondo at Arroyo Hondo③	15,113	7,490	2,881	4,742	5,618[37]
	6900 Rio Pueblo de Taos near Taos①	18,618	12,807	3,264	2,547	2,454[13]
	7100 Rio Lucero ①	14,932	8,826	3,970	2,137	2,512[17]
	7500 Rio Fernando de Taos②	2,741	1,943	303	495	22[1]
	7550 Rio Grande del Rancho②	13,468	9,399	2,261	1,807	1,491[11]
	7560 Rio Chiquito①	5,052	3,137	1,052	862	1,057[21]
	7600 Rio Pueblo at Los Cordovas③	33,303	20,657	3,530	9,116	10,462[31]
	7630 Rio Pueblo b/w Los Cordovas③	32,886	18,247	4,470	10,169	9,760[30]
EMBUDO	7850 Rio Santa Barbara①	23,105	15,651	5,083	2,371	2,845[12]
	7900 Embudo Creek at Dixon③	52,055	34,659	7,817	9,579	7,059[13]

① Unimpaired, natural flow.
② Flow slightly impaired by minor diversion and/or regulation.
③ Impaired flow.
④ Median annual discharge calculated from mean monthly discharge values for period of record through 1994, USGS Daily Values (Hydrosphere, 1996b).
⑤ Sum of median monthly flows for the months of April, May, and June for the period of record through 1994.
⑥ Sum of median monthly flows for the months of July through October for the period of record through 1994.
⑦ Sum of median monthly flows for the months of November through March for the period of record through 1994.
⑧ Annual baseflow estimate (ac-ft) is calculated from the minimum average monthly discharge for the winter months of December, January, and February (cfs) (see period statistics in Appendix B, Hydrosphere (1996b)) multiplied by the conversion factor of 724; percent of annual discharge is relative to the median.

Table 15. River and stream losses and gains by reach (all values rounded to nearest 100 ac-ft/yr).

Stream Reach	Total Gain (AFY)	Gain from Surface Water (AFY)	Gain(+)/Loss(-) from/to Ground Water (AFY)
Rio Grande Lobatos-Cerro	29,400[a]	Costilla Ck 1020[b] Latir Ck 175[b]	+28,200
Rio Grande Cerro-Arroyo Hondo	120,400[c]	Red River 63,200[d] Arroyo Hondo 19,800[e]	+37,400
Red River Questa-Fish Hatchery [Questa-Mouth]	26,800[f]	Cabresto Ck 7,800[g]	+19,000
Arroyo Hondo Valdez-Arroyo Hondo	1,200[h]	0	+1,200
Rio Grande Arroyo Hondo-Taos Junction	68,100[i]	Rio Pueblo de Taos 47,300[j]	+15,800
Rio Pueblo de Taos Mountain Front-Los Cordovas	9,800[k]	7,500[l]	+2,300
Rio Grande Taos Junction-Embudo	60,700[m]	Embudo 61,400[n]	-700

[a] Total gain based on mean annual discharge for stations 5150 and 6350, 1949-1994.
[b] Surface water gain based on November-March (non-irrigation season) baseflow estimate.
[c] Total gain based on mean annual discharge for stations 6350 and 6870, 1964-1994.
[d] Surface water gain from Red River based on mean annual discharge for station 6682, 1979-1994.
[e] Surface water gain from Arroyo Hondo based on mean annual discharge for station 6850, 1913-1985.
[f] Total gain based on mean annual discharge for station 6500, and stations 6682 and 6700 averaged for 1952-1994.
[g] Surface water gain based on mean annual discharge for station 6600, 1944-1994.
[h] Total gain based on annual baseflow estimates for stations 6750 and 6850.
[i] Total gain based on mean annual discharge for stations 6870 and 7650, 1964-1994.
[j] Surface water gain based on mean annual discharge for station 7630, 1964-1994.
[k] Total gain based on annual baseflow estimate for station 7630.
[l] Surface water gain at mountain front based on annual baseflow estimates for stations 6900, 7100, 7500, 7550, and 7560.
[m] Total gain based on mean annual discharge for stations 7650 and 7950, 1927-1994.
[n] Surface water gain based on mean annual discharge for station 7900, 1924-1994.

Table 16. Maximum stream discharges recorded for Taos area gage stations (Hydrosphere, 1996b; Waltemeyer, 1989) (page 1 of 3).

Assessment Area	Station ID	Period of Record	Maximum Discharge (cfs)	Date Recorded	Approx. Recurrence Interval (yrs)①	Comments
RED RIVER	5150 Rio Grande at Lobatos	1900-1994	13,200	06/08/05		Maximum stage since at least 1828
	6350 Rio Grande at Cerro	1949-1994	9,740	06/22/49	~50	
	6870 Rio Grande, Arroyo Hondo	1964-1994	6,940	06/14/85	~25	
	5250 Costilla Ck above Dam	1937-1994	3,870	07/22/54		Highest stage since 1909
	5300 Casias Ck near Costilla	1937-1994	181	07/20/71		
	5350 Santistevan Ck near Costilla	1937-1994	18	08/11/41 07/12/57		
	5550 Costilla Ck near Costilla	1936-1994	1,150	05/11/42	>50	A major flood occurred in 1886
	6050 Costilla Ck below Diversion Dam	1965-1986	540	06/09/79		A major flood occurred in 1886; flood of 1942 probably exceeded 1000 cfs
	6300 Latir Creek	1946-1970	126	06/18/65	>50	
	6400 Red River near Red River	1944-1955	264	06/12/52	>10	
	6500 Red River near Questa	1925-1994	886	05/25/42	~100	Discharge of 5/25/42 may have been equaled or exceeded by peak of 6/15/21
	6682 Red River below Fish Hatchery	1979-1994	755	06/08/79		
	6600 Cabresto Creek	1944-1994	204	06/02/83	25-50	Flood of 5/25/42 may have exceeded maximum of record
	6700 Red River at Mouth	1952-1978	730	08/12/64	>50	

Table 16. Maximum stream discharges recorded for Taos area gage stations (Hydrosphere, 1996b; Waltemeyer, 1989) (page 2 of 3).

Assessment Area	Station ID	Period of Record	Maximum Discharge (cfs)	Date Recorded	Approx. Recurrence Interval (yrs)①	Comments
	7650 Rio Grande at Taos Junction	1927-1994	9,730	06/07/48	~20	Maximum flood since 1888 was ~14,000 cfs, 6/19/03; other floods >10,000 cfs occurred 6/9/05, 5/28/20, and 6/16/21
	6750 Arroyo Hondo near Valdez	1935-1994	541	05/13/41	~100	
	6850 Arroyo Hondo at Arroyo Hondo	1913-1985	1,060 >1,200	07/19/48 08/23/35	>>100 >>100	Major floods on 10/6/11, 9/1/32, and 7/22/34, discharges not determined
	6900 Rio Pueblo de Taos near Taos	1941-1994	1,050	05/26/79	>50	
RIO PUEBLO DE TAOS	7100 Rio Lucero	1935-1994	310	06/08/79	50-100	
	7500 Rio Fernando de Taos	1964-1980	219	05/13/73	~25	
	7530 Rio Pueblo de Taos, Ranchito	1958-1980	1,290	05/26/79	~50	
	7550 Rio Grande del Rancho, Talpa	1953-1982	497	05/21/73	~50	
	7560 Rio Chiquito near Talpa	1958-1980	309	06/08/79	>25	
	7600 Rio Pueblo at Los Cordovas	1911-1925, 1927-1965	1,830	05/14/41	50-100	
	7630 Rio Pueblo b/w Los Cordovas	1958-1994	2,380	08/24/57	~50	

Table 16. Maximum stream discharges recorded for Taos area gage stations (Hydrosphere, 1996b; Waltemeyer, 1989) (page 3 of 3).

Assessment Area	Station ID	Period of Record	Maximum Discharge (cfs)	Date Recorded	Approx. Recurrence Interval (yrs)①	Comments
EMBUDO CREEK	7950 Rio Grande Embudo	1890-1994	16,200	06/19/03	~50	Major flood ~14,000 cfs between 5/20 and 6/10/05; another major flood 9/29-30/04
	7900 Embudo Creek at Dixon	1924-1994	4,200	08/29/77	>>100	

① Recurrence interval interpolated from tabulated data in Waltemeyer (1989); accuracy of values would be improved significantly through graphing techniques.

Table 17. Regional flood frequency equations for the northern mountain region (Waltemeyer, 1996).

		Average Standard Error of Estimates			
Equations	Recurrence Interval(yrs)	Regression Log Units	%	Prediction Log Units	%
$Q_2 = 8.54x10^2 * A^{0.83} * (E/1,000)^{-2.22} * I24,25^{0.31}$	2	0.330	88	0.343	92
$Q_5 = 7.39x10^3 * A^{0.81} * (E/1,000)^{-3.01} * I24,25^{0.63}$	5	0.296	78	0.309	82
$Q_{10} = 2.19x10^4 * A^{0.81} * (E/1,000)^{-3.41} * I24,25^{0.81}$	10	0.284	72	0.297	78
$Q_{25} = 6.90x10^4 * A^{0.80} * (E/1,000)^{-3.85} * I24,25^{1.03}$	25	0.280	72	0.294	75
$Q_{50} = 1.44x10^5 * A^{0.80} * (E/1,000)^{-4.13} * I24,25^{1.18}$	50	0.284	72	0.298	78
$Q_{100} = 2.80x10^5 * A^{0.80} * (E/1,000)^{-4.40} * I24,25^{1.33}$	100	0.291	75	0.306	82
$Q_{500} = 1.10x10^6 * A^{0.80} * (E/1,000)^{-4.95} * I24,25^{1.64}$	500	0.320	85	0.337	92

Q: peak discharge in ft^3/sec for indicated recurrence interval.
A: drainage area in mi^2.
E: mean basin elevation in ft.
I24,25: maximum precipitation intensity, in inches, of a storm of 24-hour duration with a recurrence interval of 25 years.

Table 18. Surface water uses (ac-ft) in Taos County in 1995 (Wilson and Lucero, 1997).

Water Use Category	Surface Water Withdrawal	Ground-Water Withdrawal	Total Withdrawal	Surface Water Depletion	Surface Water Return
Public Water Supply	0	2024.20	2024.20	0	0
Domestic	0	1262.81	1262.81	0	0
Irrigated Agriculture	102,584	2022	104,606	39,361	63,223
Livestock	66.42	85.63	152.05	66.42	0
Commercial	112.90	241.11	354.01	15.79	97.11
Industrial	0	5.07	5.07	0	0
Mining	64.52	1516.18	1580.70	10.97	53.55
Power	0	0	0	0	0
Reservoir Evaporation	578.00	0	578.00	578.00	0
COUNTY TOTALS	103,405.84	7157.00	110,562.84	40,032.18	63,373.66

Table 19. Surface water withdrawals, depletions, and return flow (ac-ft) for irrigated agriculture in Taos County (Wilson and Lucero, 1997), by assessment area.

Assessment Area	Drainage Area	Acres Irrigated with Surface Water	Surface Water Withdrawal②	Surface Water Depletion	Surface Water Return Flow
RED RIVER	Costilla	5480	18,632	6372	12,260
	Cerro-Questa	4210	14,328	4900	9428
RIO PUEBLO DE TAOS	Taos and Vicinity	13,665	53,020	21,378	31,642
EMBUDO	Pilar①	80	144	74	70
	Embudo and Vicinity	4975	16,460	6637	9823
	COUNTY TOTALS	28,410	102,584	39,361	63,223

① Values for both Pilar and Ojo Caliente are compiled together, and cannot be separated by locality.
② Values reflect total project withdrawals and include both farm withdrawal and conveyance losses from stream to farm headgate.

Table 20. Costilla Reservoir area-capacity table, revised January 1, 1990 (New Mexico State Engineer Office, 1990).

Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)	Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)	Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)	Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)
0	9298	0	0	28	9326	27	345	56	9354	124	1880	84	9382	274	7516
1	9299	0	0	29	9327	28	372	57	9355	131	2007	85	9383	279	7793
2	9300	1	1	30	9328	28	400	58	9356	138	2142	86	9384	285	8075
3	9301	1	2	31	9329	30	429	59	9357	146	2284	87	9385	291	8363
4	9302	2	4	32	9330	31	459	60	9358	153	2433	88	9386	297	8658
5	9303	3	6	33	9331	32	490	61	9359	158	2588	89	9387	303	8958
6	9304	4	10	34	9332	33	523	62	9360	163	2749	90	9388	309	9264
7	9305	5	14	35	9333	34	556	63	9361	169	2915	91	9389	315	9575
8	9306	6	20	36	9334	35	590	64	9362	173	3086	92	9390	321	9893
9	9307	7	26	37	9335	36	625	65	9363	178	3261	93	9391	327	10217
10	9308	8	34	38	9336	37	661	66	9364	182	3441	94	9392	332	10546
11	9309	9	42	39	9337	38	698	67	9365	187	3626	95	9393	338	10882
12	9310	10	52	40	9338	40	737	68	9366	191	3814	96	9394	344	11223
13	9311	11	62	41	9339	41	778	69	9367	196	4008	97	9395	350	11570
14	9312	12	74	42	9340	43	820	70	9368	200	4206	98	9396	355	11923
15	9313	13	86	43	9341	45	864	71	9369	205	4409	99	9397	361	12281
16	9314	14	100	44	9342	47	910	72	9370	211	4617	100	9398	366	12644
17	9315	15	115	45	9343	50	959	73	9371	216	4830	101	9399	372	13013
18	9316	16	131	46	9344	53	1010	74	9372	221	5049	102	9400	376	13387
19	9317	17	148	47	9345	57	1065	75	9373	225	5272	103	9401	382	13766
20	9318	18	165	48	9346	64	1126	76	9374	230	5500	104	9402	387	14150
21	9319	19	184	49	9347	72	1194	77	9375	236	5733	105	9403	391	14539
22	9320	20	204	50	9348	80	1270	78	9376	241	5971	106	9404	397	14934
23	9321	21	225	51	9349	87	1353	79	9377	246	6215	107	9405	403	15334
24	9322	22	247	52	9350	94	1444	80	9378	251	6464	108	9406	409	15739
25	9323	24	270	53	9351	102	1542	81	9379	257	6718				
26	9324	25	294	54	9352	109	1647	82	9380	263	6978				
27	9325	26	319	55	9353	116	1760	83	9381	269	7244				

Table 21. Cabresto Reservoir area-capacity table (New Mexico State Engineer Office, 1958).

Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)	Water Level (ft)	Water Surface Elev (ft)	Area (ac)	Capacity (ac-ft)
0	9410	0	0	55	9465	21.5	583.75
10	9420	4.94	24.7	60	9470	23.1	695.25
20	9430	7.85	88.25	65	9475	25.2	815.0
30	9440	11.9	187.25	70	9480	27.2	946.0
40	9450	13.9	316.25	75	9485	29.2	1087.0
44	9454	17.2	378.00	76	9486	29.5	1110.0
45	9455	17.5	394.75	80	9490	31.6	1239.0
50	9460	18.3	484.25	85	9495	33.6	1402.0

FIGURES

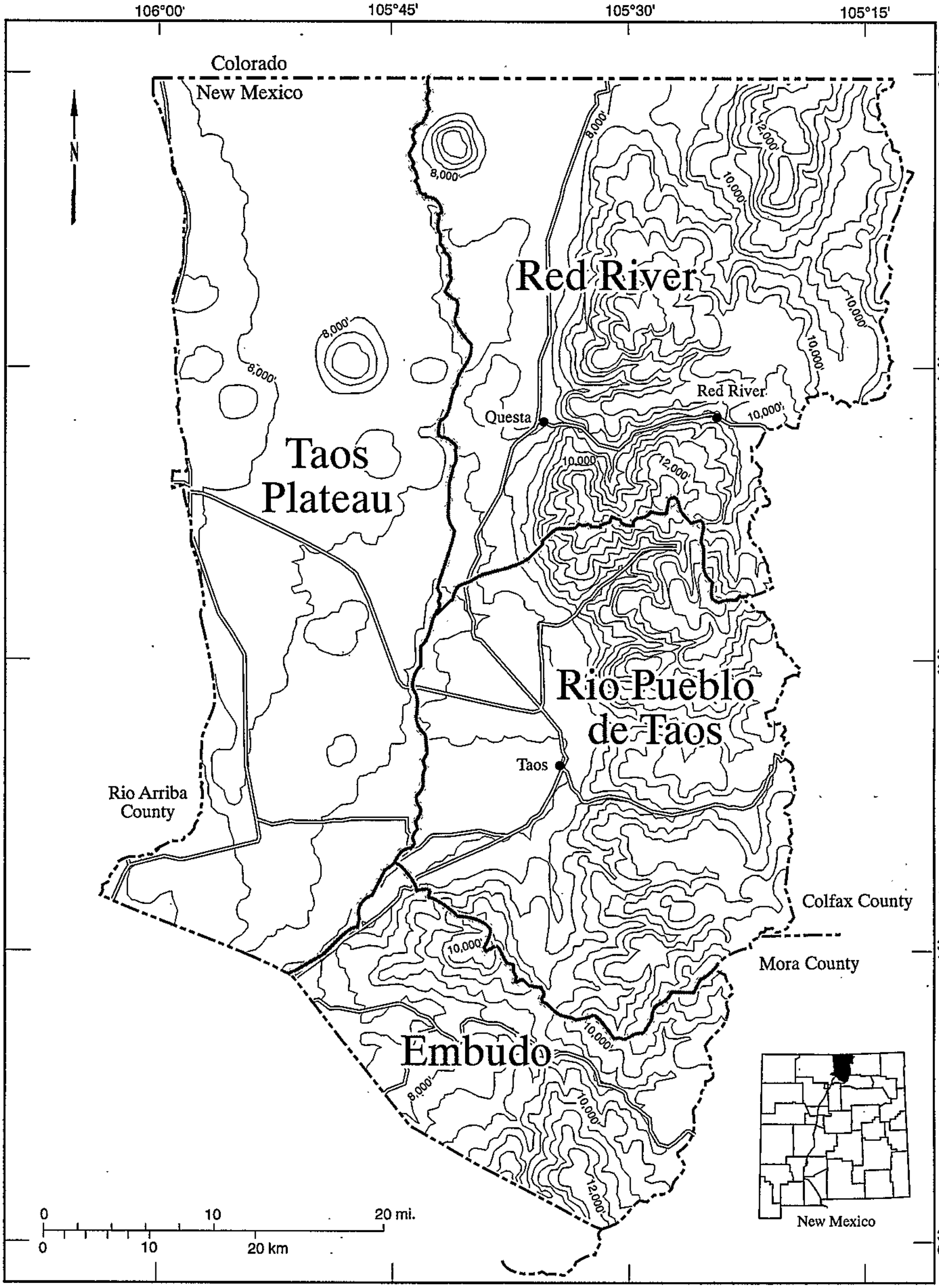


Figure 1. Taos County planning region and water resources assessment areas.

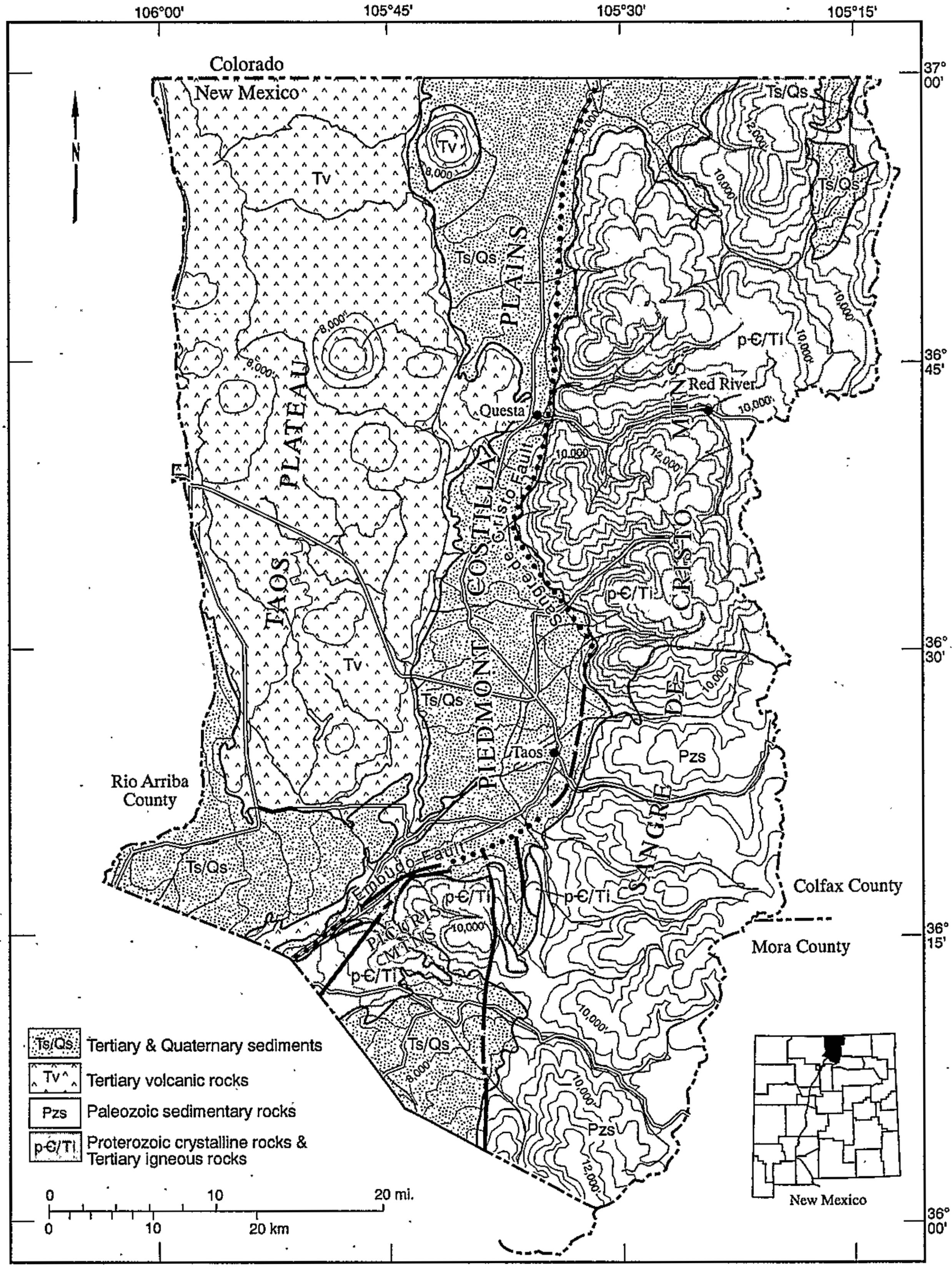


Figure 2. General geology and physiographic features of Taos County (modified from Anderson and others, 1997).

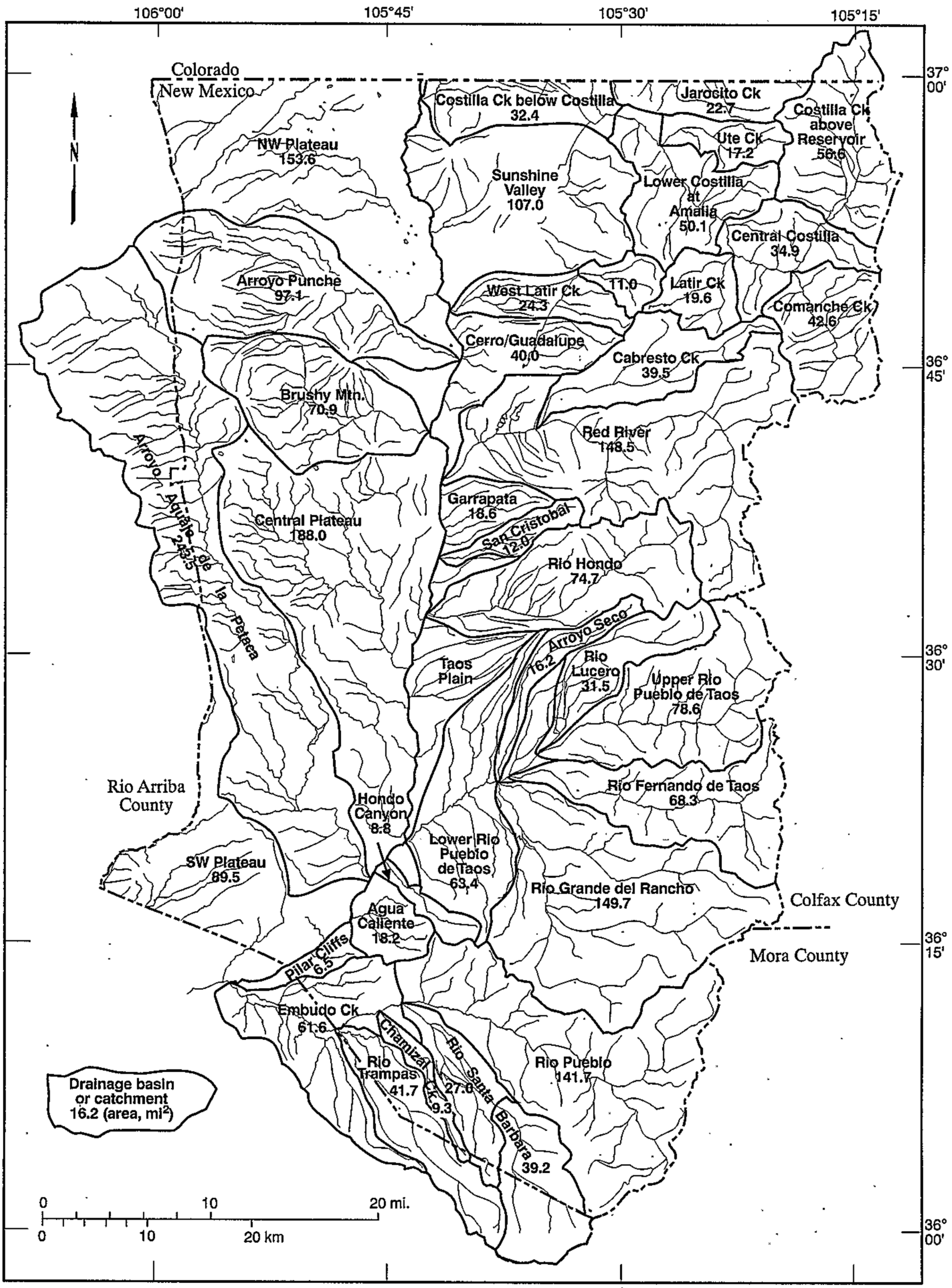


Figure 3. Drainage basins, subbasins, and catchments in Taos County

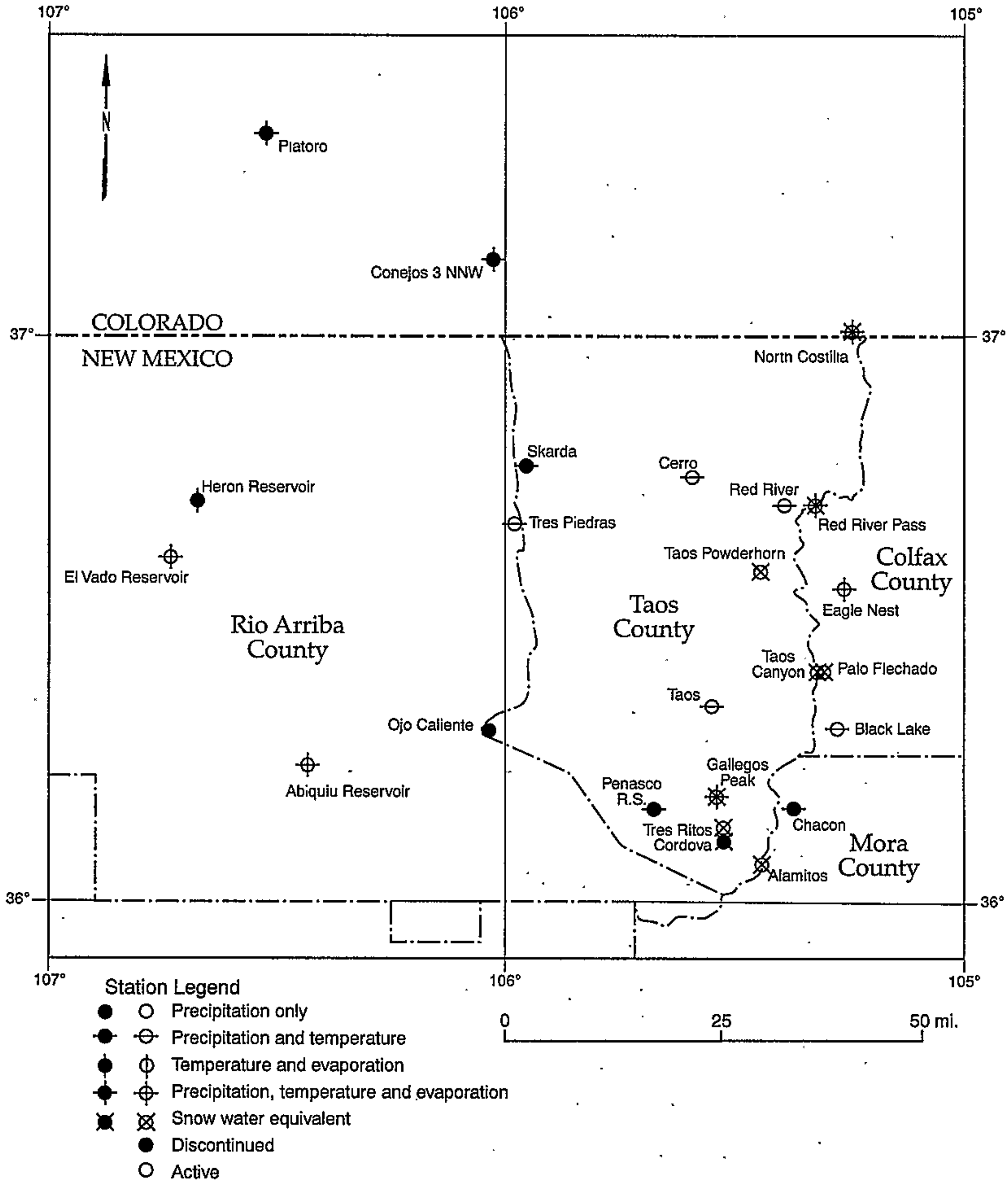


Figure 4. Climate data recording stations in and around Taos County, and available parameters.

Figure 5a. Precipitation gradients for mean annual precipitation (map), and mean April snow water equivalent (swe) for all stations

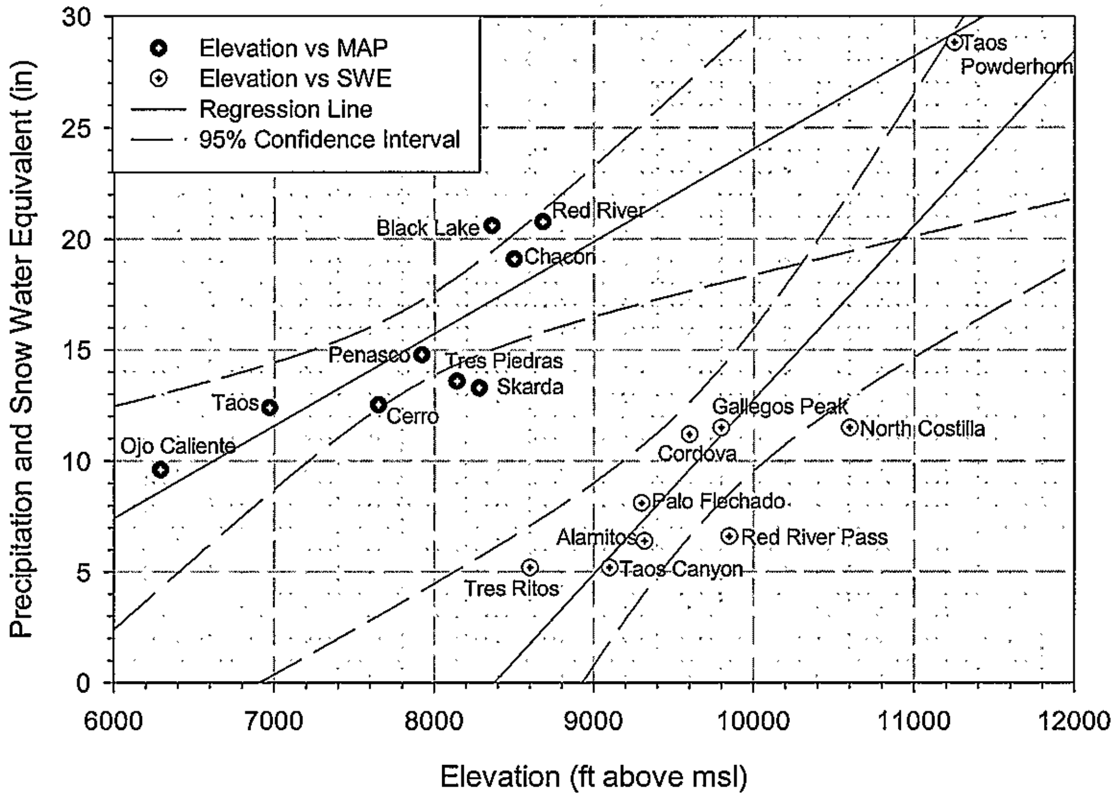


Figure 5b. Precipitation gradients for mean annual precipitation (map), and mean April snow water equivalent (swe) for select stations

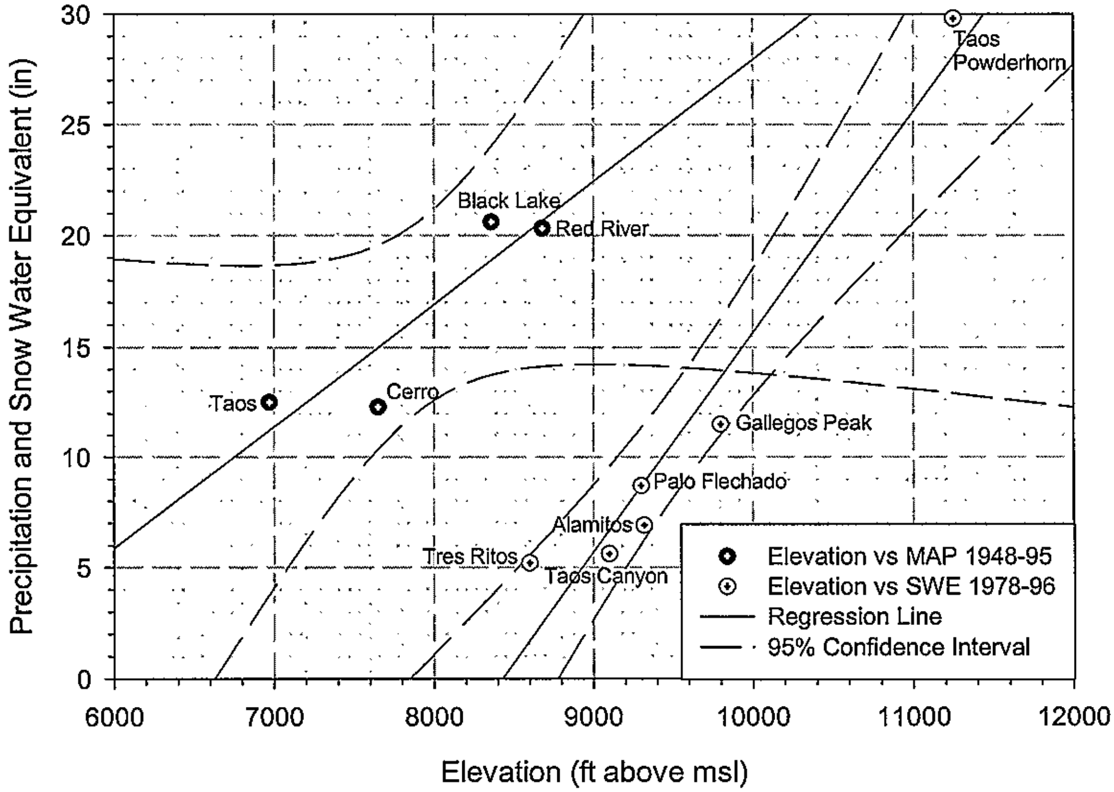


Figure 5c. Precipitation gradients for mean annual precipitation (map), and mean April snow water equivalent (swe)

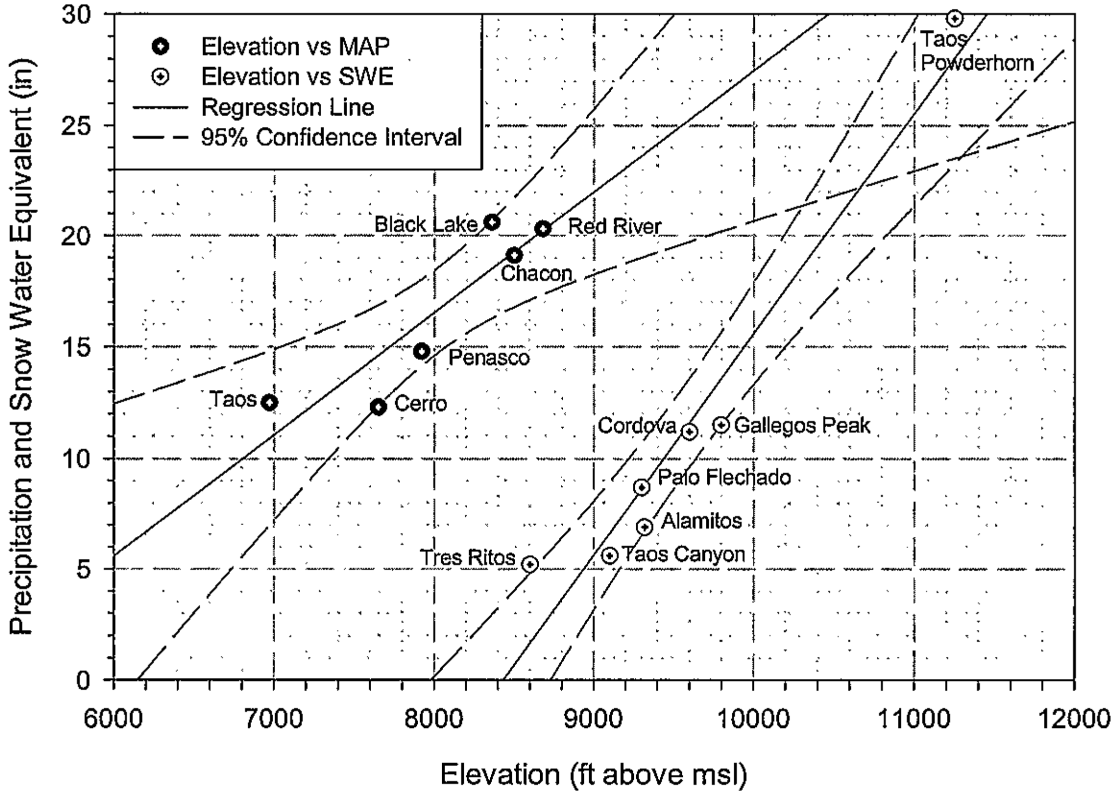


Figure 6. Seasonal distribution of monthly precipitation for NOAA weather stations in Taos County

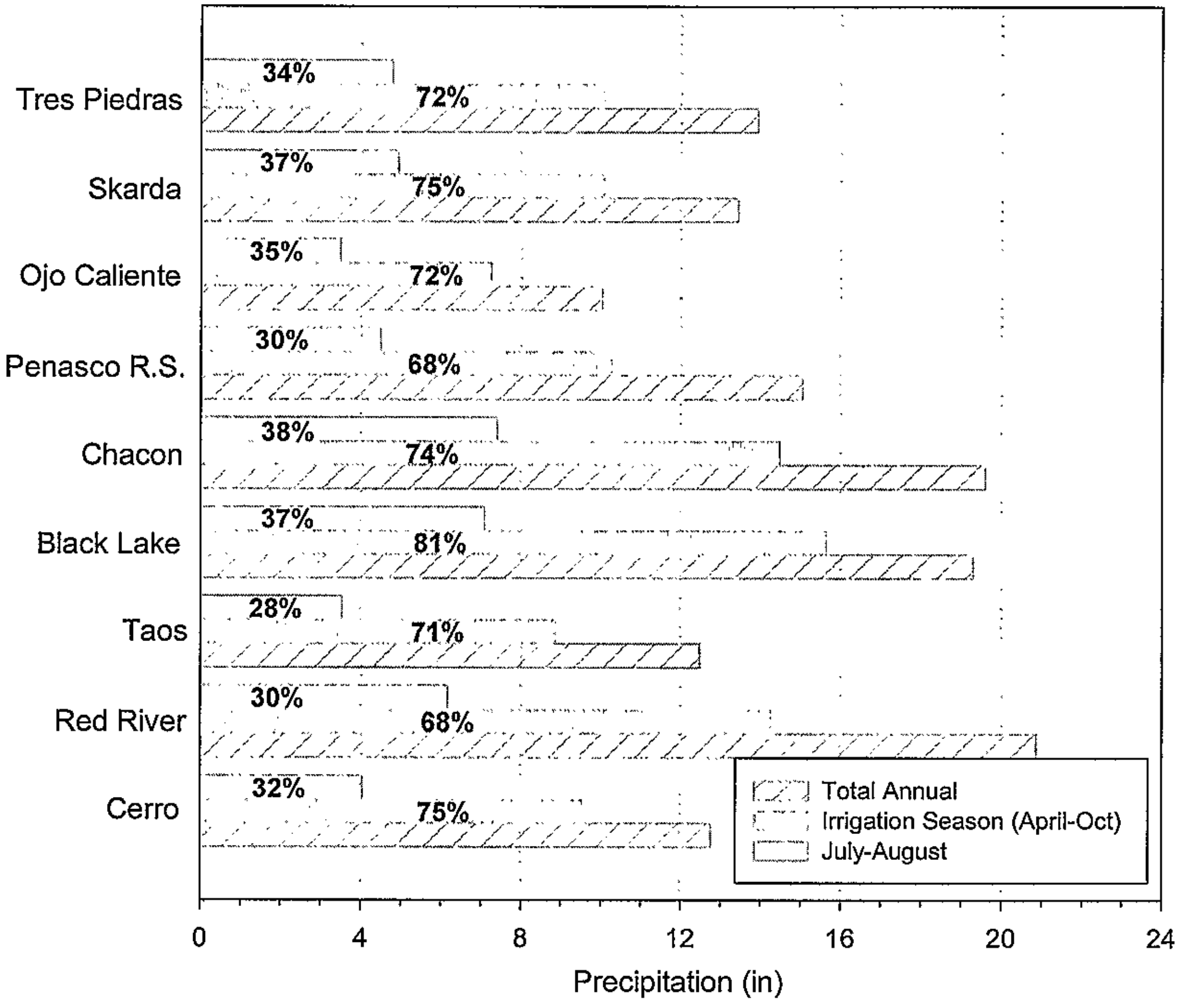


Figure 7. Monthly distribution of precipitation in Taos County

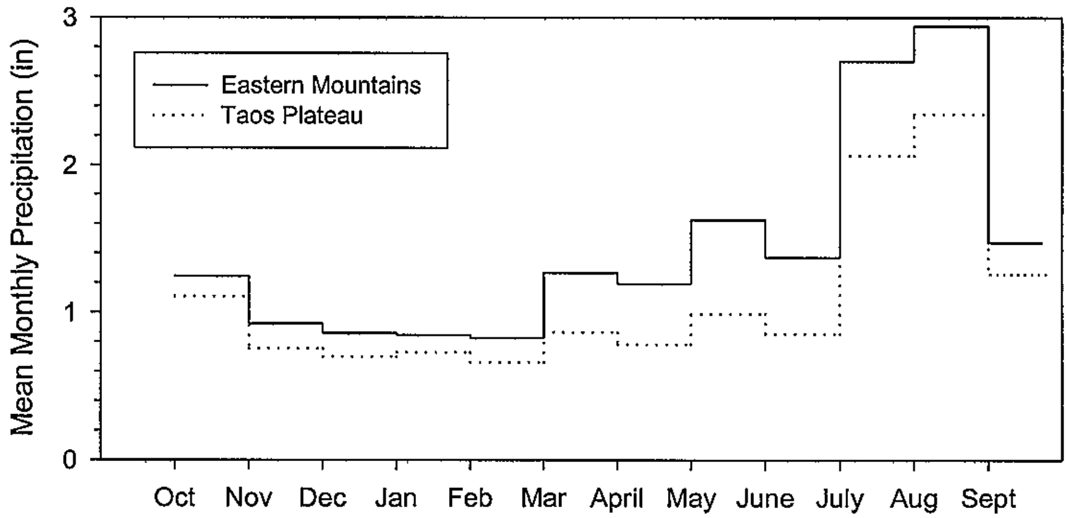
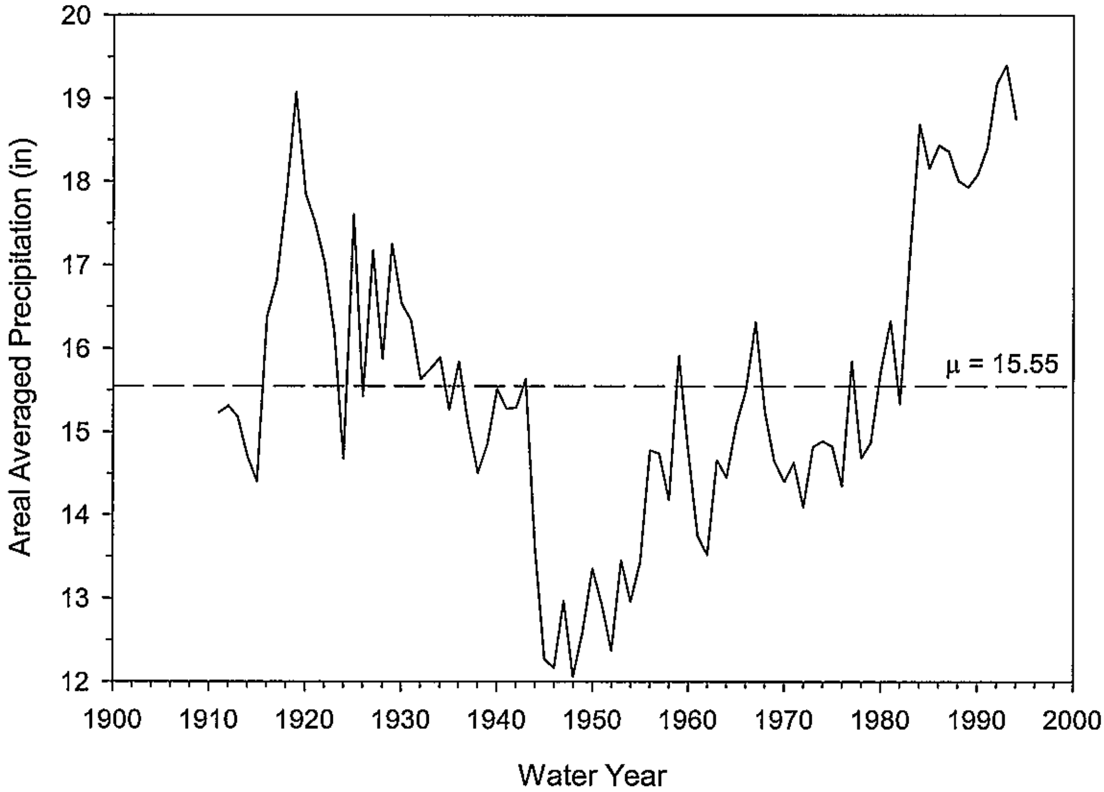


Figure 8. Five-year moving average of mean precipitation
from Black Lake, Cerro, Penasco, Red River, Taos, and Tres Piedras



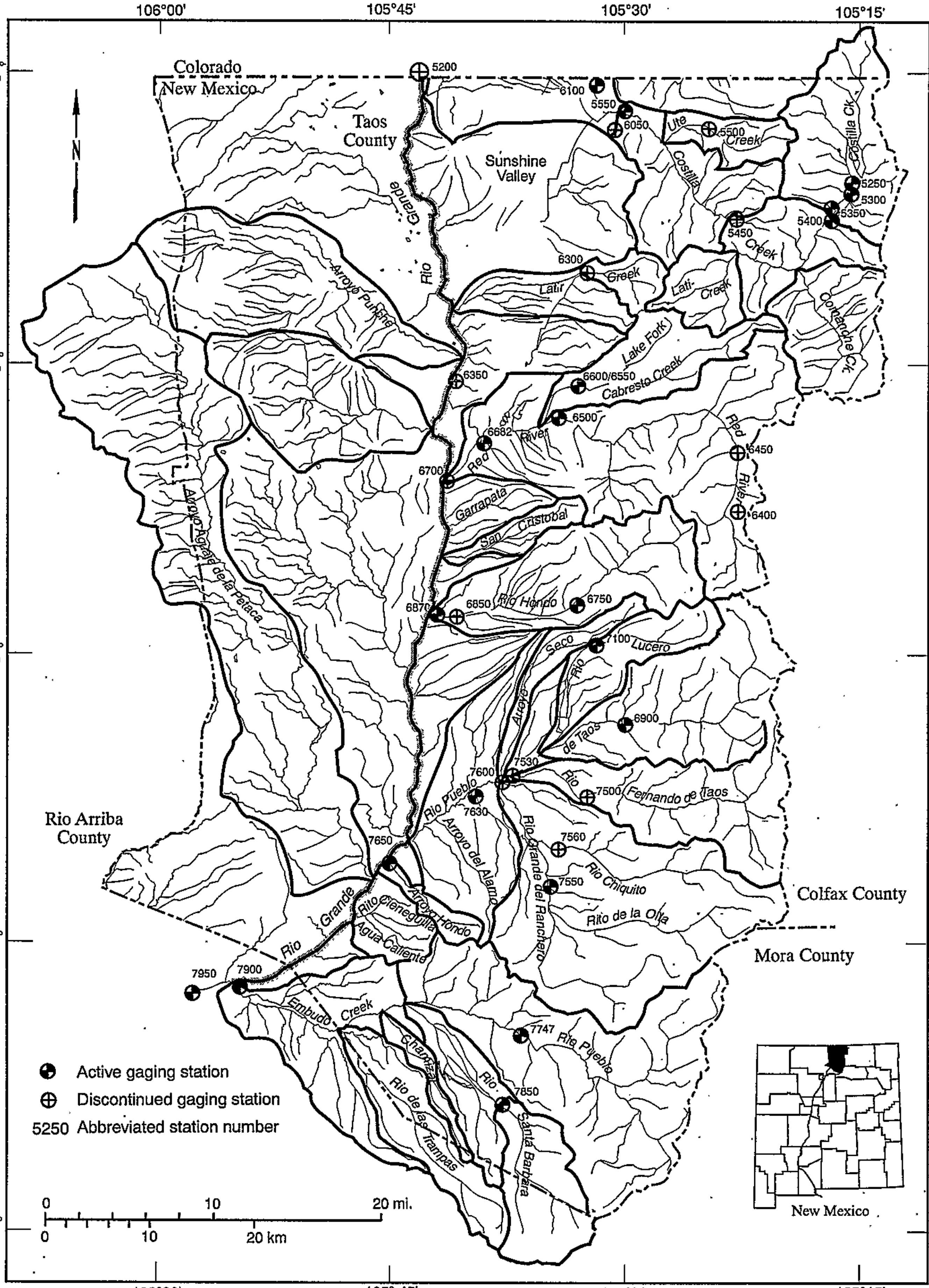


Figure 9. USGS surface water gaging stations in and adjacent to Taos County.

Figure 10. Index of Stream Gage Records by Water Year

Station ID	Gage Location
8251500	Rio Grande near Lobatos, CO
8252000	Rio Grande at CO-NM State Line
8252500	Costilla Creek above dam
8253000	Casias Creek near Costilla
8253500	Santistevan Creek near Costilla
8254000	Costilla Creek below dam
8254500	Costilla Creek near Amalia
8255000	Ute Creek near Amalia
8255500	Costilla Creek near Costilla
8256000	Acequia Madre at Costilla
8257500	Cordillera Ditch at Garcia, CO
8258000	Cerro Canal at Costilla
8258600	Cerro Canal below Assoc Ditch at Costilla
8259500	NM Branch Cerro Canal near Jaroso
8259600	Cerro Canal at State Line near Jaroso
8260500	Costilla Crk below div at Costilla
8261000	Costilla Creek at Garcia CO
8263000	Latir Creek near Cerro
8263500	Rio Grande near Cerro
8264000	Red River near Red River
8264500	Red River below Zwergle Damsite
8265000	Red River near Questa
8265500	Llano Ditch near Questa
8266000	Cabresto Creek near Questa
8266820	Red River below Fish Hatchery nr Questa
8267000	Red River at Mouth near Questa
8267500	Rio Hondo near Valdez
8268500	Arroyo Hondo at Arroyo Hondo
8268700	Rio Grande near Arroyo Hondo
8269000	Rio Pueblo de Taos near Taos
8271000	Rio Lucero near Arroyo Seco
8275000	Rio Fernando de Taos near Taos
8275300	Rio Pueblo de Taos near Ranchito
8275500	Rio Grande del Rancho near Talpa
8275600	Rio Chiquito near Talpa
8276000	Rio Pueblo de Taos at Los Cordovas
8276300	Rio Pueblo de Taos below Los Cordovas
8276500	Rio Grande below Taos Junction Bridge
8277470	Rio Pueblo near Penasco
8278500	Rio Santa Barbara near Penasco
8279000	Embudo Creek at Dixon
8279500	Rio Grande at Embudo

Figure 11. Variability of annual discharge for Rio Grande gage stations.

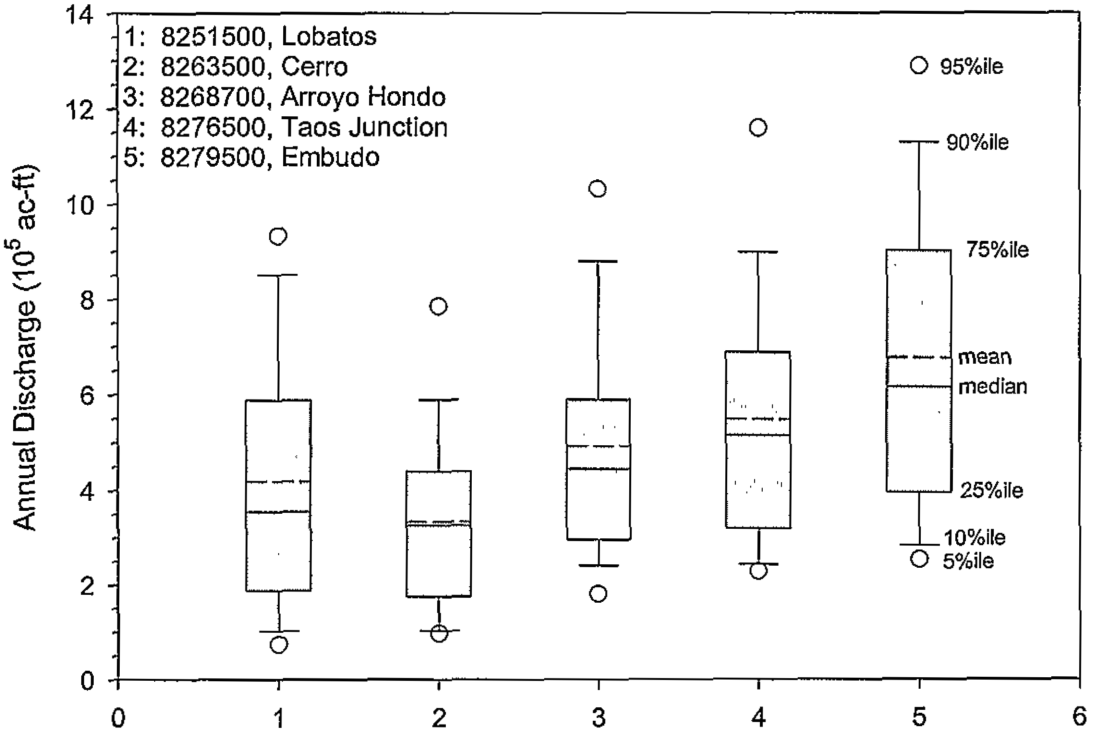


Figure 12. Five-year moving average of annual discharge for the Rio Grande at Embudo, and annual precipitation for Cerro, Red River, and Taos.

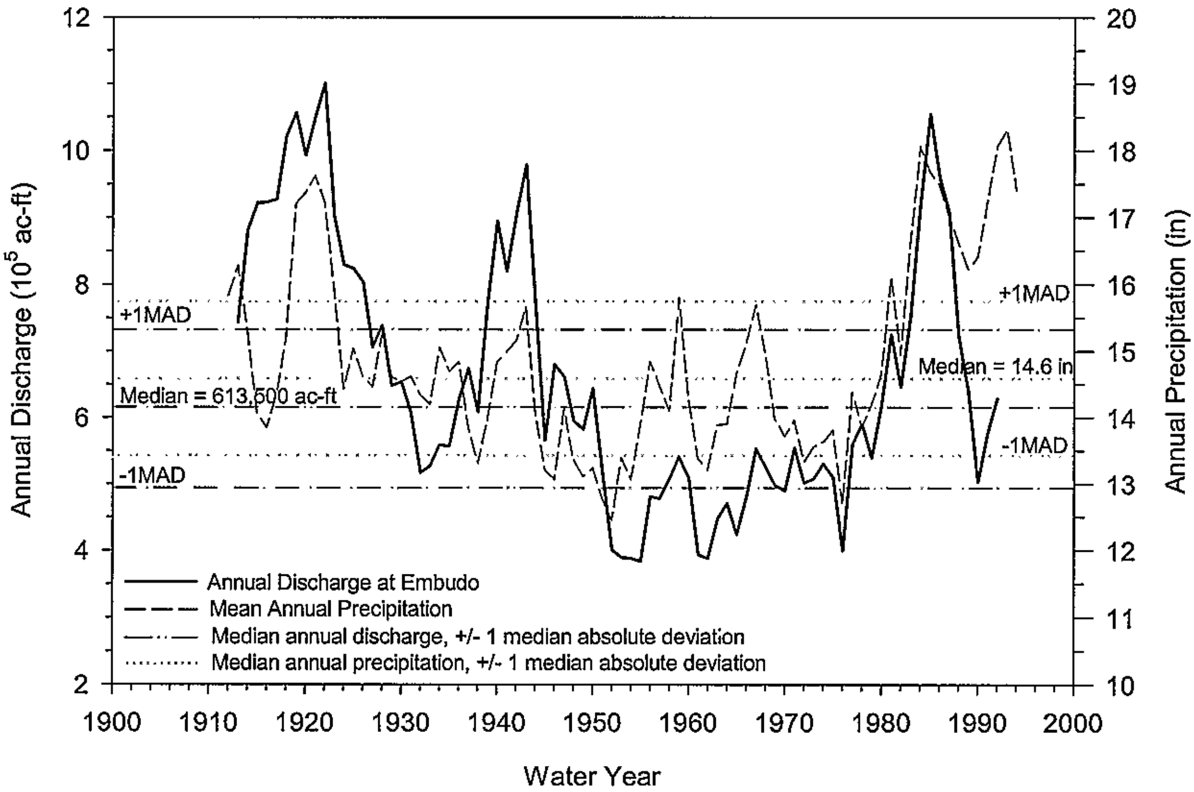
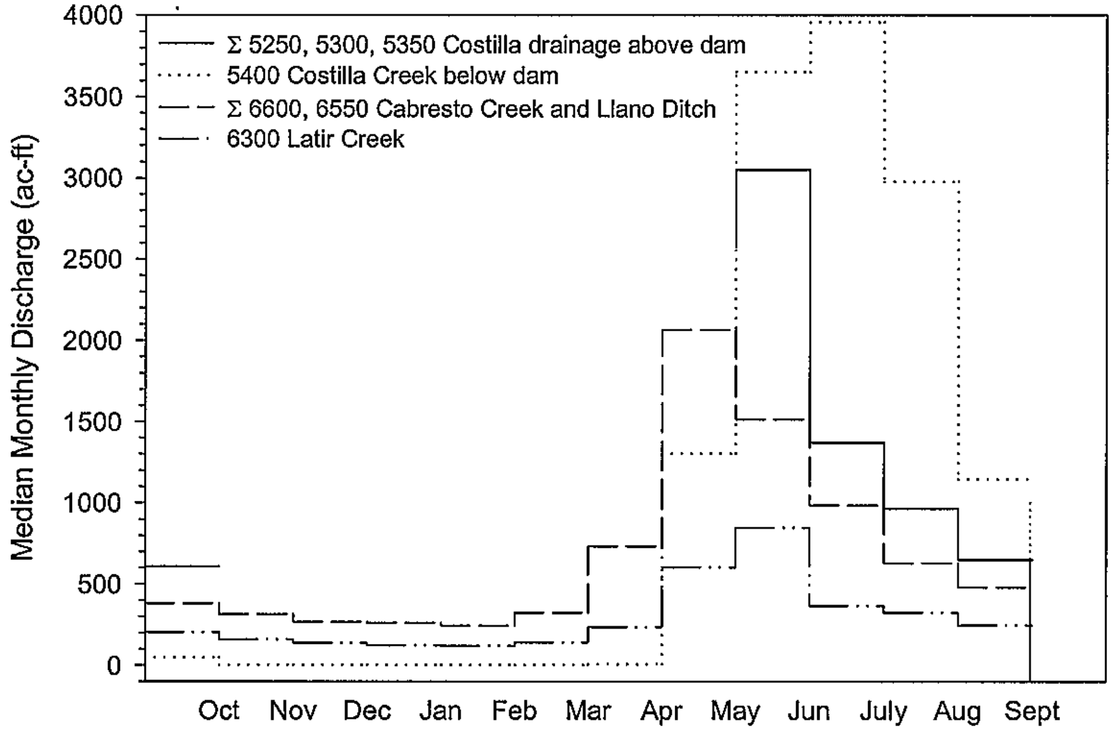


Figure 13. Monthly distribution of streamflow,
Red River assessment area.



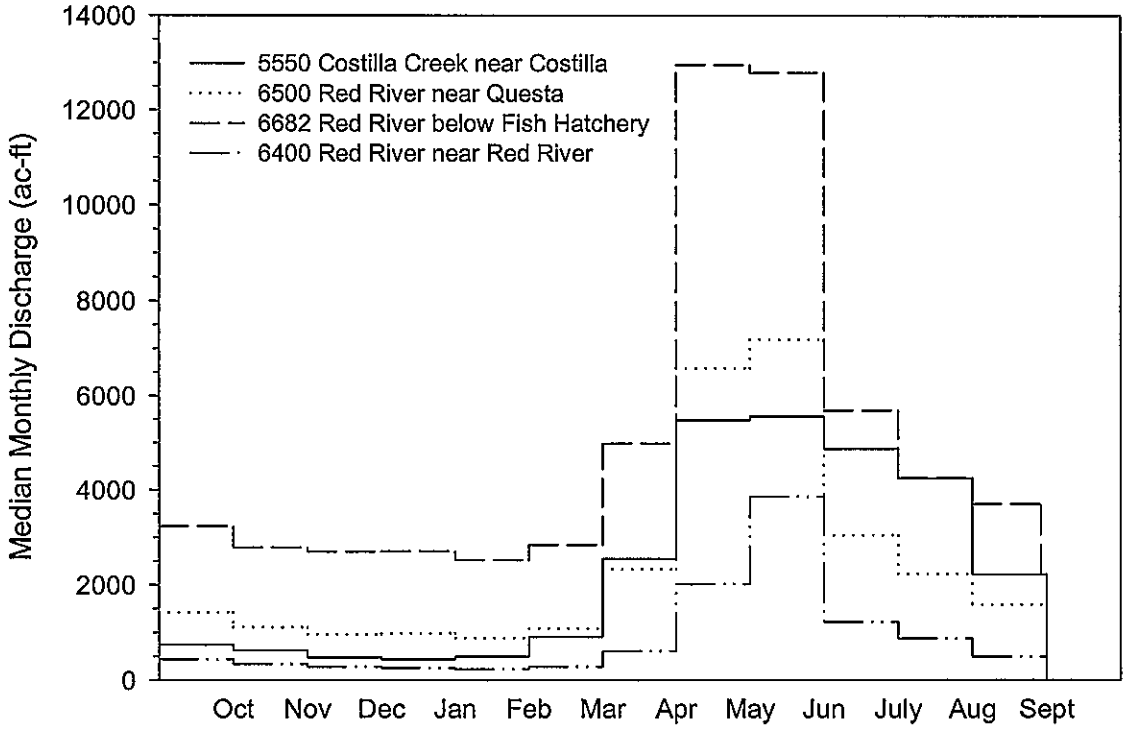


Figure 14. Seasonal distribution of median monthly discharge, Red River assessment area

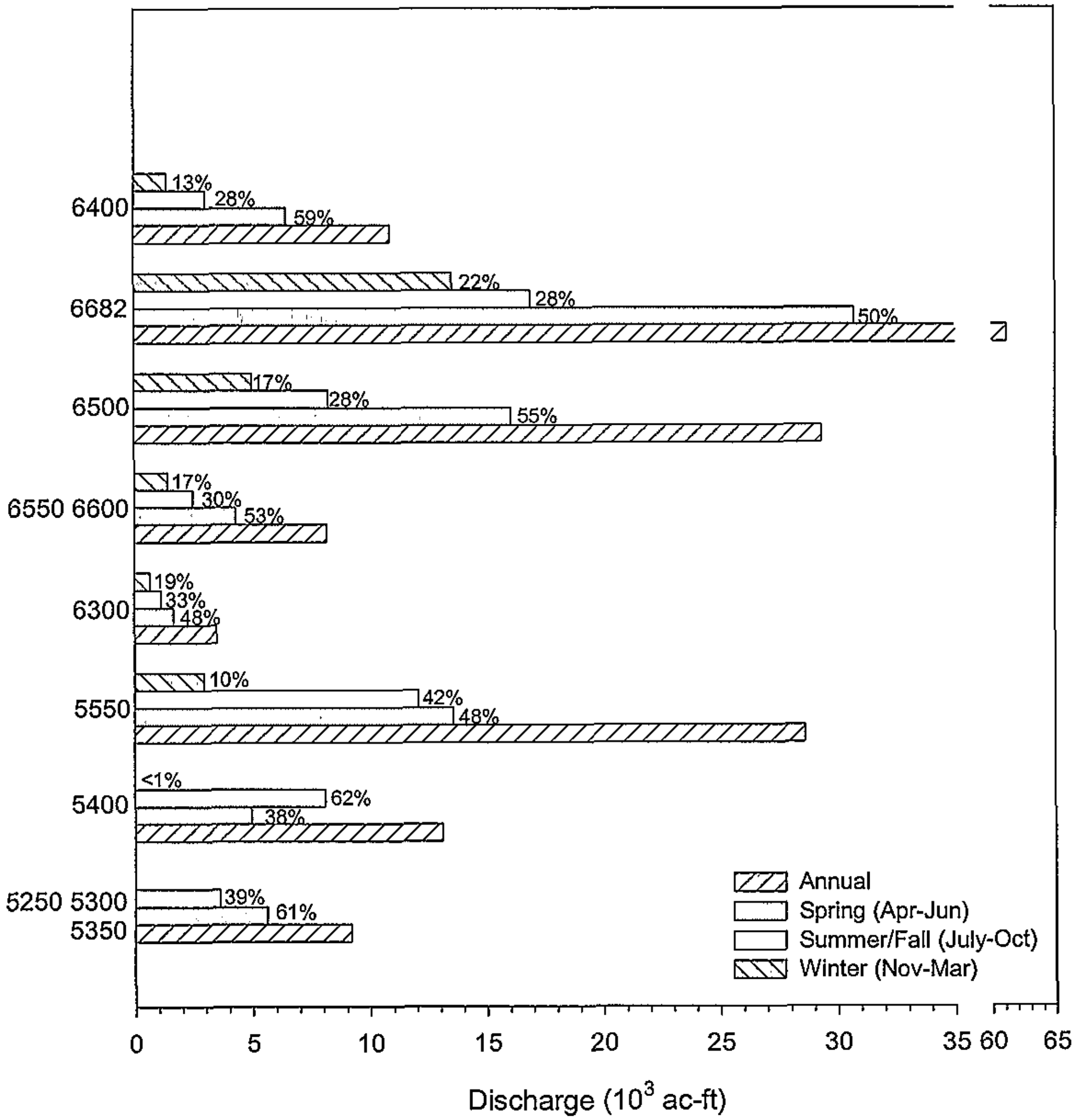
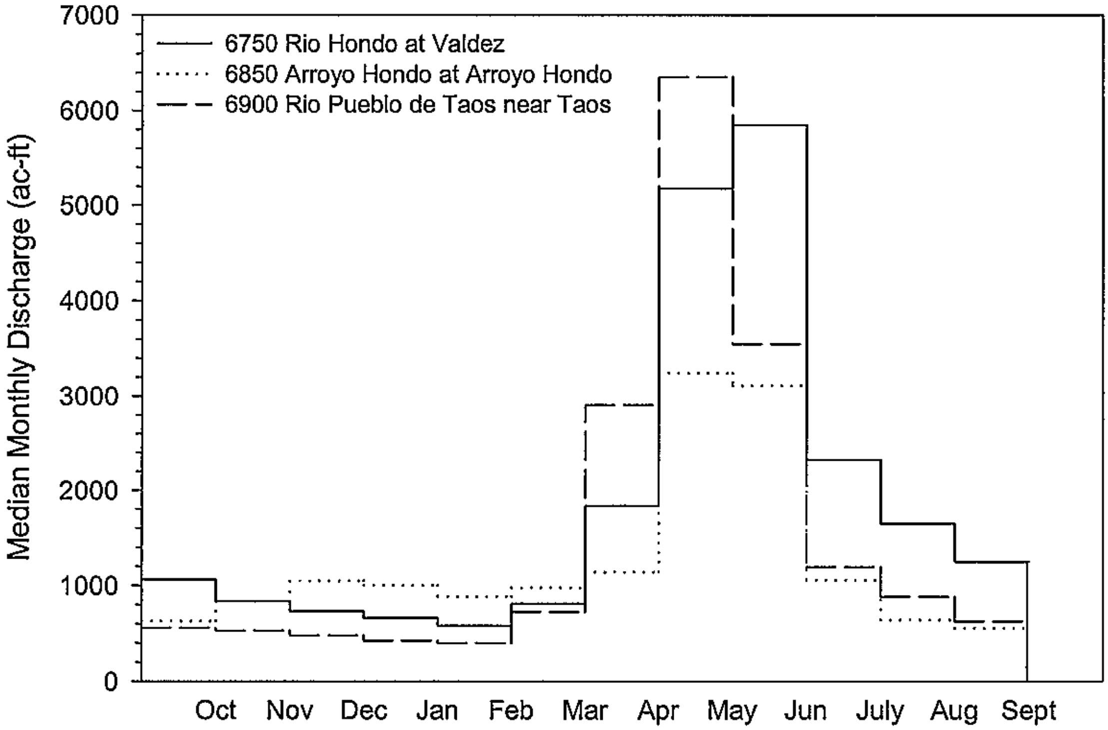


Figure 15. Monthly distribution of streamflow,
Rio Pueblo de Taos assessment area



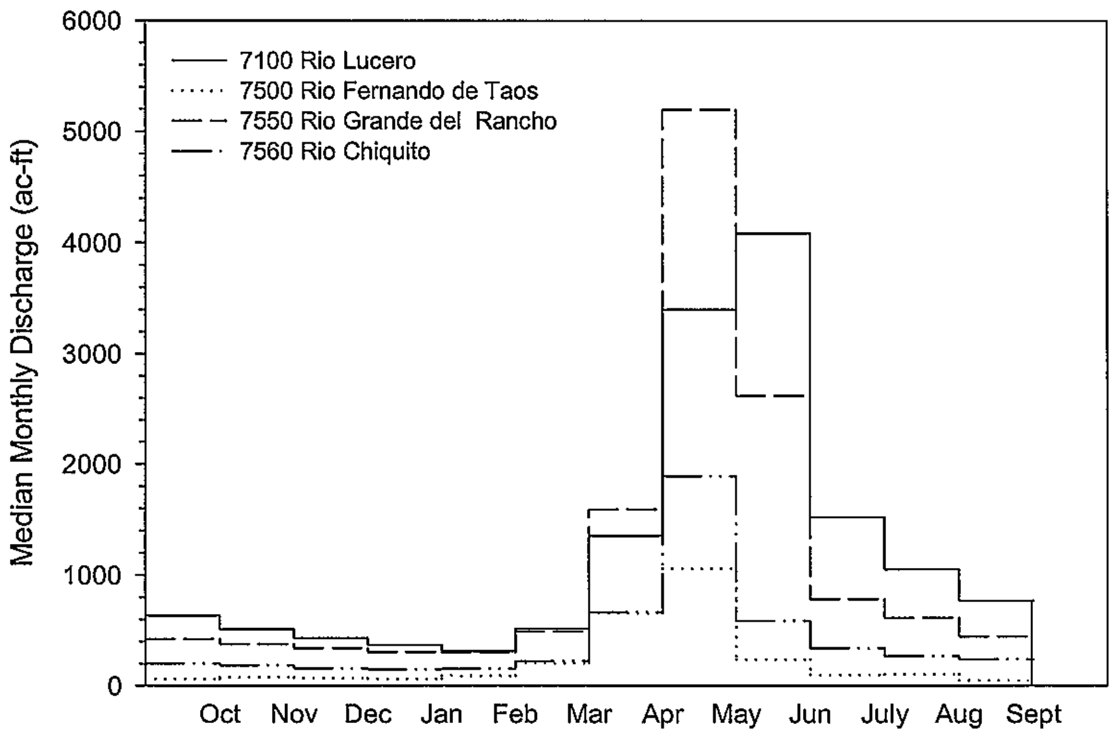


Figure 16. Seasonal distribution of median monthly discharge,
Rio Pueblo de Taos assessment area

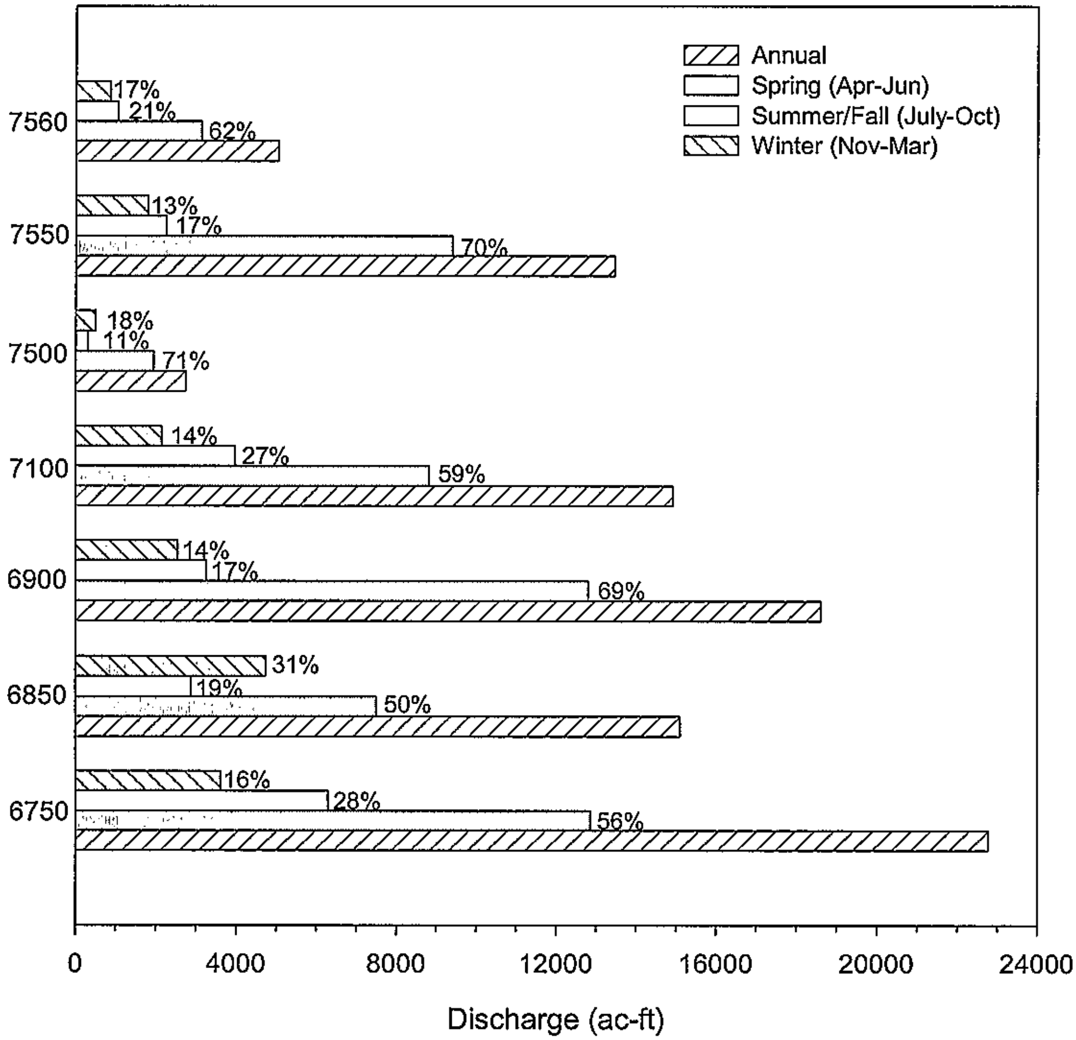


Figure 17. Monthly distribution of streamflow, Embudo assessment area

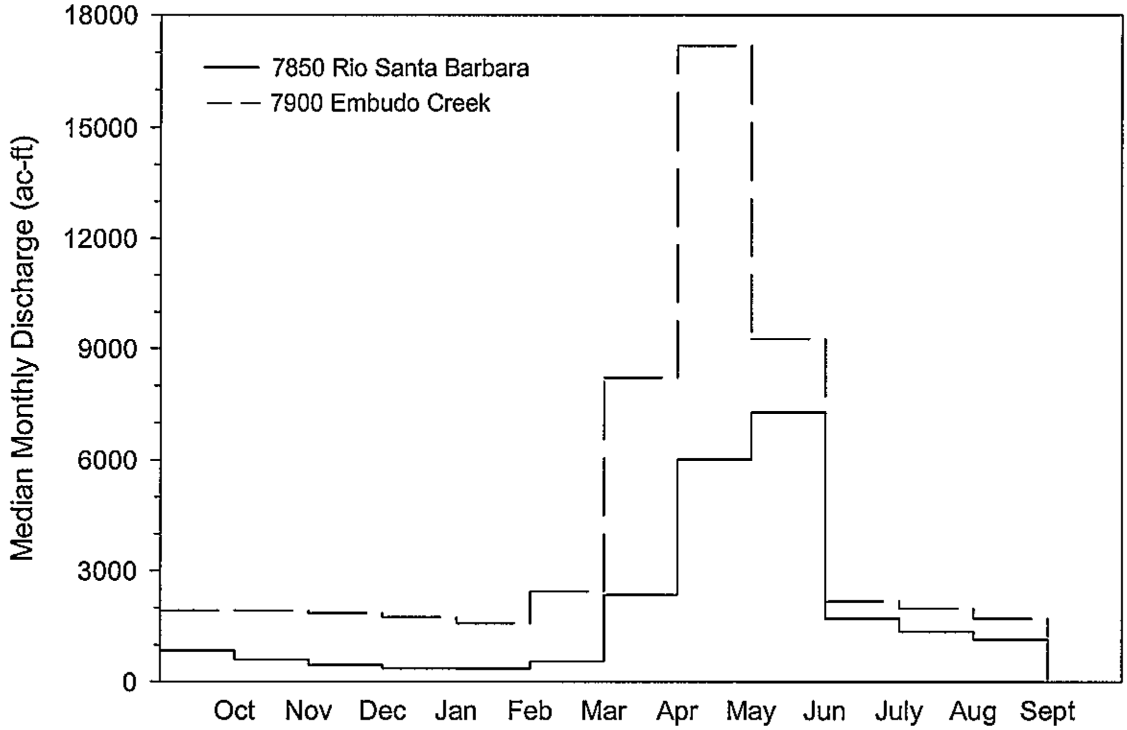


Figure 18. Seasonal distribution of median monthly discharge, Embudo assessment area

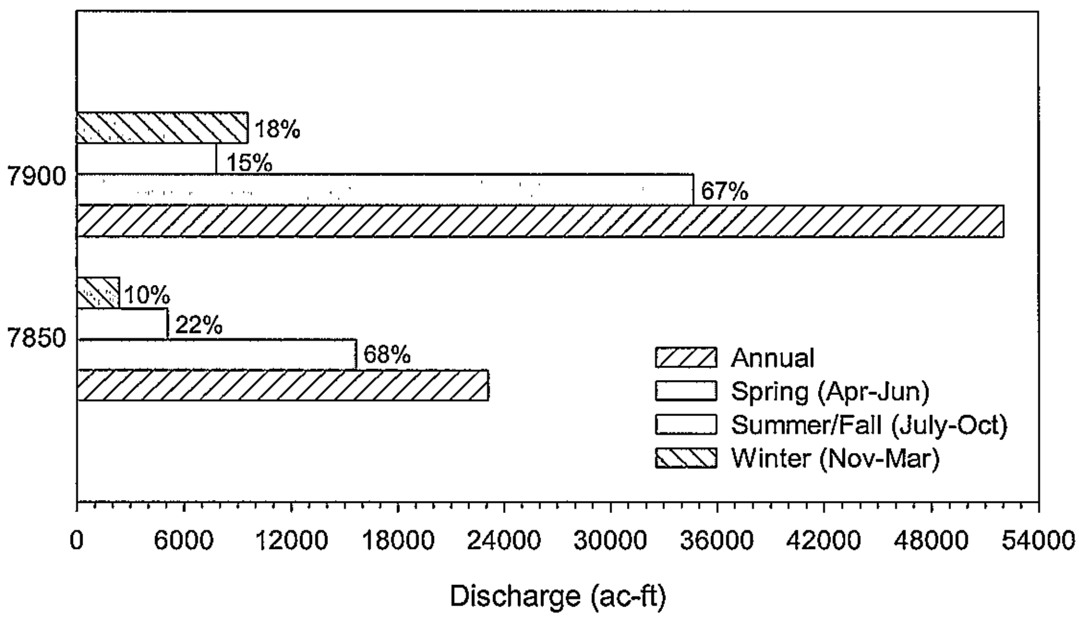
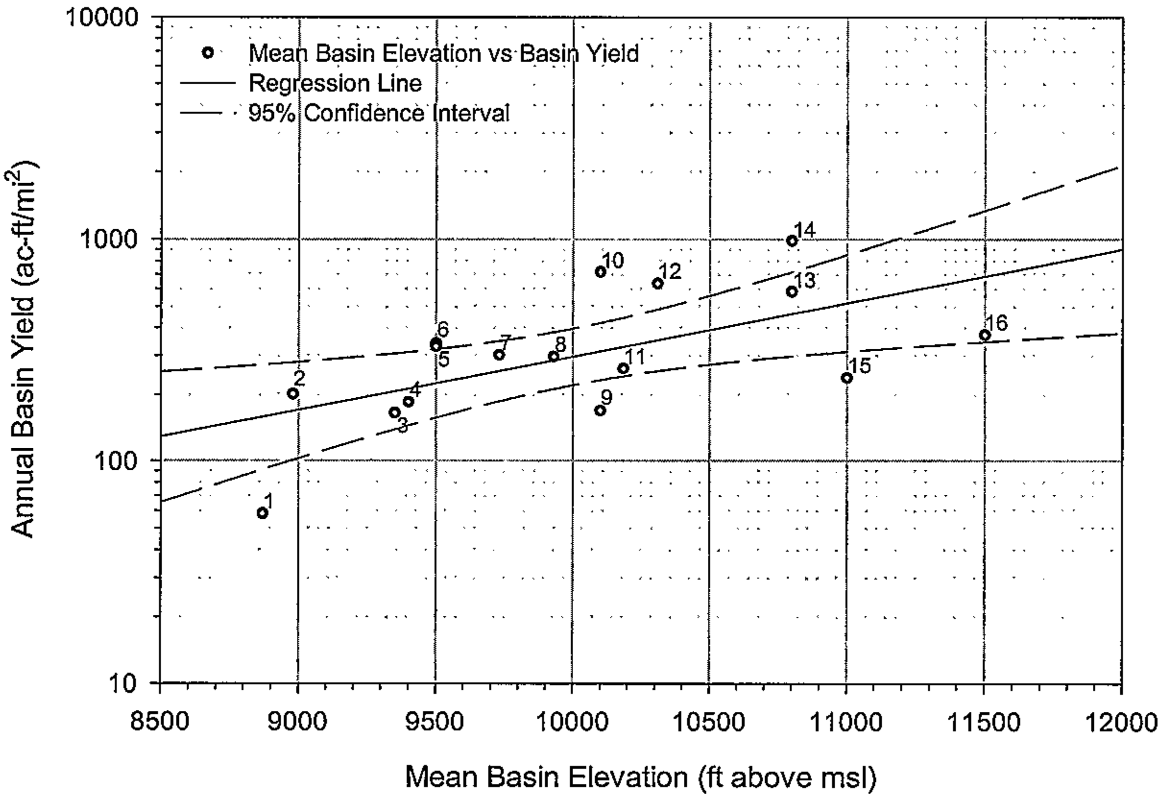


Figure19. Annual basin yield versus mean basin elevation for stream gage stations in Taos County.



1: 7500 Rio Fernando de Taos
2: 7900 Embudo Creek at Dixon
3: 7560 Rio Chiquito
4: 7550 Rio Grande del Rancho at Talpa
5: 6900 Rio Pueblo de Taos at Taos
6: 6682 Red River below the Fish Hatchery
7: 6850 Arroyo Hondo at Arroyo Hondo
8: 6500 Red River near Questa
9: 5550 Costilla Creek near Costilla
10: 6750 Arroyo Hondo near Valdez
11: 6600 & 6550 Cabresto Creek and Llano Ditch
12: 7850 Rio Santa Barbara near Penasco
13: 6400 Red River near Red River
14: 7100 Rio Lucero
15: 5250, 5300 & 5350 Costilla Drainage above the reservoir
16: 6300 Latir Creek

Figure 20. Area-capacity curve for Costilla Reservoir

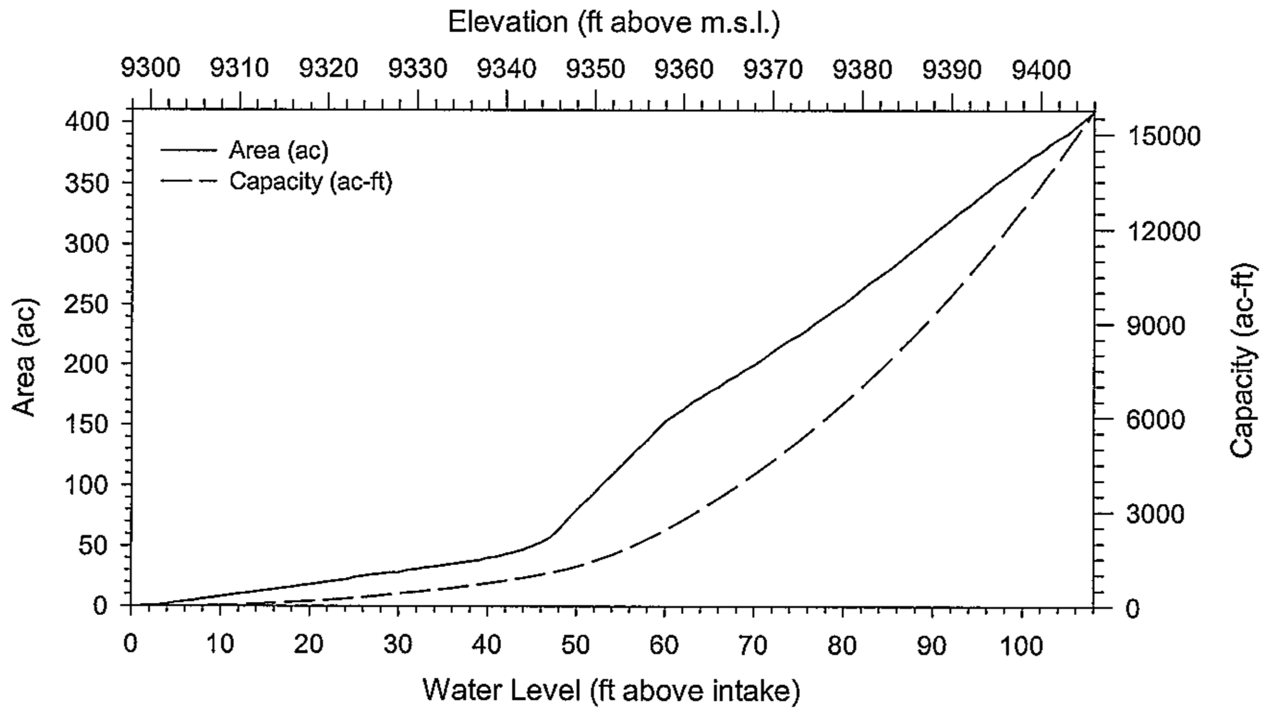


Figure 21. Maximum annual and carry-over reservoir storage for Costilla Reservoir

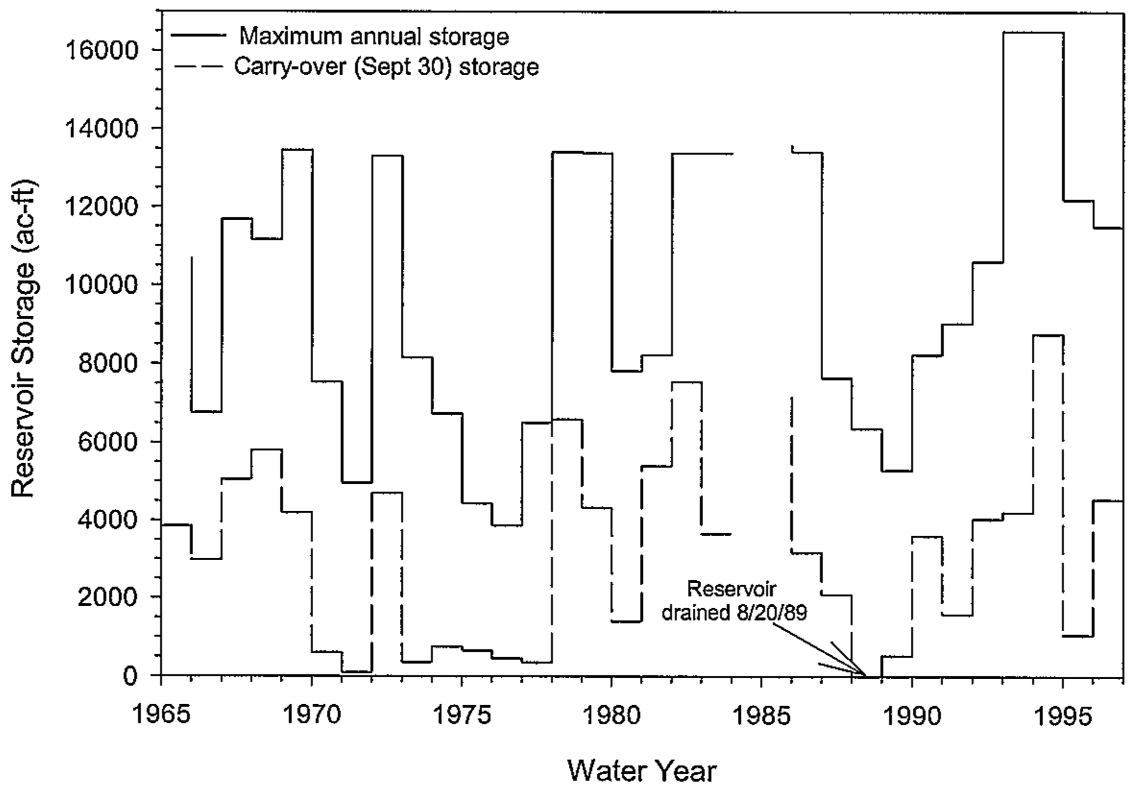
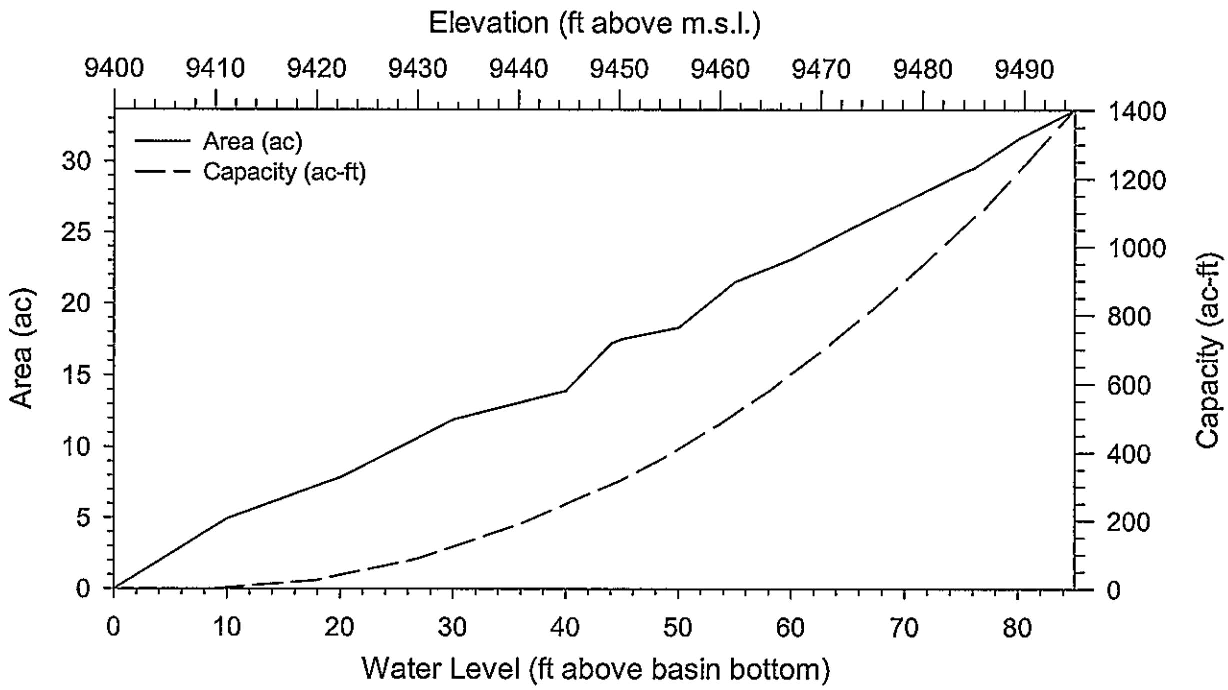


Figure 22. Area-capacity curve for Cabresto Reservoir



APPENDIX A

Climatic Data

Station Name	ABIQUIU DAM
Station ID	NOAA, 41
State	NEW MEXICO
County	RIO ARRIBA
Latitude	36:14:00
Longitude	106:26:00
Elevation	6380

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1957	1995	39	12670	89	36.95	38.37	35.03
AIR TEMP FAHN	Maximum	1957	1995	39	12667	89	63.98	66	62.18
EVAP TOT DAY IN	Sum	1964	1995	32	6836	58			
PRECIP TOT DAY IN	Sum	1957	1995	39	13976	98	9.9	14.38	4.98
SNOW DEPTH INCHES	Sum	1957	1995	39	13026	91	8.8	26.6	0

Parameter: Evaporation

Year	Mar	April	May	June	July	Aug	Sept	Oct	Nov
1964		0.27	0.38	0.46	0.36	0.33	0.22	0.22	
1965		0.25	0.33	0.37	0.32	0.31	0.24	0.19	0.11
1966		0.31	0.38	0.40	0.36	0.32	0.27	0.21	
1967		0.31	0.37	0.37	0.37	0.26	0.24	0.24	
1968		0.24	0.34	0.45	0.37	0.27	0.30	0.21	
1969		0.26	0.31	0.40	0.35	0.30	0.23	0.16	
1970			0.34	0.33	0.34	0.31	0.25	0.16	
1971		0.26	0.35	0.38	0.37	0.27	0.26		
1972		0.31	0.35	0.38	0.34	0.31	0.24	0.12	
1973			0.30	0.36	0.34	0.33	0.28	0.18	
1974		0.27	0.40	0.41	0.33	0.27	0.27	0.14	0.08
1975		0.22	0.30	0.36	0.30	0.33	0.21	0.21	
1976		0.25	0.29	0.45	0.37	0.30	0.22	0.18	
1977		0.20	0.34	0.40	0.33	0.30	0.23	0.18	
1978		0.28	0.26	0.41	0.35	0.33	0.28	0.20	
1979		0.25	0.24	0.35	0.37	0.31	0.28	0.21	
1980			0.29	0.43	0.36	0.32	0.25	0.18	0.12
1981		0.28	0.30	0.44	0.35	0.29	0.21	0.16	
1982		0.27	0.27	0.38	0.40	0.26	0.22	0.15	
1983		0.29	0.28	0.39	0.36	0.26	0.29		
1984			0.41	0.37	0.39	0.30	0.25	0.13	
1985		0.23	0.29	0.37	0.30	0.29	0.22	0.10	
1986		0.22	0.33	0.29	0.28	0.28	0.19	0.12	
1987				0.35	0.41	0.26	0.25	0.19	
1988		0.21	0.30	0.32	0.33	0.26	0.22	0.16	
1989			0.41	0.39	0.37	0.29	0.26	0.18	
1990			0.35	0.42	0.26	0.28	0.23	0.17	
1991		0.28	0.32	0.30	0.29	0.26	0.20	0.19	
1992		0.25	0.26	0.36	0.36	0.27	0.27	0.18	
1993		0.28	0.26	0.40	0.41	0.25	0.25	0.16	
1994		0.24	0.26	0.41	0.39	0.28	0.21	0.16	
1995	0.19	0.21	0.27	0.32	0.36	0.27	0.23	0.20	0.10
Avg	0.19	0.26	0.32	0.38	0.35	0.29	0.24	0.17	0.10
Min	0.19	0.20	0.24	0.29	0.26	0.25	0.19	0.10	0.08
Max	0.19	0.31	0.41	0.46	0.41	0.33	0.30	0.24	0.12

Station Name	ALAMITOS
Station ID	NRCS, 05N12
State	NEW MEXICO
County	TAOS
Latitude	36:04:00
Longitude	105:27:00
Elevation	9320

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1971	1996	26	77	99	5.8	14.9	2.2

Parameter: Snow Water Equivalent (inches)

	January			February			March			April		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1971				29-Jan	6	1.5	25-Feb	12	3.3	25-Mar	4	1.3
1972				31-Jan	19	5.1	22-Feb	19	4.5	29-Mar	2	0.5
1973							1-Mar	29	5.5	28-Mar	44	9.5
1974				31-Jan	14	1.9	26-Feb	18	3.9	27-Mar	15	3.7
1975				30-Jan	23	5.1	25-Feb	36	8.5	25-Mar	31	10.4
1976				26-Jan	17	3.3	23-Feb	22	6.8	26-Mar	10	3.9
1977				1-Feb	13	2.7	25-Feb	23	4.5	29-Mar	13	5.1
1978				30-Jan	15	3.0	28-Feb	17	4.2	29-Mar	16	5.0
1979				30-Jan	35	7.3	28-Feb	32	6.9	29-Mar	24	7.5
1980				28-Jan	20	4.1	26-Feb	27	8.6	25-Mar	33	8.3
1981				29-Jan	8	1.3	27-Feb	2	0.8	31-Mar	16	5.2
1982				28-Jan	14	3.3	26-Feb	24	7.0	29-Mar	20	7.4
1983				28-Jan	28	6.8	28-Feb	31	9.4	31-Mar	35	12.3
1984				30-Jan	25	7.0	28-Feb	29	8.1	30-Mar	36	10.3
1985				31-Jan	45	10.0	1-Mar	31	9.5	1-Apr	42	14.0
1986				27-Jan	9	2.6	25-Feb	10	3.5	26-Mar	3	0.8
1987				29-Jan	29	7.0	26-Feb	67	14.4	26-Mar	41	14.9
1988				28-Jan	29	6.4	26-Feb	25	7.3	28-Mar	1	0.5
1989				1-Feb	25	3.8	1-Mar	25	6.3	30-Mar	3	1.2
1990				29-Jan	22	4.4	28-Feb	38	8.9	28-Mar	19	2.7
1991	3-Jan	12	2.7	4-Feb	12	1.9	1-Mar	16	3.8	29-Mar	18	4.8
1992				30-Jan	29	7.5	27-Feb	33	9.0	30-Mar	33	9.2
1993				1-Feb	28	5.7	26-Feb	40	9.9	30-Mar	28	10.0
1994				27-Jan	16	4.6	25-Feb	27	7.2	30-Mar	40	9.9
1995				1-Feb	19	2.3	28-Feb	17	4.0	29-Mar	8	2.2
1996				1-Feb	19	4.3	1-Mar	15	4.1	1-Apr	18	4.7
Average					20.8	4.5		25.6	6.5		21.3	6.4
Min					6.0	1.3		2.0	0.8		1.0	0.5
Max					45.0	10.0		67.0	14.4		44.0	14.9
StdDevn						2.2			2.9			4.3

Station Name	BLACK LAKE
Station ID	NOAA, 1000
State	NEW MEXICO
County	COLFAX
Latitude	36:18:00
Longitude	105:17:00
Elevation	8360

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1978	1978	1	0	0			
AIR TEMP FAHN	Maximum	1978	1978	1	0	0			
PRECIP TOT DAY IN	Sum	1948	1995	48	17049	97	20.7	32.72	9.47
SNOW DEPTH INCHES	Sum	1948	1995	48	16556	94	94.2	189.9	21

Parameter: Precipitation

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Annual
1948				0.5	1.5	1.96	0.3	3.8	2.09	1.2	3.55	0.82	15.62
1949	0.9	0.8	0.4	0.7	0.5	0.7	1.8	1.7	5.2	4.5	1.91	0.82	19.72
1950	0.44	0	0.3	0.9	0	0.26	0.5	0.1	1.59	4.2	1.65	2.05	12.02
1951	0	0.3	0.3	0.6	0.8	1.9	2	1.6	0.3	4.9	3.26	0.21	16.1
1952	0.55	1.5	1.8	0.7	0.4	0.5	1.7	1.1	0.51	3.7	4.33	2.51	19.28
1953	0.2	0.6	0.2	0.1	0.5	0.1	1.1	2.9	1.89	2.9	2.45	0.08	13.08
1954	1.66	1.4	0.3	0.2	0.2	0.68	0	1.4	0.56	1.9	2.25	0.77	11.29
1955	1.63	0.3	0.3	0.5	1	0.33	0.7	5.5	0.68	2.5	6.11	0.83	20.42
1956	0	0.1	0.6	1.2	0.4	0.3	0.2	0.9	0.36	3.7	1.64	0	9.39
1957	0.34	0.2	0.2	2.4	0.1	1.96	1.4	4.6	0	4.3	6.52	0.22	22.37
1958	5.08	1	0.2	0.2	0.8	1.89	1.9	1.7	5.02	0.9	3.99	1.23	23.8
1959	0.78	0.5	0.2	0.5	0.4	0.21	1.2	1.4	2.21	2.2	4.69	0.28	14.44
1960	2.19	0.3	0.6	0.6	0.7	1.39	0.4	0.8	1.79	3.8	1.52	1.36	15.42
1961	4.37	0.5	0.7	0.3	0.3	0.88	0.7	0.7	1.81	4.2	4.81	2.32	21.49
1962	1.42	1.1	0.5	0.5	0.8	1.91	0.8	0.3	2.55	3.8	0.42	2.56	16.67
1963	0.2	0.7	0.3	0.7	1.7	0.62	0	0.5	0.95	0.9	5.47	1.91	14.04
1964	0.25	0.6	0.1	0.4	1.2	0.82	2.3	0.5	0.56	3.9	0.97	2.16	13.86
1965	0.1	1.2	1.9	0.9	0.8	1.52	1.6	2.4	6.16	7	3.38	1.81	28.84
1966	0.53	1.5	1	0.1	1.2	0.2	0.8	1.1	3.2	4.6	6.96	1.29	22.33
1967	0.34	0.5	1.2	0.3	0.5	0.68	0.2	0.9	2.01	4	6.29	0.86	17.71
1968													0
1969	0.28	0.8	0.2	2	0.4	1.15	1.7	2.9	3.1	5.2	5.63	2.85	26.24
1970	2.95	0.7	1.2	0	0.3	1.28	1.9	0.7	1.2	3.9	2.42	1.81	18.55
1971	0.82	1	0.6	0.3	0.3	0.25	0.3	2.9	0.37	5.4	1.46	1.28	14.91
1972	1.8	1.1	1	0.2	0.1	0.3	1	1.9	0.94	3.5	3.36	1.25	16.4
1973	1.78	1.1	1.2	0.8	0.4	3.02	1.3	1.4	1.72	2.9	1.76	1.85	19.25
1974	0.97	1	0.4	2.1	0.4	1.29	0.6	0.3	1.33	3.9	3.4	1.01	16.59
1975	2.88	1	0.8	1.1	2.5	3.62	1.4	0.3	1.24	4	2.08	3.89	24.7
1976	0.25	2.2	0.6	0.4	1.4	1.79	1.6	1.2	0.4	4.3	4.73	0.73	19.53
1977	0.87	0.6	0.1	0.5	1.2	1.1	2.6	1.7	1.46	5.2	2.6	1.05	18.9
1978	0.85	1.9	0.5	0.7	0.5	1.66	0.5	4.4	2.15	1.4	3.2	0.82	18.56
1979	1.65	2.6	1.3	1.5	0.6	0.9	1.3	5	3.15	1.1	4.21	0.54	23.68
1980	1.2	0.7	0.5	1.7	1.1	1.64	2.4	3.9	0.1	1.1	1.93	2.18	18.33
1981	0.5	0.4	0.1	0.3	0	2.62	0.8	1.4	2.7	1.4	5.73	3.02	18.96
1982	1.19	0.6	0.6	1.3	2.6	2.27	1	2.8	0.64	4.5	7.01	2.23	26.66
1983	1.8	1.9	1.3	0.5	0.7	2.5	2	1.4	1.4	2.4	4.31	1.68	21.81

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Annual
1984	1.4	0.9	3.4	0.9	0.8	1.9	1.9	1.2	2.95	3.6	4.04	0.77	23.65
1985	3.48	0.9	3	1	2.5	2.54	3.2	4.2	3.57	3.3	2.89	2.45	32.97
1986	4.77	1.2	0.6	0.4	0.7	1.95	5	3	4.68	5.3	2.27	3.98	33.8
1987	1.83	2.7	0.9	1.4	3.1	1.7	1.1	2.4	1.35	0.7	4.45	1.43	22.97
1988	0.95	1.6	0.4	1	0.3	0.64	1.3	2.2	7.04	4.4	5.23	3.83	28.73
1989	0.65	1.6	0.5	2.1	2.3	1.28	0.7	2.2	1.68	4.2	2.42	2.61	22.15
1990	1.5	0.3	1.3	1.5	2.4	1.2	1.5	1.2	0.68	7.6	2.96	2.8	24.9
1991	1.38	0.8	2	0.4	0.7	2.77	0.4	3.8	6.25	4.2	5.14	2.94	30.7
1992	0.95	2.1	1.8	0.5	0.5	1.97	0.2	2.6	1.14	2.7	2.77	0.64	17.85
1993	0.6	1.6	1.4	1.6	2	1.87	1.5	1.5	0.78	2.2	6.15	1.07	22.26
1994	1.9	2.1	0.7	1.1	2.2	2.88	4.2	6.7	0.9	2	5.6	2.06	32.14
1995	2.68	2.1	0.5	1.4	1.8	1.32	1.1	4.2	3.74	1.5	3.1	2	25.39
AvgMonth	1.37	1.1	0.8	0.8	1	1.41	1.3	2.2	2.04	3.4	3.68	1.64	
StdDevn	1.22	0.7	0.7	0.6	0.8	0.87	1	1.6	1.73	1.6	1.71	1.02	

Figure A-1. NOAA Station Black Lake
Annual Precipitation 1948-1995

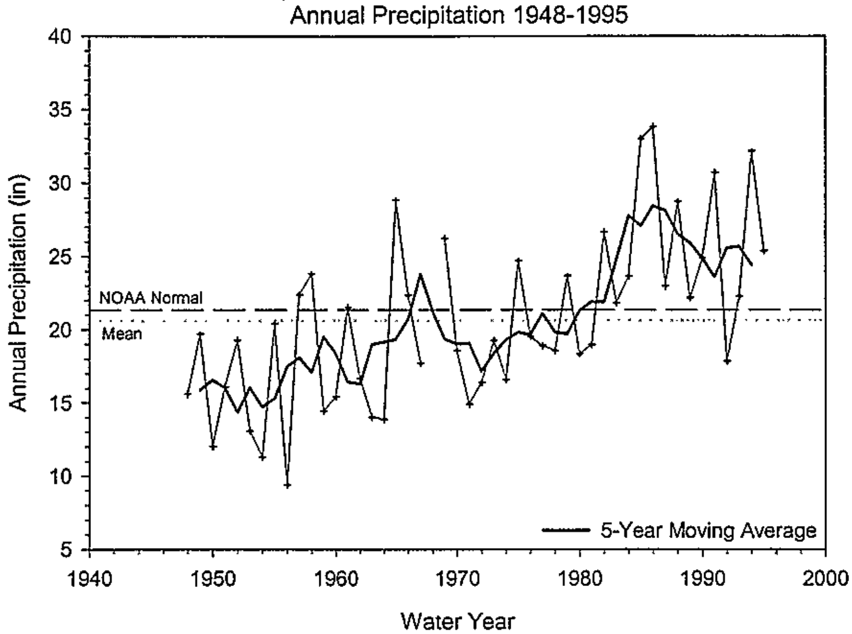
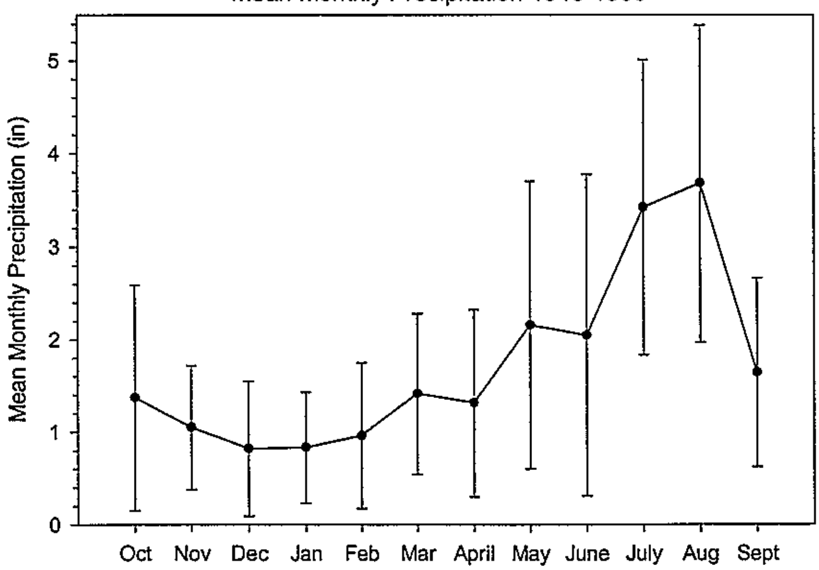


Figure A-2. NOAA Station Black Lake
Mean Monthly Precipitation 1948-1995



Station Name	CERRO
Station ID	NOAA, 1630
State	NEW MEXICO
County	TAOS
Latitude	36:45:00
Longitude	105:36:00
Elevation	7650

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	48	16509	94	28.49	30.59	24.53
AIR TEMP FAHN	Maximum	1948	1995	48	16474	94	59.86	65.75	56.6
PRECIP TOT DAY IN	Sum	1910	1995	48	16718	95	11.84	19.29	7.26
SNOW DEPTH INCHES	Sum	1948	1995	48	16780	96	59.49	117.5	13

Parameter: Precipitation

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1910				0.37	0.94	2.04	0.13		0.37	0.94	2.04	0.13	6.96
1911	0.42	0.48	0.48	0.56	1.58	0.82	0.83	0.54	0.68	4.74	2.81	1.26	15.2
1912	3.38	0.54	0.42	0.2	0.24	1.18	2.23	1.18	1.28	2.91	2.36	0.16	16.08
1913	0.87	0.04	0.23	0.44	1	0.87	0.91	0.56	1.47	0.5	0.95	1.8	9.64
1914	0.32		2.08	0	0.11	0.66	1.2	1.67	0.6	2.89	1.93	0.82	12.28
1915	1.59	0	0.32	0.39	0.44	0.15			0.62	3.03	0.58	1.08	8.2
1916	0.14	0.3	0.48		0	0.27	0.74	0.01	0.05	2.97	1.43	0.27	6.66
1917	2.11	0	0.02										2.13
1918							0.18	0.23	0.74	2.97	1.34		5.46
1919	1.12	0.68	0.95	0.92	0.74	1.31	1.2	1.94	0.63	3.13	1.27	3.05	16.94
1920	2.29	1.43	0.9	0.13	0.9	1.12	1.41	2.69	1.3	1.5	1.79	1.31	16.77
1921	1.82	0.45	0.57	0.36	0.8	0.58	2.76	3.67	3.44	3.82	3.15	1.4	22.82
1922	1.11	0	0.6	0.41	0.51		0.89	1.12	0.47		8.16	0.08	13.35
1923	0.02	0.41	0	0	0.07	1.81	0.71	0.25	1.42	2.28	4.19		11.16
1924	3.3	0.8	1.12	0.13	0.1	1.09		0.24	0.81	2.33	1.36	4.07	15.35
1925					0.14	1.14	0.02			1.5	1.98	1.3	6.08
1926	1.02	0.78	0.16	0.39	0.46	1.31		0.6		1.64	0.45	0.44	7.25
1927	1.19			0.01	0.19	0.63					1.9	1.65	5.57
1928	0.75	0.01	0.32	0.09		0.55	1.23	2.98	0.21	2.38	1.3	1.08	10.9
1929	0.59	0.3				0.33	0.7	1.67	0	1.6	2.81		8
1930	0.49	1.22	0.03	0.8	0.05	0.83	0.2	0.88	0.14	4.16	2.88	1.98	13.66
1931			0.23	0	0.26	0.4						0.35	1.24
1932					0.97	0.78	0.84	0.61	0.54	1.36	3.11		8.21
1933	0.7	0	0.95	0.72	0.61	0.44	0.82	0.5	1.61	1.39	1.78	1.02	10.54
1934	0.79	0.27	0.53	0.42	0.88	0	0	4.54	0.68	2.35	4.24	0.95	15.65
1935	0	0.84	0.27	0.4	0.51	0.21	0.68	4.21	0.31	2.41	2.94	3.91	16.69
1936	0.66	0.74	0.43	0.13	0.68	0.45	0.12	2.95	0.87	2.28	3.71	1.9	14.92
1937	1.72	0.04	0.82	0.41	1.65	0.83	0.13	1.34	1.39	0.72	0.87	3.03	12.95
1938	1.17	0.38	0	0.41	0.55	0.71	2.15	0.91	0.9	0.71	0.98	2.28	11.15
1939	1.6	0.1	0.4	0.86	0.72	0.48	0.6	0.29	0.42	1.8	0.59	3.47	11.33
1940	0.58	0.37	1.25	0.42	0.39	0.06	0.88	1.41	0	0.78	3.67	1.39	11.2
1941	0.97	0.89	1.55	1	0.25	1.5	0.86	1.56	1.29	1.81	1.25	2.63	15.56
1942	2.49	0.53	1.45	0.15	0.55	0.53	6.26	0	0.67	0.79	1.26	2.44	17.12
1943	0.4	0	0.83	0.25	0.36	0.39	0	1.04	1.71	1.66	3.84	2.73	13.21
1944	0.72	0.44	0.44	0.61	0.29	0.18	1.44	0.2	0.46	1.41	0.49	0.7	7.38
1945	2.69	0.85	0.65	0.32	0.46	0.89	2.45	0.33	0	1.15	2.16	0.6	12.55

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1946	0.5	0	0.73	0.05	0.29	0.68	0.52	0.72	0	1.97	2.47	0	7.93
1947	2.77	0.91	0.18	0.63	0.22	0.78	0.76	1.85	0.25	0.77	2.34	0.88	12.34
1948	0.8	0.38	1	0.57	1.79	1.28	0.5	1.08	0.5	2.09	1.21	0.5	11.7
1949	0.82	0.22	0.3	1.37	0.61	1.03	0.93	1.79	2.59	2.74	0.76	1.26	14.42
1950	1.33	0.27	0.76	1.38	0.21	0.15	0.15	0	2.88	3.51	1.03	1.5	13.17
1951	0.29	0.28	0.04	0.89	0.87	0.7	1.44	0.85	0.13	0.83	1.72	0	8.04
1952	0.63	0.78	1.16	1.45	0.4	0.69	0.79	0.66	0.33	1.79	2.3	1.25	12.23
1953	0	1.82	0.22	0.08	0.76	0.43	0.52	1.55	1.34	2.07	0.86	0.19	9.84
1954	2.48	1.61	0.3	0.5	0.33	1.54	0	1.89	1.08	2.3	1.75	0.63	14.41
1955	0.9	0.28	0.04	0.43	0.89	0.12	1.23	2.29	0.43	1.25	2.46	0.3	10.62
1956	0.2	0.46	0.56	0.97	0.31	0.18	0.13	0.5	0.99	2.28	0.44	0.09	7.11
1957	0.61	0.5	0.26	1.46	0.27	0.57	1.42	2.3	1.11	2.41	2.97	0	13.88
1958	4.04	1.78	0	0.41	0.43	0.65	0.47	1.28	0.61	0.74	1.19	2.21	13.81
1959	0.86	0.6	0	0.32	0.48	0.24	1.19	1.9	0.65	1.65	2.85	0.57	11.31
1960	1.66	0.31	1.64	1.2	1.02	0.63	0.62	0.8	1.16	1.84	0.62	1.66	13.16
1961	1.33	0.32	0.99	0.15	0.45	0.97	1.45	0.06	0.03	1.77	2.53	2.1	12.15
1962	0.69	0.72	0.86	0.6	0.46	0.54	0.24	0.18	0.48	1.04	0.64	2.23	8.68
1963	0.89	0.6	0.43	0.57	0.43	1.21	0.02	0.38	0.76	0.7	2.38	0.98	9.35
1964	0.81	0.19	0.09	0.36	0.45	0.54	0.55	0.57	0.84	2.02	2.66	1.91	10.99
1965	0	0.49	1.17	1.1	0.73	0.29	1.48	0.8	2.36	2.53	1.14	3.02	15.11
1966	1.22	0.63	1.08	0.25	0.17	0.05	0.07	0.62	2.44	2.57	2.88	0.25	12.23
1967	0.68	0.46	0.18	0.09	0.25	0.73	0.27	0.48	1.26	2.7	2.98	0.8	10.88
1968	0.54	0	0.75	0.05	0.1	0.21	0.45	1.19	0	3.13	3.68	0.05	10.15
1969	0.19	0.28	0.64	0.27	0.07	0.4	0.42	0.68	1.68	2.15	2.14	1.44	10.36
1970	1.58	0.09	0.31	0.1	0.03	0.86	0.58	0.15	0.63	1.23	3.06	1.94	10.56
1971	0.99	0.08	0.03	0.21	0.42	0	0.49	0.28	0.05	3.24	1.68	2.06	9.53
1972	2.4	0.73	1.31	0.19	0.25	0.08	0	0.49	0.42	2.1	1	1.05	10.02
1973	2.13	1.05	0.57	0.31	0.1	1.03	0.43	0.89	0.27	2.9	0.45	0.66	10.79
1974	0.67	0.2	1.63	1.87	0.11	0.12	0.69	0	0.69	2.46			8.44
1975		0.64	0.71	0.51	0.37	1.25	0.53	0.24	1.16	2.21	1.76	0.46	9.84
1976	0.17	1.54		0.11	0.46	0.54	0.9	1.3	0.08	1.27	2.52	1.48	10.37
1977	0.62	0.52	0.2	0.67	0.16	0.44	1.32	0.81	1.59	3.45	1.56	1.71	13.05
1978	0.02			0.49	0.49	0.66						0.41	2.07
1979	1.02	2.82	1.49	2.13	0.27	0.81	1.03	2.27	2.14	0.8	1.53	0.67	16.98
1980	1	0.9	1.04	0.73	0.65	1.29	1.2	1.2	0	0.43	1.13	0.35	9.92
1981	1.72	0.23	0.2	0.07	0.08	1.53	0.51	1.74	1.55	1.94	3.12	0.81	13.5
1982	0.96		0.65	0.51	1.49	0.98	0	0.4	0.47	2.08	3.32	2.76	13.62
1983	0.54	1.32	0.83	0.52	0.92	0.89	1.04	1.1	1.65	1.08	1.11	0.44	11.44
1984	0.51	1.17	0.4	0.62	0.74	0.91	1.24	0.51	0.5	0.9	2.59	1.2	11.29
1985	1.92	1.17	1.46	1.09	0.32	2.06	2.19	1.89	0.41	0.84	1.23	2.8	17.38
1986	2.29			0.2	0.59	1.89	2.24	2.19	2.87	3.61	2.33	3.34	21.55
1987	1.54		0.33	2.02	1.47		0.28	0.84	2.14	1.35	3.05		13.02
1988	0.5	1.15	1.13	0.66	0.53	0.14	0	1.37	1.56	1.94			8.98
1989	0	0.57	0.25	1.09	1.65	0.7	0	0.37	0.94	1.79		1.71	9.07
1990	2.34	0	1.54	0.55	0.72	2.66	1.49		0.59	2.63	1.29	1.97	15.78
1991	0.48	0.22	1.83	0.35	0.15		0	1.47	1.55	1.03		3.26	10.34
1992	0.47	2.86	1.69	0.67	0.42	2.41	0.35	2.77	1.18	1.54	2.19	0.5	17.05
1993	0.37	1.28	1.68	1.18	1.52	1.47	0.58	1.99	0.06	0.87	6.71	1.21	18.92
1994	0.95	2.05	0.7	0.4	1.02	1.22	2.42	2.12	0.41	1.16	1.44		13.89
1995	2.3	2.69	0.63	0.95	0.31	0.85	1.16	3.6	1.3	0.69	1.96	2.14	18.58

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept
AvgMonth	1.11	0.67	0.68	0.56	0.54	0.79	0.87	1.21	0.91	1.93	2.11	1.38
StdDev	0.87	0.65	0.52	0.47	0.42	0.56	0.9	1.01	0.76	0.93	1.3	1.02

Figure A-3. NOAA Station Cerro
Annual Precipitation 1910-1995

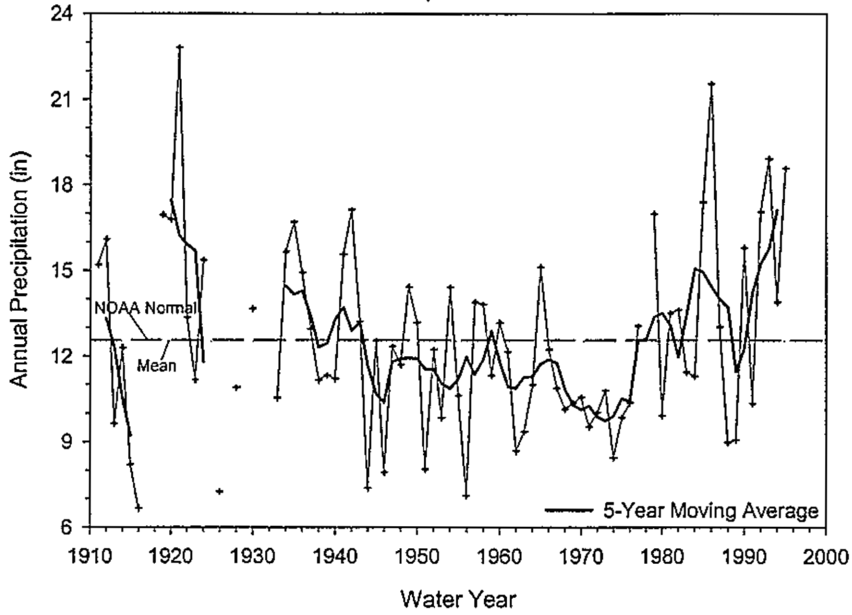
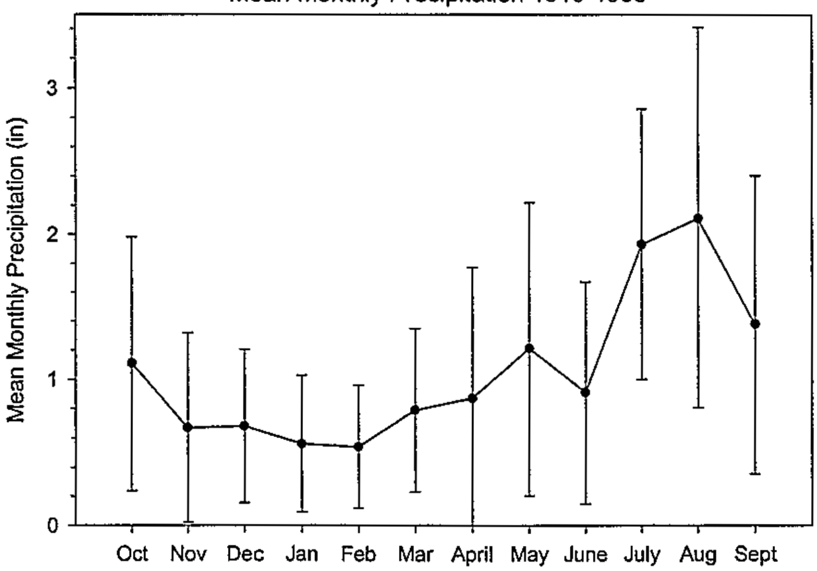


Figure A-4. NOAA Station Cerro
Mean Monthly Precipitation 1910-1995



Station Name	CHACON
Station ID	NOAA, 1653
State	NEW MEXICO
County	MORA
Latitude	36:10:00
Longitude	105:23:00
Elevation	8500

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1968	1968	1	60	16			
AIR TEMP FAHN	Maximum	1968	1968	1	60	16			
PRECIP TOT DAY IN	Sum	1948	1985	38	13525	97	18.96	30.31	8.52
SNOW DEPTH INCHES	Sum	1948	1985	38	13083	94	71.67	162.6	10

Parameter: Precipitation

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1948				0.33		6.31	0.5	4.4	3.59	1.56	4.23	1	21.92
1949	1.57	1	0.48	1.27	0.51	0.29	1.89	2.3	3.86	7.79	4.6	3.27	28.84
1950	0.82	0.3	0.96	3.73	0.44	0.93	0.5	0.24	1.86	7.31	4.18	3.75	24.99
1951	0	1.5	0.96	1.95	0.24	1.21		2.69	0	2.98	5.04	0	16.6
1952	0.35	3	5.11	2.63	1.36		3.17	3.2	0.4	4.31	6.85	2.71	33.06
1953	0.37	2	0.88	0.04	0.7	0.1	0.7	2.98	1	0.99	0.91	0	10.66
1954	1.65	1	1.78	2.27		1.44	0	1.84	0.79	5.47	3.22	0.75	20.17
1955	1.8	0	0.95	0.15		0.03	0.55	2.9	0.3	1.85	5.17	0.55	14.25
1956	0	0	0.8	1.92	0.21	0.71	0	1.1	0	2.16	2.07	0	8.97
1957	0	0.4	0	1.8	0	1.91	1.04	3.67	0	4.44	5.74	0	18.95
1958	3.53	2.3	0	0.2	0.4	2.28	3	0.6	2.1	0.83	2.83	0.3	18.39
1959	1.01	0.8	0.2	0.7	0.2		1.5	1.9	2.6	1.6	2.4	0.5	13.41
1960	3.2	0.2	1.05	0.7	0.28	0.2	0	0	2	2.7	1.4	1.3	13.03
1961	4	0.1	1.5	0.7	0.06	0.7	1.2	0.3	2.1	2.9	7.9	1.9	23.36
1962	1.2	1.2	0.9	0.5	0.7	1.8	0.7	0	1.31	3.4	1	1.8	14.53
1963	0.2	1.3	0.3	0.8	2.77	1.2	0	0.05	0.7	1.3	5.32	2.2	16.15
1964	0.7	0.1	0.3	0.3	1.4	1.1	1.6	1	0.2	1.7	0.9	2	11.3
1965	0	0.8	0.7	0.9	1.3	1.4	1.7	2.71	4.8	3.33	4.1	1.4	23.09
1966	0	1.2	1.6	0	1.3	0.4	0.21	0	2.56	1.62	6.02	0.5	15.41
1967	0.05	0.2	0.9	0.05	0.25	0.2	0	0.76	1.99	3.65	6.58	2.16	16.79
1968	0	0	1.51	0.16	0.65	1.17	0.57	1.06	0	3.95	3.79	0.23	13.09
1969	0.05	1.1	0.54	1.09	0.7	1.38	1.83	2.32	1.23	8.4	5.47	1.32	25.38
1970	5.15	0.5	0.97	0.05	0.38	2.04	1.3	0.7	1.97	4.14	1.51	1.49	20.15
1971	0.7	1	0.55	0.53	0.66	0.62	1.03	1.82	1.53	5.49	5.35	2.82	22.05
1972	2.13	1	1.83	0.07	0.36	0.22	0.73	1.64	1.05	4.8	4.17	1.11	19.09
1973	3.35	2.4	0.27	0.63	0.95	3.76	1.5	1.21	2.25	3.51	3.28	2.86	25.95
1974	0.8	0.5	0.12	2.61	0.37	2.07	0.39	0.45	1.03	2.69	3.49	0.95	15.42
1975	2.88	0.7	0.94	1.25	2	1.25	1.8	0.64	1.2	4.22	2.82	4.11	23.8
1976	0.01	1	0.17	0.69	1.25	1.67	0.87	2.55	1.4	3.72	3.86	2.25	19.46
1977	0.97	1.1	0.13	1.47	1.15	0.68	2.28	1.2	0.97	2.03	3.71	1.13	16.8
1978	0.38	2	0.1	0.96	0.46	1.63	0.54	3.04	2.45	2.28	2.16	1	16.97
1979	1.25	3	1.05	1.79	0.5	0.85	1.4	3.81	2.76	3.65		0.77	20.85
1980	0.49	0.8	0.76	1.8	0.71	1.55	2.59	3.94	0.05	1.2	3.41	2.37	19.63
1981	0.14	0.8	0.13	0.1	0.16	2.67	0.65	2.28	2.12	4.81	6.75	1.95	22.54
1982	1.11	0.4	0.14	1.62	1.08	1.38	0.47	2.45	1.09	3.79	4.99	1.7	20.19
1983	1.31	1.4	1.91	0.54	0.76	1.73	0.71	0.5	1.29	3.84	3.88	0.63	18.45

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1984	0.68	0.6	2.62	0.45	0.42	1.89	1.2	1.31	2.41	4.01	3.49	0.6	19.72
1985	2.97	0.4	1.77	0.79	0.22	3.84	2.28	2.17	4.52	2.93	3.23		25.1
AvgMonth	1.21	1	0.94	0.99	0.71	1.46	1.09	1.73	1.62	3.46	3.94	1.44	
StdDevn	1.33	0.8	0.95	0.88	0.58	1.23	0.85	1.24	1.23	1.8	1.75	1.08	

Figure A-5. NOAA Station Chacon
Annual Precipitation 1948-1985

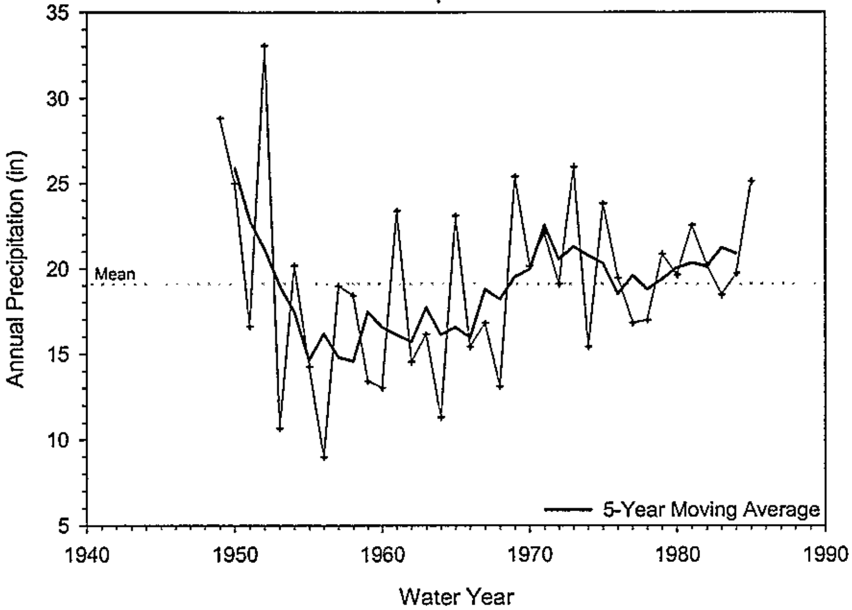
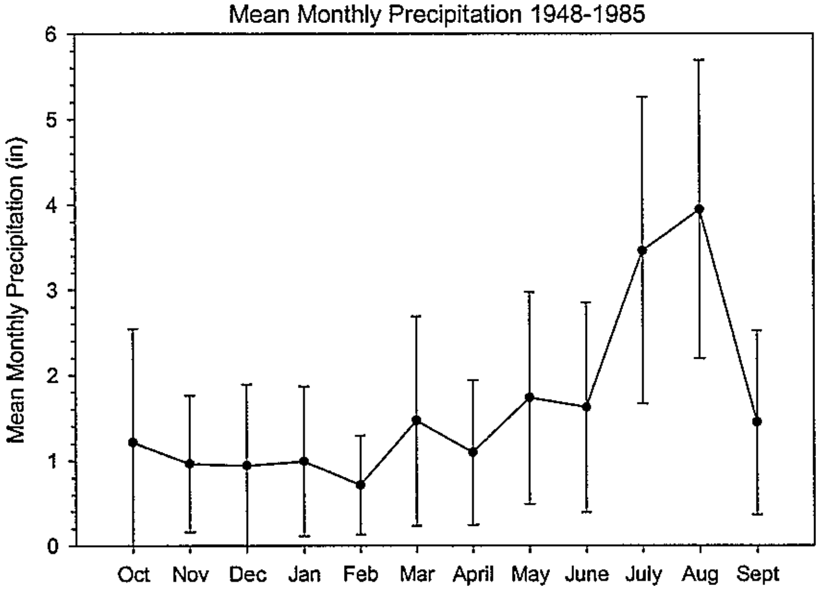


Figure A-6. NOAA Station Chacon
Mean Monthly Precipitation 1948-1985



Station Name	CONEJOS 3 NNW
Station ID	NOAA, 1816
State	COLORADO
County	
Latitude	37:08:00
Longitude	106:02:00
Elevation	7900

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1960	13	4195	88	25.32	26.34	24.23
AIR TEMP FAHN	Maximum	1948	1960	13	4072	86	60.05	62.96	56.76
EVAP TOT DAY IN	Sum	1940	1959	12	1988	45			
PRECIP TOT DAY IN	Sum	1948	1960	13	4219	89	8.12	13.7	3.58
SNOW DEPTH INCHES	Sum	1948	1960	13	3843	81	30.3	61.9	12.8

Parameter: Evaporation

Year	Mar	April	May	June	July	Aug	Sept	Oct	Nov
1940				0.26	0.23	0.20	0.12	0.08	
1941			0.31	0.18	0.18	0.23	0.24		
1942				0.36	0.22	0.22	0.25	0.14	
1943		0.30	0.33	0.38	0.24	0.22	0.23	0.15	
1944		0.15	0.22	0.32	0.21	0.25	0.23	0.17	
1945			0.33	0.31	0.19	0.22	0.24	0.17	
1946			0.30	0.34	0.26	0.24	0.29		
1947			0.26	0.31	0.22	0.23	0.22	0.18	
1948			0.24	0.24	0.25	0.23	0.27	0.23	
1949		0.24	0.29	0.29	0.29	0.33	0.26		
1950		0.30	0.28	0.38	0.26	0.25	0.26	0.19	
1951		0.20	0.29	0.35	0.36	0.33	0.29		
1952			0.24	0.28	0.26	0.21	0.25	0.20	
1953		0.23	0.25	0.27	0.22	0.23	0.28		
1954		0.24	0.21	0.30	0.27	0.24	0.27		
1955			0.26	0.19	0.26	0.21	0.23		
1956			0.24	0.24	0.23	0.22	0.24		
1957			0.18	0.23	0.18	0.17	0.18		
1958			0.26	0.24	0.25	0.17	0.19		
1959		0.19	0.21	0.20	0.16	0.18	0.18		
Avg		0.23	0.24	0.27	0.25	0.23	0.24	0.20	
Min		0.19	0.18	0.19	0.16	0.17	0.18	0.19	
Max		0.30	0.29	0.38	0.36	0.33	0.29	0.23	

Station Name	CORDOVA
Station ID	NRCS, 05N5A
State	NEW MEXICO
County	TAOS
Latitude	
Longitude	
Elevation	10,100

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1942	1967						

Parameter: Snow Water Equivalent (inches)

	February			March			April		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1942	2-Feb	35	8.1	27-Feb	46	11.7	1-Apr	53	16.8
1943	1-Feb	26	5.8	2-Mar	31	8.3	1-Apr	33	10.3
1944	2-Feb	34	7.5	1-Mar	43	11.1	31-Mar	41	12.9
1945	1-Feb	36	8	9-Mar	53	13.1	2-Apr	50	16.6
1946	1-Feb	20	4.9	1-Mar	21	5.3	1-Apr	30	10
1947	1-Feb	29	7	1-Mar	43	8	30-Mar	31	9.3
1948	1-Feb	28	5.8	Feb-29	39	9.7	1-Apr	53	15.2
1949	31-Jan	39	9.3	28-Feb	47	13.1	1-Apr	47	14.2
1950	1-Feb	32	5.1	1-Mar	28	6.3	29-Mar	23	7.8
1951	1-Feb	19	4.3	28-Feb	28	6.4	20-Mar	29	9.2
1952	31-Jan	40	12.2	Feb-29	51	15.8	31-Mar	53	18.3
1953	3-Feb	26	6.6	3-Mar	47	9.1	1-Apr	24	6.3
1954	1-Feb	23	5.7	1-Mar	24	5.1	1-Apr	32	8.8
1955	30-Jan	15	3	3-Mar	39	8.5	31-Mar	22	5.4
1956	2-Feb	27	5.5	3-Mar	21	6.9	29-Mar	20	6.3
1957	31-Jan	49	11	27-Feb	39	11.8	1-Apr	48	15.7
1958	7-Feb	39	10.5	27-Feb	56	12.8	2-Apr	61	13.4
1959	4-Feb	30	5.7	1-Mar	29	8	30-Mar	30	4.8
1960				3-Mar	63	14.5	25-Mar	39	12.3
1961	29-Jan	37	6	25-Feb	39	7.9	28-Mar	42	11.7
1962	30-Jan	30	6.6	1-Mar	51	14.8	26-Mar	46	13.3
1963	2-Feb	27	7.1				27-Mar	35	9.7
1964	29-Jan	15	3.3	25-Feb	36	8.6	26-Mar	43	11.5
1965	30-Jan	39	9.8	26-Feb	45	12.6	30-Mar	51	16.4
1966	29-Jan	20	4.2	26-Feb	39	8.6	28-Mar	27	8.3
1967	30-Jan	15	3	27-Feb	27	6.2	29-Mar	22	6.8
Average		29.2	6.6		39.4	9.8		37.9	11.2
Min		15	3.0		21	5.1		20	4.8
Max		49	12.2		63	15.8		61	18.3
StdDevn		8.94	2.47		11.22	3.14		11.86	3.88

Station Name	EAGLE NEST
Station ID	NOAA, 2700
State	NEW MEXICO
County	COLFAX
Latitude	36:33:00
Longitude	105:16:00
Elevation	8260

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	48	16657	95	22.43	25.82	18.29
AIR TEMP FAHN	Maximum	1948	1995	48	16627	95	57.64	61.2	55.27
EVAP TOT DAY IN	Sum	1929	1995	46	6082	36			
PRECIP TOT DAY IN	Sum	1948	1995	48	16697	95	14.89	23.12	6.94
SNOW DEPTH INCHES	Sum	1948	1995	48	16277	93	58.63	117.6	22

Parameter: Evaporation

Year	April	May	June	July	Aug	Sept	Oct	Nov
1929		0.33	0.33	0.22	0.18	0.18		
1930	0.14	0.24	0.29	0.20	0.15	0.19	0.14	0.10
1931	0.19	0.25	0.33	0.26	0.21	0.18	0.14	
1932	0.19			0.40	0.33	0.31	0.19	0.11
1933				0.28		0.28	0.20	0.09
1934	0.20	0.23	0.41		0.23		0.19	
1935	0.19	0.22		0.27	0.22			
1936		0.27	0.34	0.26	0.22	0.18	0.12	
1937		0.24	0.30	0.24	0.20	0.17	0.16	
1938		0.23	0.25	0.23	0.25	0.15	0.14	
1939		0.25	0.35	0.27	0.19	0.17	0.16	
1940		0.22	0.26	0.22	0.24	0.13	0.14	
1941		0.22	0.23	0.19	0.19	0.18	0.12	
1942		0.28	0.27	0.22	0.22	0.21	0.14	
1943		0.26		0.22	0.25	0.19	0.12	
1944		0.22	0.36	0.23	0.21	0.20	0.12	
1945		0.26	0.25	0.29	0.22	0.22	0.12	
1946		0.20	0.23	0.23	0.15	0.17	0.14	
1947		0.18	0.28		0.28			
1948			0.28	0.27	0.23	0.23	0.15	
1949					0.21	0.18	0.14	
1950		0.33	0.34	0.20	0.19	0.20	0.19	
1951				0.30		0.24		
1952				0.28	0.21	0.19	0.18	
1953				0.23		0.21	0.14	
1954			0.37	0.19	0.18	0.20	0.17	
1955			0.27	0.24	0.16	0.20		
1956				0.26	0.21	0.25	0.15	
1957				0.23	0.15	0.16		
1958				0.23	0.15	0.16		
1959				0.21	0.18	0.2		
1962		0.29	0.28				0.16	
1963		0.40		0.30	0.21	0.16	0.19	
1964							0.19	
1965				0.24	0.21	0.18		

Year	April	May	June	July	Aug	Sept	Oct	Nov
1966		0.23	0.28	0.16	0.23			
1967				0.23	0.16	0.14		
1968		0.24	0.33	0.27	0.23	0.23	0.18	
1969		0.24	0.25	0.25	0.22	0.15		
1970		0.28	0.26	0.24	0.20	0.20		
1971		0.24	0.30	0.27	0.18	0.20		
1972		0.26	0.3	0.29	0.25	0.20	0.14	
1973			0.28	0.26	0.24	0.22		
1974		0.32	0.30	0.25	0.19	0.19	0.14	
1975		0.31	0.33	0.24	0.22	0.17		
1976			0.35	0.24	0.21			
1977		0.29	0.30	0.23	0.21	0.22		
1978			0.32	0.27	0.24	0.25		
1979		0.20	0.27	0.27	0.23	0.20		
1980		0.2	0.39	0.30	0.24	0.22		
1981			0.36	0.24	0.22	0.15		
1982			0.31	0.27	0.19			
1983			0.12		0.11	0.12		
1984			0.31		0.22	0.22		
1985		0.23	0.25	0.18	0.21	0.19	0.12	
1986	0.16	0.21	0.22	0.21	0.17	0.18		
1987		0.17	0.22	0.27	0.20	0.13		
1988		0.23	0.24	0.19	0.17	0.17	0.13	
1989				0.21	0.19	0.17		
1990	0.18	0.27	0.27	0.18	0.17	0.18		
1991		0.21	0.20	0.17	0.18	0.13	0.08	
1992			0.17	0.15	0.12	0.14		
1993		0.16	0.16	0.30	0.18	0.12		
1994				0.30	0.27	0.21	0.17	
1995			0.32					
Avg	0.18	0.25	0.29	0.24	0.20	0.19	0.15	
Min	0.14	0.16	0.12	0.15	0.11	0.12	0.08	
Max	0.20	0.40	0.41	0.40	0.33	0.31	0.20	

Station Name	EL VADO DAM
Station ID	NOAA, 2837
State	NEW MEXICO
County	RIO ARRIBA
Latitude	36:36:00
Longitude	106:44:00
Elevation	6740

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	48	16902	96	26.77	29.51	22.74
AIR TEMP FAHN	Maximum	1948	1995	48	16916	96	61.86	65.16	59.24
EVAP TOT DAY IN	Sum	1936	1995	48	8775	50			
PRECIP TOT DAY IN	Sum	1948	1995	48	17334	99	14.45	24.09	6.06
SNOW DEPTH INCHES	Sum	1948	1995	48	16936	97	48.68	102.2	7.5

Parameter: Evaporation

Year	Apr	May	June	July	Aug	Sept	Oct	Nov
1936				0.29	0.25	0.21	0.12	0.07
1937			0.29	0.29	0.29	0.23	0.15	
1938		0.21	0.28	0.28	0.27	0.18	0.18	
1939	0.20	0.32	0.47	0.34	0.25	0.20	0.16	0.08
1940	0.19	0.26	0.31	0.33	0.26	0.19	0.16	
1941		0.24	0.23	0.28	0.25	0.21	0.12	
1942		0.31	0.35	0.31	0.27	0.24	0.19	
1943		0.29	0.33	0.32	0.25	0.24		
1944			0.31	0.27	0.26	0.23	0.13	
1945		0.28	0.33	0.28	0.24	0.25	0.12	
1946		0.25	0.39	0.29	0.19	0.21	0.13	
1947			0.40	0.24	0.21	0.20	0.11	
1948		0.25			0.25	0.22	0.15	
1949			0.28	0.26	0.28	0.22		
1950			0.37	0.27	0.27			
1951			0.37	0.35				
1952			0.34	0.30	0.25	0.22	0.16	
1953						0.24	0.17	
1954			0.34	0.27	0.23	0.20		
1955			0.34	0.27	0.22	0.23		
1956			0.33	0.31	0.26	0.28		
1957		0.14	0.27	0.23	0.21	0.22		
1958		0.24	0.32	0.31	0.24	0.20		
1959		0.28	0.31	0.31	0.22	0.25		
1960		0.24	0.30	0.31	0.30	0.22		
1961		0.23	0.25	0.25	0.17	0.13		
1962		0.26	0.30	0.27	0.24	0.14		
1963	0.20	0.27	0.29	0.29	0.20	0.17		
1964	0.18	0.28		0.26	0.22	0.16	0.13	
1965	0.17	0.23	0.25	0.25	0.18	0.14	0.12	
1966	0.22	0.25	0.27	0.25	0.20	0.16	0.13	
1967	0.20	0.26	0.23	0.24	0.18	0.15		
1968	0.17	0.24	0.27	0.23	0.21	0.15		
1969	0.17	0.21	0.25	0.30	0.19	0.15	0.10	
1970		0.26	0.27	0.28	0.26	0.21	0.11	

Year	Apr	May	June	July	Aug	Sept	Oct	Nov
1971		0.24	0.34	0.3	0.23	0.23	0.11	
1972	0.27	0.34	0.32	0.33	0.25	0.21	0.10	
1973	0.15	0.23	0.29	0.27	0.24	0.23	0.14	
1974	0.20	0.32	0.31	0.28	0.24	0.23	0.11	0.06
1975	0.16	0.25	0.31	0.27	0.25	0.18	0.15	
1976	0.19	0.24	0.35	0.29	0.23	0.16	0.12	
1977	0.17	0.28	0.34	0.27	0.24	0.17	0.12	0.06
1978	0.22	0.24	0.30	0.30	0.25	0.19	0.14	
1979	0.17	0.18	0.26	0.27	0.23	0.22	0.16	
1980	0.17	0.22	0.35	0.30	0.26	0.21	0.14	
1981	0.21	0.24	0.34	0.27	0.22	0.18	0.11	
1982	0.20	0.23	0.26	0.27	0.19	0.13	0.11	
1983	0.17	0.22	0.27	0.26	0.20	0.20	0.11	
1984		0.29	0.27	0.28	0.24	0.19	0.07	
1985	0.17	0.18	0.29	0.26	0.24	0.18		
1986			0.25	0.22	0.22	0.15	0.10	
1987	0.19	0.18	0.29	0.33	0.24	0.20	0.14	
1988	0.18	0.25	0.27	0.27	0.19	0.19	0.14	
1989	0.26	0.31	0.31	0.28	0.23	0.21		
1990	0.17	0.26	0.35	0.25	0.22	0.19	0.12	
1991	0.21	0.27	0.25	0.26	0.22	0.18	0.15	
1992	0.21	0.20	0.30	0.27	0.22	0.19	0.14	
1993	0.21	0.20	0.31	0.35	0.22	0.21		
1994	0.14	0.20	0.29	0.30	0.22	0.17	0.10	
1995	0.15	0.19	0.27	0.27	0.25	0.18	0.14	
Avg	0.19	0.25	0.31	0.28	0.23	0.20	0.13	0.07
Min	0.14	0.14	0.23	0.22	0.17	0.13	0.07	0.06
Max	0.27	0.34	0.47	0.35	0.30	0.28	0.19	0.08

Station Name	GALLEGOS PEAK
Station ID	NRCS, 05N18S
State	NEW MEXICO
County	TAOS
Latitude	36:11:00
Longitude	105:33:00
Elevation	9800

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1978	1996	19	60	79	8.1	16.4	2.7

Parameter: Snow Water Equivalent (inches)

	January			February			March			April		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1978							28-Feb	30.0	6.4	29-Mar	32.0	9.8
1979				29-Jan	46.2	7.5	23-Feb	52.2	14.6	30-Mar	43.2	14.8
1980				31-Jan	33.7	7.4	Feb-29	37.6	10.4	31-Mar	46.8	13.9
1981	28-Dec	10.8	1.4	30-Jan	3.2	0.8	23-Feb	5.0	1.4	27-Mar	9.4	3.2
1982	30-Dec	25.0	4.6	29-Jan	24.9	6.5	26-Feb	33.7	9.9	26-Mar	28.5	9.9
1983	28-Dec	51.2	10.8	28-Jan	29.5	6.8	25-Feb	34.2	9.4	31-Mar	50.3	15.4
1984	27-Dec	24.0	6.5	30-Jan	36.9	12.5	Feb-29	41.1	13.3	29-Mar	52.1	16.4
1985	30-Dec	14.0	3.3	31-Jan	45.7	9.6	27-Feb	38.2	11.4	27-Mar	40.0	14.9
1986	1-Jan	18.0	4.1	27-Jan	14.5	3.6	24-Feb	25.0	5.8	26-Mar	26.0	6.5
1987	31-Dec	18.2	4.1	30-Jan	22.7	5.6	24-Feb	36.0	9.0	26-Mar	36.3	10.9
1988	28-Dec	17.0	2.8	28-Jan	27.7	6.8	26-Feb	25.5	7.0	31-Mar	15.9	5.5
1989	28-Dec	20.5	4.2	1-Feb	26.7	6.4	27-Feb	38.0	11.1	28-Mar	24.0	9.1
1990				30-Jan	21.0	4.5				26-Mar	33.0	11.3
1991				30-Jan	36.5	10.6				27-Mar	48.0	14.6
1992				28-Jan	28.1	7.1	2-Mar	37.4	8.9		48.8	14.5
1993				26-Jan	31.6	8.5	1-Mar	51.0	13.1	30-Mar	38.9	13.0
1994				25-Jan	23.3	5.3				30-Mar	44.5	13.8
1995				26-Jan	35.4	8.8					32.6	11.0
1996				30-Jan	23.0	5.3				28-Mar	32.8	9.4
Average		22.1	4.6		28.4	6.9		34.6	9.4		36.0	11.5
Min		10.8	1.4		3.2	0.8		5.0	1.4		9.4	3.2
Max		51.2	10.8		46.2	12.5		52.2	14.6		52.1	16.4
StdDevn			2.7			2.7			3.5			3.6

Station Name	HERON RESERVOIR
Station ID	USBOR Station
State	NEW MEXICO
County	RIO ARRIBA
Latitude	36:42:00
Longitude	106:40:30
Elevation	7240

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
EVAP TOT DAY IN	Sum	1976	1994	19					

Parameter: Evaporation

Year	April	May	June	July	Aug	Sept	Oct	Nov
1976		0.21	0.36	0.33	0.25	0.17	0.13	
1977	0.14	0.24	0.27	0.25	0.29	0.25	0.16	1.76
1978	0.21	0.21	0.32	0.33	0.28	0.22	0.14	
1979	0.15	0.19	0.28	0.28	0.25	0.22	0.16	
1980	0.14	0.22	0.33	0.31	0.26	0.21	0.12	
1981	0.19	0.21	0.35	0.28	0.28	0.18	0.11	
1982	0.19	0.21	0.27	0.27	0.19	0.12	0.11	
1983	0.15	0.22	0.23	0.24	0.20	0.17	0.08	
1984	0.14	0.26	0.23	0.25	0.21	0.20	0.06	
1985	0.13	0.17	0.25	0.23	0.22	0.15	0.09	
1986	0.13	0.20	0.20	0.22	0.21	0.13	0.09	
1987	0.15	0.15	0.23	0.26	0.19	0.18	0.12	
1988	0.15	0.20	0.23	0.25	0.19	0.16	0.12	
1989	0.19	0.26	0.28	0.26	0.22	0.20	0.12	
1990	0.14	0.22	0.31	0.22	0.19	0.17	0.10	
1991	0.14	0.22	0.31	0.22	0.19	0.17	0.10	
1992	0.15	0.18	0.23	0.24	0.19	0.17	0.11	
1993	0.16	0.17	0.25	0.30	0.20	0.17	0.10	
1994	0.12	0.18	0.26	0.28	0.21	0.15	0.09	
Avg	0.15	0.21	0.27	0.26	0.22	0.18	0.11	1.76
Min	0.12	0.15	0.20	0.22	0.19	0.12	0.06	1.76
Max	0.21	0.26	0.36	0.33	0.29	0.25	0.16	1.76

Station Name	NORTH COSTILLA
Station ID	NRCS, 05N16S
State	NEW MEXICO
County	TAOS
Latitude	37:00:00
Longitude	105:15:00
Elevation	10600

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1977	1996	20	64	80	4.3	11.0	0.0

Parameter: Snow Water Equivalent (inches)

	January			February			March			April		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1977							25-Feb	12.0	2.0			
1978				30-Jan	14.0	3.4	27-Feb	20.0	4.6	30-Mar	23.0	7.0
1979				29-Jan	34.0	6.4	23-Feb	29.0	5.8	27-Mar	37.0	11.0
1980				29-Jan	17.0	3.4	27-Feb	21.0	5.0	27-Mar	29.0	6.4
1981	30-Dec	6.3	0.8	26-Jan	0.0	0.0	26-Feb	0.0	0.0	8-Apr	6.1	3.3
1982	29-Dec	16.8	2.5	27-Jan	8.9	2.2	24-Feb	11.7	3.3	30-Mar	18.6	5.2
1983	29-Dec	16.7	2.3	26-Jan	20.1	3.6	22-Feb	29.2	5.8	28-Mar	42.5	10.7
1984	26-Dec	10.3	3.2	26-Jan	17.0	3.7	24-Feb	21.9	5.0	27-Mar	28.2	6.9
1985				28-Jan	21.3	4.5				25-Mar	22.2	7.1
1986				29-Jan	8.6	2.0	27-Feb	3.5	1.3	24-Mar	2.6	1.0
1987	29-Dec	14.2	2.9	26-Jan	21.6	3.9	23-Feb	30.0	6.5	2-Apr	40.8	10.9
1988	5-Jan	10.1	1.9	25-Jan	13.8	2.4	28-Feb	15.2	3.4	29-Mar	6.0	2.0
1989	27-Dec	19.5	3.8	26-Jan	21.0	4.8	23-Feb	35.6	8.4	29-Mar	13.7	4.8
1990	28-Dec	10.8	1.7	29-Jan	13.8	2.5	26-Feb	16.0	3.0	27-Mar	12.4	2.9
1991	27-Dec	9.5	2.1	29-Jan	10.3	2.0	28-Feb	8.2	1.8	1-Apr	19.1	6.4
1992				27-Jan	24.6	6.1	2-Mar	34.8	7.8		32.0	8.3
1993				25-Jan	25.0	6.1	1-Mar	35.0	10.4	17-Mar	34.0	9.6
1994				26-Jan	22.6	4.5				29-Mar	34.0	10.1
1995				30-Jan	31.3	6.9					27.3	6.2
1996					8.2	1.8					14.9	4.4
Average		12.7	2.4		17.5	3.7		20.2	4.6		23.3	6.5
Min		6.3	0.8		0.0	0.0		0.0	0.0		2.6	1.0
Max		19.5	3.8		34.0	6.9		35.6	10.4		42.5	11.0
StdDevn			0.9			1.8			2.8			3.0

Station Name	OJO CALIENTE
Station ID	NOAA, 6321
State	NEW MEXICO
County	TAOS
Latitude	36:18:00
Longitude	106:03:00
Elevation	6290

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
PRECIP TOT DAY IN	Sum	1944	1982	34	11060	89	9.8	14.36	3.16
SNOW DEPTH INCHES	Sum	1949	1982	34	10867	88	24.4	51.1	1.3

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1944									0.40	1.27	1.3	1.71	4.68
1945											2.02	0.4	2.42
1946		0		1.20	0.30	2.00	1.06	0	0	1.55	1.64	0.6	8.35
1947	2.06	0.39	0.10	1.00	1.40	0.80	0.35	1.52	0	1.50	2.22	1.43	12.77
1948	1.49	0.80											2.29
1949													0
1950	0.59	0.05	0.06	0.06			0.58	0	0.31	2.19	0.55	2.11	6.5
1951	0	0	0	0.44	0.42	0.52	0.41	0.38	0	0.23	2.22	0	4.62
1952	0.54	0.34	0.83	0.35	0.03	0	0.48	1.76	0.21	1.07	1.55	0.76	7.92
1953	0	1.64	0.14	0.21	0.50	0.22	0.1	1.16	0.13	2.32	0.27	0	6.69
1954	1.62	2.05		0.12	0	1.93	0	2.76	0.07	1.53	1.72	1.2	13
1955	0.32	0	0.12	0.10	0.62	0.10	0.50	2.15	0	0.94	4.32	0.53	9.7
1956	0.08	0.40	0.53	0.69	0.32	0	0.01	0.10	0.15	0.99	0.72	0	3.99
1957	0.18	0	0	1.45	0.39	0.51	0.36	0.83	0.01	1.26	3.09	0	8.08
1958	4.43	1.98	0.05	1.75	0.05	0.99	0.87	0.41	0.18	0.60	1.98	1.39	14.68
1959	0.50	0.55	0.01	0.12	0.27	0.89	0.51	1.38	0.95	1.20	2.32	0	8.7
1960	2.37	0.22	0.72	0.65	0.61	0.44	0.17	0.08	0.27	0.71	0.75	0.24	7.23
1961	2.05	0.20	0.95	0.52	0.22	0.88	1.23	0.09	0.36	0.63	3.58	2.07	12.78
1962	1.15	0.20	0.18		0.15	0.27	0.05	0.04	0.22	1.79	0.38	1.77	6.2
1963	0.86	1.63	0.37	0.35	1.44	1.13	0.04	0.14	0.36	1.51	1.37	0.73	9.93
1964	0.87	0.72	0	0.04	0.54	0.35			0.21	1.12	1.65	3.39	8.89
1965	0	0.13	1.69	1.93	0.23	0.44		0.89		1.52	2.24	2.03	11.1
1966		0.56						0.01	2.46	1.39	2.84	0.03	7.29
1967	0.20	0.17	1.60	0.15	0.30	0.47	0	0.52	1.59	1.48	6.98	0.79	14.25
1968	0.12						0.38			2.01		0.04	2.55
1969	0.27	0.37	0.19	0.75	0.46	0.33		1.32	0.96	1.32	1.57	1.93	9.47
1970	2.48	0.23	0.66	0.11	0.17	0.75	0.17	0.28	0.37	2.75	1.31	0.95	10.23
1971	0.19	0.25	0.03	0.46	0.28	0.24	0.76	0.10	0	2.77	2.38	2.92	10.38
1972	1.38	0.50	1.22	0.04	0.02	0.15	0	1.17	0.39	1.08	2.04	0.95	8.94
1973	3.19	1.05	0.15	0.37	0.55	1.40	0.19	0.53	0.29	2.12	0.54	1.01	11.39
1974	0.50	0.34	0.18	2.05	0.04	0.32	0.52	0.07	0.38	2.37	1.01	0.21	7.99
1975	2.29	0.61	0.62	0.36	0.64	0.44	0.59	0.18	0.19	2.85	2.81	2.54	14.12
1976	0.10	1.11	0.11	0.04	0.43	0.28	0.71	0.73	0.18	2.88	1.91	1.11	9.59
1977	0.10	0.39	0.03	0.68	0.04	0.41	2.04	1.12	0.81	1.10	3.38	1.16	11.26
1978	0.21	1.54	0.07	0.50	1.06	1.52	0.22	1.53	0.77	0.46	0.4	0.88	9.16
1979	0.95	2.28	0.93	1.77	0.39	0.55	1.10	2.43	1.45	1.34	1.34	0.16	14.69
1980	0.35	0.41	0.68	1.36	0.95	1.30	1.38	0.44	0.05	1.31	1.49	0.63	10.35

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1981	1.00	0.49	0.27	0.06	0	0.99	1.10	0.59	1.76	1.62	3.18	0.88	11.94
1982	0.87					0.90							1.77
AvgMonth	0.98	0.64	0.42	0.63	0.41	0.67	0.53	0.77	0.47	1.51	1.97	1.02	
StdDevn	1.05	0.64	0.48	0.62	0.38	0.52	0.49	0.76	0.59	0.69	1.31	0.89	

Figure A-7. NOAA Station Ojo Caliente
Annual Precipitation 1944-1982

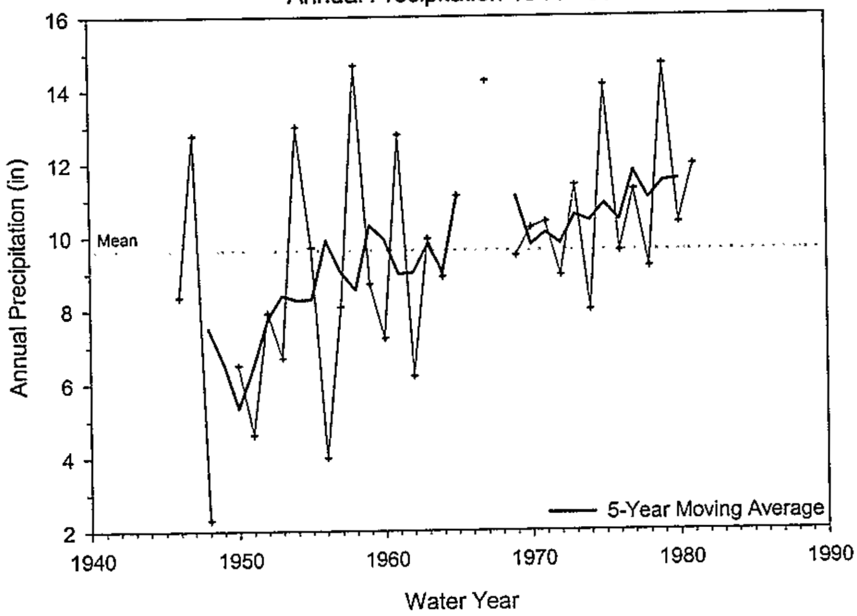
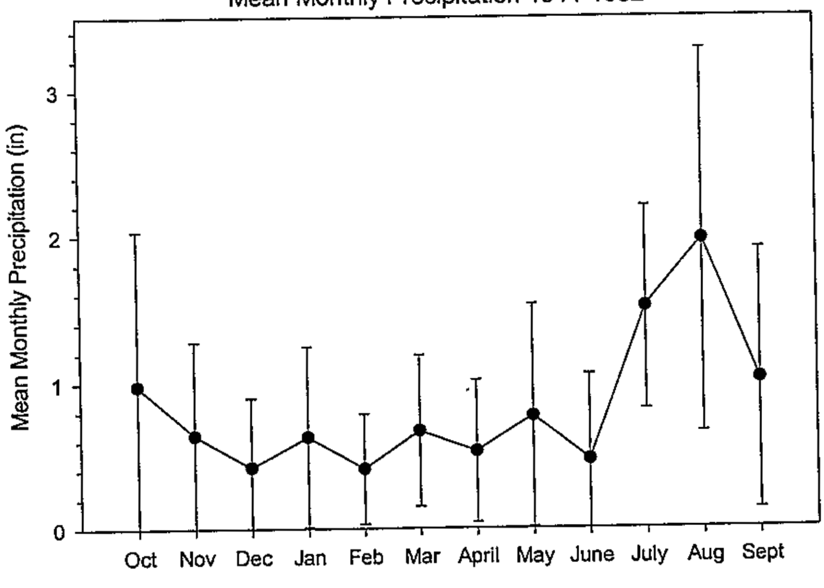


Figure A-8. NOAA Station Ojo Caliente
Mean Monthly Precipitation 1944-1982



Station Name	PALO FLECHADO
Station ID	NRCS, 05N13
State	NEW MEXICO
County	TAOS
Latitude	36:24:00
Longitude	105:19:00
Elevation	9300

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1972	1996	25	72	96	7.0	12.3	0.6

Parameter: Snow Water Equivalent

	February			March			April			May		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1972	26-Jan	18.0	4.3	24-Feb	17.0	4.5	29-Mar	4.0	1.0			
1973	30-Jan	24.0	6.7	23-Feb	28.0	7.4	29-Mar	44.0	10.4			
1974	29-Jan	29.0	6.8	26-Feb	28.0	7.6	26-Mar	19.0	6.6			
1975	28-Jan	20.0	5.0	25-Feb	33.0	8.4	26-Mar	33.0	9.7			
1976	27-Jan	26.0	6.9	25-Feb	29.0	9.2	30-Mar	27.0	8.0			
1977	25-Jan	17.5	3.3	22-Feb	17.5	3.2	28-Mar	11.7	3.7			
1978	27-Jan	20.3	9.1	23-Feb	24.0	6.0	28-Mar	21.5	6.4			
1979	31-Jan	33.6	7.2	22-Feb	41.3	9.7	28-Mar	30.6	9.7	27-Apr	7.5	2.7
1980	30-Jan	34.1	6.4	28-Feb	31.0	9.3	28-Mar	38.4	10.8	28-Apr	21.2	7.0
1981	28-Jan	3.9	0.6	25-Feb	6.9	1.4	26-Mar	11.5	3.4			
1982	26-Jan	19.9	5.3	23-Feb	28.9	8.7	29-Mar	27.5	9.1			
1983	27-Jan	21.2	4.3	24-Feb	26.0	6.1	29-Mar	35.5	10.0			
1984	27-Jan	31.0	8.7	27-Feb	34.6	10.0	26-Mar	36.8	11.6			
1985	29-Jan	34.0	7.1	27-Feb	31.5	9.2	26-Mar	33.7	11.1			
1986	27-Jan	13.2	3.4	23-Feb	20.6	4.6	26-Mar	18.1	5.3			
1987	30-Jan	19.0	5.2	25-Feb	31.6	7.0	25-Mar	38.2	10.2			
1988	28-Jan	20.7	4.9	26-Feb	20.2	6.0	30-Mar	14.4	4.7			
1989	27-Jan	27.4	5.5	28-Feb	31.6	9.7	27-Mar	20.3	7.5			
1990	31-Jan	18.4	4.2	27-Feb	27.1	6.8	29-Mar	25.9	7.6			
1991	28-Jan	23.5	6.3	26-Feb	23.9	6.7	26-Mar	36.9	9.5			
1992	28-Jan	20.7	5.4	24-Feb	26.0	6.0		26.2	7.7			
1993	27-Jan	26.4	6.8	24-Feb	37.7	9.3	29-Mar	32.7	10.9			
1994	27-Jan	28.1	5.6	24-Feb	37.1	8.9	28-Mar	46.2	12.3			
1995	31-Jan	24.3	4.9	28-Feb	24.1	9.9						
1996		15.7	3.0		21.3	6.3						
Average		22.8	5.5		27.1	7.3		27.5	8.1		14.4	4.9
Min		3.9	0.6		6.9	1.4		4.0	1.0		7.5	2.7
Max		34.1	9.1		41.3	10.0		46.2	12.3		21.2	7.0
StdDevn			1.8			2.3			3.0			3.0

Station Name	PENASCO RANGER STATION
Station ID	NOAA, 6705
State	NEW MEXICO
County	TAOS
Latitude	36:10:00
Longitude	105:41:00
Elevation	7920

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1967	1976	4	125	9			
AIR TEMP FAHN	Maximum	1967	1976	4	124	8			
PRECIP TOT DAY IN	Sum	1929	1976	29	9510	90	14.3	20.81	8.01
SNOW DEPTH INCHES	Sum	1948	1976	29	8950	84	38.39	98	0

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1929									0.34	3.39	4.74	3.40	11.87
1930	1.33	1.08		1.12	1.07	1.02	0.66	1.31	0.36	4.95	0.96	0.84	14.70
1931	1.21	1.26	0.08	0.12	1.03	3.30	1.88	0.49	0.78	3.79	1.21	4.74	19.89
1932	1.84	1.70	0.63	1.64	1.33	2.73	0.58	1.35	0.95	1.61	1.97	1.88	18.21
1933	1.68	0.01	0.65	0.94	0.63	0.49	0.24	0.51	3.47	1.23	2.24	0.07	12.16
1934	1.58	1.41	1.27	0.70	3.19	0.06	0.73	2.43	0.84	1.89	1.71	2.60	18.41
1935	0.33	1.15	1.46	1.34	2.06	0.83	1.58	4.39	0	1.74	1.60	2.25	18.73
1936	0.99	0.73	1.33	0.86	2.30	0.66	0.06	2.66	1.12	4.20	3.00	2.54	20.45
1937	1.63	0.46	1.07	1.45	1.82	0.92	0.09	1.99	2.43	2.23	1.70	1.07	16.86
1938	1.67	0.12	0.33	0.56	1.12	0.84	1.53	1.50	2.22	1.22	1.49	2.45	15.05
1939	0.70	1.41	0.53	2.15	0.65	0.55	1.53	0.60	0.39	1.24	1.19	1.51	12.45
1940	0.72	0.82	0.51	0.81	1.66	1.67	0.75	1.86	1.07	1.39	1.75	1.97	14.98
1941	2.01	1.06	1.30	0.93	0.90	2.22	2.03	1.71	1.46	2.71	3.63	2.26	22.22
1942	2.97	1.49	1.47	0.39	0.95	1.55	4.34	0.27	0.70	0.57	1.54	4.11	20.35
1943	0.75	0.18	0.85	0.38	0.57	1.36	0.10	0.76	2.31	1.35	1.97	0.55	11.13
1944	1.36	0.80	0.73	1.23	0.56	0.58	2.19	1.04	0.10	1.36	2.21	0.35	12.51
1945	2.99	1.47	1.19	1.18	0.52	2.33	1.82	0.40	0.56	1.73	1.91	1.23	17.33
1946	0.91	0.02	0.58	0.27	0.37	1.25	1.04	0.09	0	1.20	2.10	1.00	8.83
1947	1.68	1.23	0.45	0.77	1.05	0.41	0.27	1.21	0.39	2.02	3.27	0.55	13.30
1948	0.67	1.15	1.68	0.38	1.50	2.06	1.21	1.94	1.56	1.25	2.00	0.28	15.68
1949	1.13	0.35	0.01	1.89	1.05	1.22	1.03	0.59	1.14	2.95	2.51	1.57	15.44
1950	1.45	0.24	1.46	1.03	0.38	0.44	0.53	0	1.48	2.27	0.38	1.64	11.30
1951	0	0.06	0.02	0.77	1.06	1.25	0.66	0.97	0.32	1.02	2.83	0	8.96
1952	1.40	0.13	1.40	1.89	0.47	1.11	1.30	1.03	0.01	3.77	4.37	1.35	18.23
1953	0	2.09	0.39	0.25	0.76	0.66	0.78	1.52	0.65	2.58	0.76	0.23	10.67
1954	1.79	2.15	0.68	1.11	0.59	1.83	0	2.12	0.76	1.58	1.19	0.60	14.40
1955	0.76	0.33	0	1.10	0.92	0.06	1.12	3.64	0.12	3.56	3.51	0.17	15.29
1956	0.07	0.28	0.89	1.55	0.50	0.06	0.09	0.44	0.58	1.77	1.08	0	7.31
1957	0.78	0.76	0.40	2.64	0.57	1.34	1.03	2.17	0.23	2.69	4.04	0	16.65
1958	4.24	1.53	0.33	0.64	0.98	1.56	1.38	0.99	0.47	1.02	1.81	1.67	16.62
1959	1.11	1.38	0.04	0.26	0.39	1.05	1.17	1.51	2.18	1.09	3.09	0.60	13.87
1960	1.13	0.40	1.49	1.94	0.82	1.24	0.99	0.82	1.37	2.23	0.62	0.97	14.02
1961	1.28	1.06	1.06	0.30	0.51	2.18	1.67	0.07	1.44	2.08	4.19	2.31	18.15
1962	0.66	0.72	1.88	0.95	1.03	1.41	0.04	0.34	0.52	1.96	0.55	3.13	13.19
1963	1.05	1.60	0.46	0.69	2.08	1.90	0.29	0.06	0.84	2.33	2.87	1.51	15.68

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1964	0.72	0.48	0.26	0.57	1.18	1.32	0.94	0.83	0.20	1.39	1.52	1.86	11.27
1965	0.07	1.14	1.60	1.58	0.82	1.58	1.29	1.33	2.35	1.80	2.10	2.01	17.67
1966	0.95	1.12	1.93	0.78	0.34	0.17	0.37	0.20	3.30	0.83		0.18	10.17
1967	0.41	0.53	1.47	0.34	0.53	1.59	0.30	0.47	1.23	1.66	7.23	0.98	16.74
1968	0.20	0.39	1.17	0.14	0.40	0.81	0.42	1.31	0.06	2.84	5.12	0.38	13.24
1969	0.29	0.98	1.00	1.44	0.67	0.40	1.23	0.87		2.07	2.61	1.71	13.27
1970	1.54	0.77	1.41	0.10	0.50	0.59	0.69	0.45	1.04	3.22	1.90	2.06	14.27
1971	1.19			0.84	0.38	0.20	0.57	0.37	0.06	2.45	3.85	2.14	12.05
1972	2.72	1.23	0.69		0.37	0.20	0.29	1.27	2.06	1.77	3.24	0.86	14.70
1973	2.02	2.06	1.03	1	0.36	1.88		1.78	0.70	2.06		1.19	14.08
1974	0.84	0.42		1.83	0.51	0.18				1.87	2.24		7.89
1975				0.66				0.31			1.62		2.59
1976					0.85								0.85
AvgMonth	1.22	0.90	0.89	0.97	0.92	1.13	0.95	1.15	1.00	2.09	2.39	1.44	
StdDevn	0.85	0.59	0.55	0.60	0.60	0.76	0.79	0.93	0.88	0.95	1.36	1.10	

Figure A-9. NOAA Station Penasco Ranger Station
Annual Precipitation 1929-1976

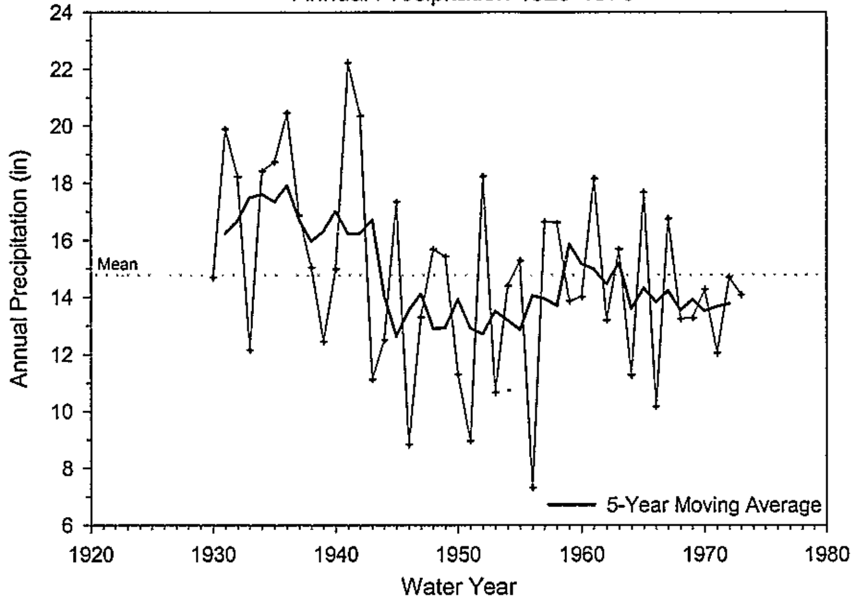
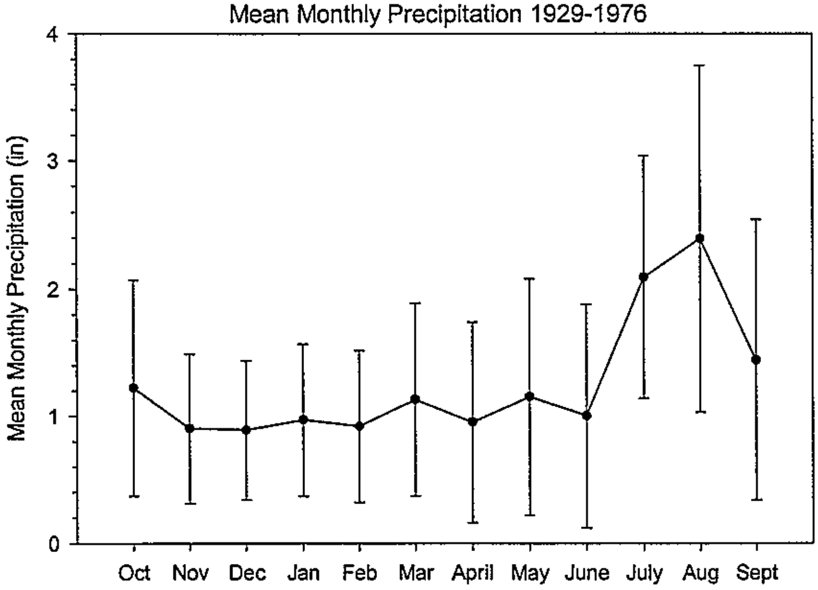


Figure A-10. NOAA Station Penasco Ranger Station
Mean Monthly Precipitation 1929-1976



Station Name	PLATORO
Station ID	NOAA, 6559
State	COLORADO
County	CONEJOS
Latitude	37:21:00
Longitude	106:32:00
Elevation	9840

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1949	1991	18	4170	63	16.44	16.83	16.05
AIR TEMP FAHN	Maximum	1949	1991	18	4162	63	49.76	50.5	49.02
EVAP TOT DAY IN	Sum	1950	1959	10	1437	39			
PRECIP TOT DAY IN	Sum	1949	1991	18	4087	62	22.94	26.06	19.81
SNOW DEPTH INCHES	Sum	1951	1991	16	3523	60	255.85	293.6	218.1

Parameter: Evaporation

	April	May	June	July	Aug	Sept	Oct	Nov
1950				0.15	0.19			
1951			0.30	0.27	0.21	0.23		
1952			0.30	0.23	0.16	0.16	0.13	
1953		0.19	0.29	0.20	0.19	0.22	0.10	
1954		0.20	0.31	0.18	0.20	0.19	0.14	
1955		0.17	0.26	0.23	0.16	0.19	0.14	
1956		0.23	0.30	0.23	0.20	0.23	0.11	
1957			0.26	0.20	0.15	0.17	0.06	
1958		0.19	0.31	0.30	0.17	0.15	0.14	
1959		0.21	0.23					
Avg		0.20	0.28	0.22	0.18	0.19	0.12	
Min		0.17	0.23	0.15	0.15	0.15	0.06	
Max		0.23	0.31	0.30	0.21	0.23	0.14	

Station Name	RED RIVER
Station ID	NOAA, 7323
State	NEW MEXICO
County	TAOS
Latitude	36:42:00
Longitude	105:24:00
Elevation	8680

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	48	17168	98	22.68	25.98	19.39
AIR TEMP FAHN	Maximum	1948	1995	48	17265	98	55.66	58.89	53.32
PRECIP TOT DAY IN	Sum	1906	1995	48	17372	99	20.47	29.01	11.61
SNOW DEPTH INCHES	Sum	1948	1995	48	17326	99	147.89	259	71.3

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1906									0.24	4.39	0.39	1.50	6.52
1907	1.60	1.66	1.50	2.44	0.55	1.00	4.15	3.08	0.73	3.50	6.10		26.31
1908	0.95	0.90			2.70	0.13	4.40						9.08
1909											4.87	1.00	5.87
1910	0.90	1.90	2.26	3.30	1.71	1.12	1.46	1.00	0.90	0.90	3.40	0.60	19.45
1911	1.05	1.06	1.37	1.07	4.02	1.12	0.97	0.08	1.30	5.80	1.16	1.90	20.90
1912	3.50	1.62	1.62	0.37	0.96	6.36	3.71	1.41	1.50	3.40	1.70	1.20	27.35
1913	0.78	0.63	0.30	1.07	3.12	2.98	0.85	0.40	4.40	2.60	3.13	2.40	22.66
1914	0.60	0.80	2.40	1.04	1.12	0.86	3.80	2.70	0.90	7.80	6.10	0.50	28.62
1915	1.70	0.00	1.61	1.26	2.51	2.24	3.09	4.18	0.40	0.80	1.00	1.00	19.79
1916	0.46	0.66	1.28	4.70	0.28	1.70	2.52	0.43	0.04	4.86	2.23	0.64	19.80
1917	3.55	0.10	0.39	1.29	0.31	1.31	2.37	3.70	1.16	4.55	1.58	1.12	21.43
1918	0.25	0.33	0.00	2.57	2.06	2.96	0.70	0.93	1.84	3.77	2.16	2.35	19.92
1919	1.78	0.85	1.81	0.05	2.74	2.82	2.01	2.90	1.78	5.29	2.20	2.14	26.37
1920	2.97	1.48	1.23	0.33	0.80	2.53	2.42	2.50	1.59	2.96	4.55	1.73	25.09
1921	1.48	0.43	1.10	1.13	1.01	1.98	3.24	3.24	4.37	5.16	2.53	1.10	26.77
1922	1.00	0.11	0.95	1.65	0.90	1.68	1.42	1.35	1.27	2.34	2.73	0.92	16.32
1923	1.19	1.45	0.89	0.62	1.15	2.15	1.44	0.70	1.81	2.80	3.09	3.15	20.44
1924	2.91	1.08	1.97	0.81	1.19	5.23	3.06	0.67	0.60	4.35	1.72	2.03	25.62
1925	0.57	0.52	3.75	0.66	1.22	1.27	0.12	1.32	1.52	5.56	2.47	1.01	19.99
1926	2.79	2.07	0.98	0.90	0.81	2.69	2.58	1.87	1.95	4.50	1.95	1.28	24.37
1927	0.83	0.28	1.48	1.20	2.21	4.32	1.63	0.14	3.17	4.57	4.43	4.08	28.34
1928	0.50	0.37	0.93	0.35	1.85	2.94	2.65	2.18	0.61	1.63	2.84	0.10	16.95
1929	1.23	1.85	0.72	1.00	1.67	1.12	0.59	3.45	0.04	5.66	5.07	4.38	26.78
1930	1.40	1.10	0.25	1.93	0.93	2.48	1.37	1.59	0.25	7.20	4.08	0.90	23.48
1931	0.97	1.26	0.13	0.13	2.21	1.79	1.44	1.51	2.36	3.18	2.25	4.68	21.91
1932	1.64	2.38	0.67	1.96	1.44	2.29	1.66	2.60	1.43	3.35	3.98	1.45	24.85
1933	1.54	0.12	1.16	1.30	0.39	0.81	1.61	1.12	3.88	2.25	1.47	0.98	16.63
1934	0.97	0.96	1.02	0.76	1.57	0.45	0.68	2.83	0.81	3.99	3.82	2.17	20.03
1935	0.19	0.76	0.30	0.95	0.73	1.17	1.75	3.72	0.06	2.27	3.33	2.47	17.70
1936	1.83	0.85	0.36	1.19	1.17	1.24	0.41	2.40	0.66	2.17	4.86	2.91	20.05
1937	1.44	0.30	1.18	1.45	1.82	0.92	0.09	1.99	2.43	2.23	1.70	1.07	16.62
1938	1.67	0.12	0.33	0.64	2.18	2.20	1.85	2.21	2.71	1.30	3.16	2.74	21.11
1939	0.93	1.25	0.98	0.91	0.59	0.67	1.71	1.03	0.28	1.15	1.51	2.34	13.35
1940	0.91	1.16	0.53	1.02	1.18	0.72	1.27	2.54	0.80	3.74	2.97	3.34	20.18
1941	2.66	0.86	2.05	0.85	0.57	3.10	1.63	2.83	3.01	2.81	3.00	1.65	25.02

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1942	4.21	0.82	1.20	0.22	1.30	1.55	6.50	0.20	1.30	1.15	1.15	1.14	20.74
1943	0.64	0.00	1.15	0.75	1.25	1.00	0.65	2.05	1.20	2.82	5.45	0.62	17.58
1944	2.60	1.37	0.93	1.56	0.44	1.20	4.40	0.02	0.04	0.86	0.93	0.06	14.41
1945	1.85	1.40	0.95	1.35	0.80	2.85	3.70	1.25	0.60	1.10	3.40	0.65	19.90
1946	0.90	0.00	1.03	0.62	0.74	1.78	0.20	0.80	0.25	3.61	6.90	1.55	18.38
1947	2.25	2.98	1.15	0.46	0.28	1.56	1.63	0.30	1.00		2.97	1.30	15.88
1948	1.15	1.48	1.13	1.04	3.87	2.22	0.14	0.89	1.30	2.30	1.45	0.70	17.67
1949	0.90	0.02	2.51	2.95	1.40	1.45	1.50	1.10	1.80	3.87	3.56	2.08	23.14
1950	0.10	0.00	0.78	1.35	0.00	0.20	0.00	0.08	3.23	4.00	1.80		11.54
1951	0.00		0.35	1.87	1.10	0.90	1.80	1.61	0.37	1.27	2.03	0.00	11.30
1952	0.83	1.55	2.03	1.07	0.76	1.33	0.99	1.96	0.16	3.16	3.45	1.36	18.65
1953	0.01	2.13	0.50	0.32	1.03	0.77	1.22	2.50	1.13	2.75	0.92	0.00	13.28
1954	2.71	2.12	0.51	0.70	0.44	2.14	0.00	2.30	0.66	3.43	1.82	0.73	17.56
1955	1.01	0.31	0.34	0.66	1.24	0.32	2.49	5.43	0.58	3.56	7.48	0.74	24.16
1956	0.14	0.22	0.35	1.32	1.04	0.67	0.56	0.76	0.70	2.12	2.00	0.10	9.98
1957	1.07	0.72	0.55	2.16	0.45	0.91	2.62	3.83	0.57	3.42	6.55	0.05	22.90
1958	4.19	1.87	0.42	0.44	0.90	1.65	1.23	1.35	0.43	1.47	2.73	1.36	18.04
1959	1.02	1.40	0.12	0.44	0.91	0.55	1.97	2.60	2.14	1.93	3.60	0.67	17.35
1960	2.06	0.44	2.25	2.38	1.19	1.33	0.78	0.82	1.18	2.51	0.78	1.64	17.36
1961	3.26	0.71	1.02	0.60	1.27	1.86	1.97	0.69	0.86	4.71	3.72	2.34	23.01
1962	1.21	1.25	2.53	0.96	1.70	1.54	0.23	0.42	0.57	1.84	0.72	2.83	15.80
1963	0.67	1.09	0.69	1.15	0.94	2.12	0.22	0.15	1.13	0.98	3.94	1.95	15.03
1964	0.69	1.05	0.43	0.68	1.64	1.18	1.21	1.41	0.88	2.12	3.12	2.20	16.61
1965	0.04	1.23	2.07	2.21	0.65	0.95	2.48	1.66	2.83	3.29	2.11	3.88	23.40
1966	1.06	1.40	2.56	0.64	0.74	0.23	1.49	0.49	2.49	5.05	8.18	0.37	24.70
1967	0.44	0.60	1.58	0.52	0.47	1.13	0.91	1.16	1.99	4.16	5.13	1.09	19.18
1968	0.34	0.05	2.23	0.51	1.14	1.02	1.66	1.75	0.07	4.03	4.18	0.49	17.47
1969	0.89	0.96	0.87	1.44	0.88	1.56	1.30	2.15	2.28	3.16	3.96	2.18	21.63
1970	3.91	0.38	0.93	0.17	0.35	2.81	1.67	0.91	1.99	1.35	3.10	2.34	19.91
1971	1.68	1.07	0.55	0.45	0.90	0.54	0.86	1.45	1.33	4.02	3.45	2.39	18.69
1972	4.05	1.53	2.46	0.50	0.25	0.51	0.27	1.03	1.72	3.63	2.16	1.47	19.58
1973	2.86	1.60	2.05	0.58	0.23	3.69	2.35	2.12	0.68	1.26	1.08	1.45	19.95
1974	0.90	0.53	0.48	1.74	0.16	1.36	1.20	0.37	3.05	3.28	3.10	1.24	17.41
1975	2.14	0.76	1.46	2.39	1.30	3.61	1.57	0.32	0.53	4.84	1.86	2.16	22.94
1976	0.37	3.20	0.78	0.28	1.92	2.42	1.65	0.84	1.48	1.92	2.21	1.34	18.41
1977	0.77	1.10	0.19	1.63	0.57	0.78	1.97	0.87	1.82	3.77	1.84	2.64	17.95
1978	0.79	2.73	0.55	0.80	0.77	2.34	0.66	2.70	0.85	1.24	1.46	0.75	15.64
1979	1.33	4.00	3.40	2.45	1.05	1.94	2.25	4.63	3.00	1.83	2.47	0.93	29.28
1980	1.37	1.23	1.04	1.32	1.49	3.01	1.94	2.19	0.00	1.52	1.50	1.60	18.21
1981	2.43	0.60	0.22	0.61	0.27	2.43	1.34	3.25	1.93	2.92	3.89	0.72	20.61
1982	0.92	0.64	0.66	1.19	1.43	1.52	0.85	2.94	0.95	2.77	6.22	2.46	22.55
1983	1.09	2.33	1.66	1.10	1.27	2.91	2.51	1.50	2.47	4.32	2.72	1.06	24.94
1984	1.00	2.32	1.45	0.73	1.44	2.80	2.78	0.73	1.22	1.54	4.38	0.75	21.14
1985	3.74	0.46	2.61	1.48	0.71	3.27	3.22	2.76	1.17	4.14	2.39	2.88	28.83
1986	2.64	1.63	0.49	0.43	1.28	1.29	4.23	2.03	4.27	2.10	2.06	3.71	26.16
1987	1.47	1.95	0.71	1.81	2.72	2.04	1.20	1.97	1.66	0.51	3.14	0.76	19.94
1988	0.70	1.45	1.56	0.83	0.77	1.30	1.51	2.12	2.40	2.90	4.46	3.15	23.15
1989	0.80	2.00	0.83	1.45	2.76	0.65	0.51	1.07	1.55	2.46	2.46	1.86	18.40
1990	3.79	0.06	2.00	1.30	1.63	2.97	2.12	1.18	0.70	3.66	2.90	3.07	25.38
1991	2.21	2.92	2.75	0.51	0.42	3.59	0.55	2.50	1.61	4.51	5.32	2.76	29.65
1992	0.65	3.31	1.27	0.55	0.65	3.22	0.76	3.10	1.52	2.13	2.91	0.48	20.55

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1993	0.60	1.71	2.15	1.64	3.02	1.62	1.40	2.83	0.51	1.57	6.33	1.21	24.59
1994	1.28	1.75	0.81	0.90	1.63	2.87	3.93	2.98	1.36	1.68	4.29	1.48	24.96
1995	3.11	4.25	0.53	1.33	0.71	1.77	2.58	5.13	1.00	1.28	2.14	3.33	27.16
AvgMonth	1.50	1.19	1.19	1.14	1.23	1.84	1.75	1.81	1.40	3.04	3.12	1.64	
StdDevn	1.08	0.91	0.80	0.77	0.81	1.12	1.20	1.20	1.03	1.48	1.64	1.06	

Figure A-11. NOAA Station Red River
Annual Precipitation 1906-1995

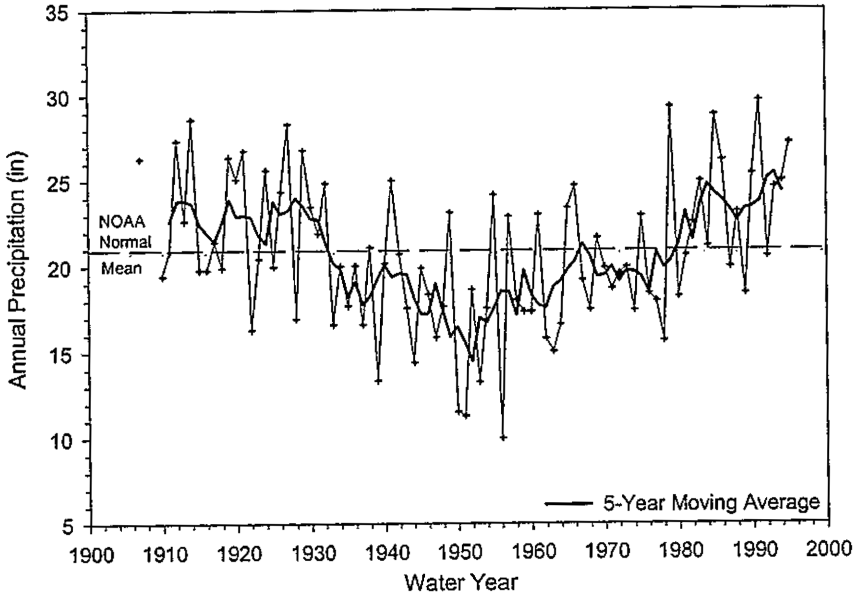
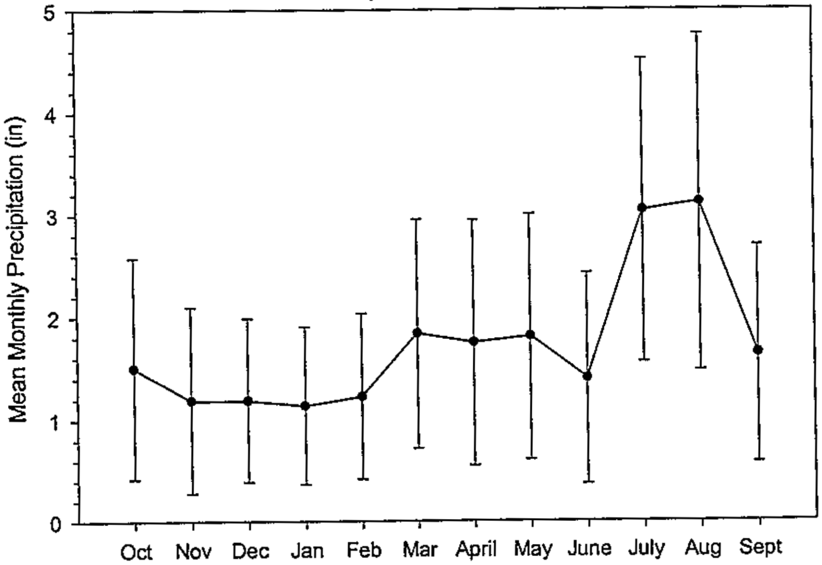


Figure A-12. NOAA Station Red River
Mean Monthly Precipitation 1906-1995



Station Name	RED RIVER PASS
Station ID	NRCS, 05N11S
State	NEW MEXICO
County	TAOS
Latitude	36:42:00
Longitude	105:20:00
Elevation	9850

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1967	1996	30	114	76	4.9	12.4	0.0

Parameter: Snow Water Equivalent

	Jan			Feb			March			April			May		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1967				25-Jan	16.0	1.8	23-Feb	14.0	2.9	28-Mar	5.0	1.3			
1968				29-Jan	20.0	4.0	26-Feb	24.0	5.9	27-Mar	28.0	9.2			
1969				27-Jan	16.0	2.7	25-Feb	20.0	5.4	26-Mar	29.0	8.1			
1970				28-Jan	11.0	2.5	25-Feb	13.0	3.0	30-Mar	27.0	5.6			
1971				26-Jan	13.0	2.9	22-Feb	15.0	3.7	29-Mar	0.0	0.0			
1972				25-Jan	21.0	5.2	23-Feb	21.0	5.3	30-Mar	4.0	1.0			
1973				29-Jan	28.0	6.7	22-Feb	30.0	7.1	28-Mar	37.0	9.3	27-Apr	29.0	10.0
1974				28-Jan	22.0	4.9	25-Feb	21.0	5.5	25-Mar	13.0	4.7			
1975				27-Jan	21.0	4.1	25-Feb	30.0	7.9	26-Mar	31.0	9.1	30-Apr	16.0	6.3
1976	29-Dec	19.0	5.0	27-Jan	22.0	6.3	25-Feb	27.0	9.0	30-Mar	26.0	7.9			
1977	29-Dec	12.3	2.6	25-Jan	18.4	3.5	23-Feb	14.6	3.5	30-Mar	10.0	3.1	29-Apr	0.0	0.0
1978	29-Dec	25.8	6.4	26-Jan	20.0	3.8	22-Feb	23.0	5.4	30-Mar	20.0	7.2	28-Apr	0.0	0.0
1979	27-Dec	17.4	2.3	31-Jan	39.5	9.6	22-Feb	41.8	10.7	28-Mar	40.0	11.0	27-Apr	16.9	6.1
1980	29-Dec	6.9	1.2	30-Jan	23.3	4.9	28-Feb	25.2	6.1	28-Mar	34.9	8.9	28-Apr	16.0	5.3
1981	29-Dec	7.5	1.2	28-Jan	7.2	1.4	25-Feb	6.2	1.7	26-Mar	12.0	3.9	28-Apr	0.0	0.0
1982	30-Dec	21.6	4.2	26-Jan	16.4	3.6	23-Feb	22.0	6.3	29-Mar	21.1	5.5	29-Apr	0.0	0.0
1983	28-Dec	23.4	4.1	27-Jan	22.7	4.9	24-Feb	28.2	6.5	29-Mar	36.0	9.4	27-Apr	24.0	8.0
1984	27-Dec	14.0	3.4	27-Jan	24.3	5.7	27-Feb	27.8	6.6	26-Mar	30.8	8.8	26-Apr	21.1	4.9
1985	1-Jan	12.9	2.8	29-Jan	24.1	5.1	28-Feb	25.1	6.9	26-Mar	28.8	9.9	29-Apr	10.1	1.8
1986	1-Jan	12.9	2.8	30-Jan	14.0	3.6	23-Feb	20.8	4.6	24-Mar	16.3	4.9	28-Apr	0.0	0.0
1987	31-Dec	12.8	2.6	30-Jan	21.9	5.8	26-Feb	47.5	9.0	26-Mar	40.0	9.7			
1988	29-Dec	14.0	3.0	29-Jan	19.0	4.4	25-Feb	19.8	5.0	30-Mar	11.9	3.8			
1989	28-Dec	19.3	3.9	27-Jan	23.9	5.0	28-Feb	31.5	9.5	27-Mar	16.1	6.1			
1990	28-Dec	10.6	2.7	31-Jan	15.4	2.8	27-Feb	20.0	4.6	29-Mar	22.6	5.5			
1991	27-Dec	21.2	3.1	28-Jan	25.4	6.1	26-Feb	25.0	6.4	26-Mar	37.0	9.3			
1992				28-Jan	22.8	5.0	2-Mar	32.6	7.8		30.0	7.5			
1993				27-Jan	29.2	7.6	1-Mar	39.0	12.4	29-Mar	25.2	9.3			
1994				27-Jan	24.7	5.0	28-Feb	32.7	11.0						
1995				31-Jan	28.1	5.6				27-Mar	28.3	7.6			
1996					14.8	3.1				28-Mar	12.5	4.1			
Avg		15.7	3.2		20.8	4.6		24.9	6.4		23.2	6.6		11.1	3.5
Min		6.9	1.2		7.2	1.4		6.2	1.7		0.0	0.0		0.0	0.0
Max		25.8	6.4		39.5	9.6		47.5	12.4		40.0	11.0		29.0	10.0
StdD			1.3			1.7			2.6			3.0			3.6

Station Name	SKARDA
Station ID	NOAA, 8352
State	NEW MEXICO
County	TAOS
Latitude	36:46:00
Longitude	105:58:00
Elevation	8280

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1968	1968	1	1	0			
AIR TEMP FAHN	Maximum	1968	1968	1	1	0			
PRECIP TOT DAY IN	Sum	1940	1983	36	12924	98	13.46	22.8	6.32
SNOW DEPTH INCHES	Sum	1948	1983	36	12813	97	60.09	126.5	16

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1940										1.67	1.12	2.82	5.61
1941	0.75	2.44	1.93	0.78	0.83	0.53	1.34	3.09	3.04	2.75	1.24	2.28	21.00
1942	2.55	0.53	0.98	0.04	0.70	0.67	1.82	0.27	1.24	2.90	2.70	0.77	15.17
1943	0.36	0.00	0.76	0.37	0.32	0.16	0.04	0.79	1.67	1.96	3.75	2.14	12.32
1944	0.61	0.31	1.80	0.56	0.33	0.62	1.55	0.89	0.30	1.84	2.18	1.05	12.04
1945	0.94	0.68	0.69	0.89	0.26	0.69	1.76	0.06	0.19	1.21	3.30	0.69	11.36
1946	0.86	0.10	0.80	0.25	0.28	0.85	0.54	0.81	0.00	2.18	3.83		10.50
1947	1.89	0.76	0.28	0.48	0.26	0.09	0.67	1.40	0.82	2.20	3.89	0.87	13.61
1948	0.90	0.54	1.12	1.40	2.69	1.33	0.55	1.48	1.32	1.02	2.00	0.34	14.69
1949	1.32	0.35	0.32	1.49	0.40	1.44	1.00	2.03	2.72	2.82	0.89	2.15	16.93
1950	0.43	0.45	0.30	0.67	0.17	0.17	1.28	0.28	1.07	2.66	2.34	1.83	11.65
1951	0.41	0.70	0.00	0.42	0.29	0.73	1.19	0.59	0.00	1.01	3.81	0.31	9.46
1952	0.91	0.88	2.39	0.82	0.51	0.32	1.09	2.39	0.32	3.15	2.42	1.77	16.97
1953	0.00	2.83	0.66	0.24	0.32	0.21	0.40	0.92	0.77	3.98	0.77	0.00	11.10
1954	1.54	0.97	0.66	0.49	0.18	0.63	0.32	0.79	0.24	2.38	1.14	0.82	10.16
1955	0.33	0.00		0.52	0.31	0.00	0.99	2.67	0.00	1.61	3.31	0.10	9.84
1956	0.03	0.31	0.34	0.46	0.38	0.22	0.00	0.56	0.71	1.79	1.48	0.00	6.28
1957	0.34	0.25	0.13	1.21	0.18	0.90	2.39	2.03	0.43	5.00	3.46	0.04	16.36
1958	2.61	1.95	0.00	0.90	0.50	1.36	2.38	0.95	0.35	0.90	6.55	1.92	20.37
1959	0.65	1.13	0.17	0.05	0.65	0.74	1.36	1.30	1.12	0.76	3.52	0.63	12.08
1960	2.74	0.00	1.64	0.59	0.76	0.75	0.69	0.49	1.23	1.28	1.26	1.74	13.17
1961	2.59	0.47	0.90	0.08	0.64	1.72	0.91	0.00	0.66	2.22	3.44	1.61	15.24
1962	2.08	0.52	0.64	0.37	0.33	0.69	0.15	0.02	0.93	1.21	0.63	2.12	9.69
1963	0.75	0.38	0.29	0.44	1.67	1.05	0.23	0.45	0.98	1.31	2.72	1.39	11.66
1964	0.81	0.27	0.07	0.28	0.98	0.39	0.72	0.26	1.24	2.03	3.07	2.58	12.70
1965		1.29	2.23	1.37	0.74	0.89	2.20	1.88	2.47	3.36	3.18	2.56	22.17
1966	1.55	0.90	1.70	0.22	0.20	0.00	0.25	0.41	2.21	3.77	3.22	1.37	15.80
1967	0.80	0.56	0.68	0.21	0.34	0.37	0.00	0.58	1.74	4.12	4.71	0.61	14.72
1968	0.51	0.00	1.29	0.08	0.41	0.65	0.55	1.60	0.25	3.15	4.93	0.22	13.64
1969	0.12	0.48	0.28	0.70	0.04	0.74	0.69	1.06	2.27	2.32	1.85	1.88	12.43
1970	2.64	0.08	0.18	0.07	0.34	1.17	0.40	0.64	0.19	2.21	1.34	1.55	10.81
1971	0.90	0.42	0.19	0.16	0.60	0.39	1.01	0.81	0.46	2.44	2.66	2.09	12.13
1972	2.10	0.63	1.11	0.24	0.15	0.00	0.10	1.15	0.72	2.00	2.63	2.07	12.90
1973	2.32	0.88	0.67	0.34	0.48	1.37	0.21	0.47	0.25	1.81	0.39	0.89	10.08
1974	0.75	0.17	0.37	1.17	0.00	0.47	0.11	0.50	0.82	2.19	1.93	0.73	9.21
1975	1.90	0.53	0.72	1.27	1.89	2.28	1.46	0.14	0.58	4.88	1.92	1.82	19.39

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1976	0.00	3.03	0.55	0.00	0.63		0.67	2.06	0.51	3.38	3.57	1.46	15.86
1977	0.26	0.45		0.64	0.52	0.65	0.15	0.67	1.02	4.54	1.57	2.04	12.51
1978	0.05	0.83	0.02	0.51	0.27	0.86	0.25	2.05	0.63	1.37	1.94	0.76	9.54
1979	0.86	3.20	0.67	1.08	0.31	1.00	0.33	1.78	2.52	2.35	2.31	0.51	16.92
1980	0.79	0.57	0.68	1.20	1.28	1.14	1.22	2.01	0.00	0.27	1.14	0.44	10.74
1981		0.34	0.12	0.01	0.00	1.09	0.28	1.25	2.10	2.75	2.21	1.33	11.48
1982		0.16	0.56	1.63	1.06	1.09	0.00	0.00	0.42	3.00	3.52	1.66	13.10
1983		0.76	0.94	0.48	0.53	1.03	0.94	1.17	1.58	1.54	3.25	0.90	13.12
1984	0.25	0.61	0.96										1.82
AvgMonth	1.06	0.74	0.73	0.59	0.55	0.75	0.80	1.04	0.98	2.35	2.57	1.28	
StdDevn	0.85	0.78	0.61	0.45	0.52	0.49	0.66	0.78	0.81	1.10	1.27	0.79	

Figure A-13. NOAA Station Skarda
Annual Precipitation 1940-1984

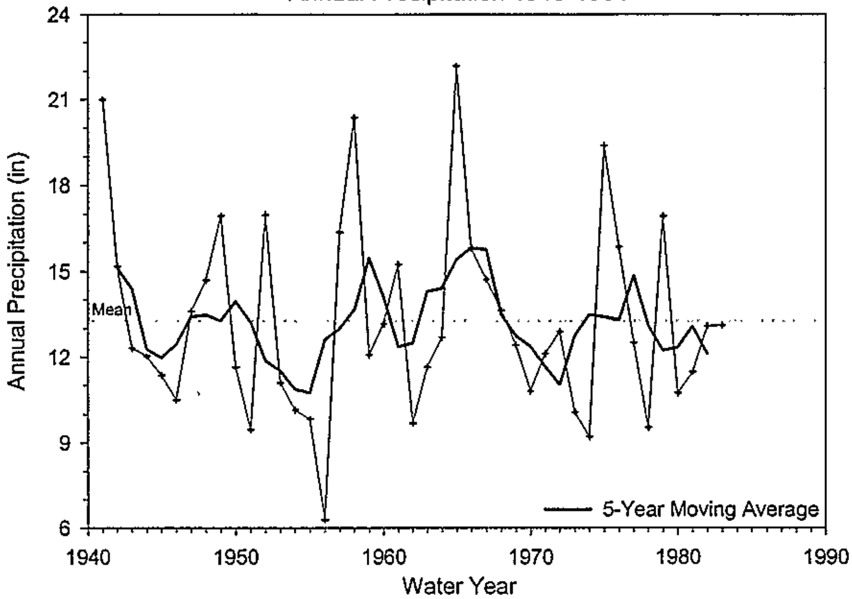
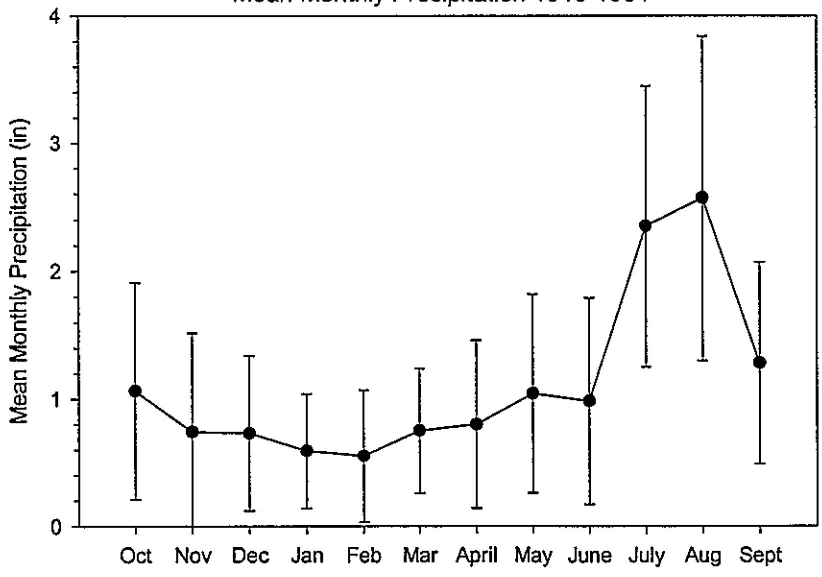


Figure A-14. NOAA Station Skarda
Mean Monthly Precipitation 1940-1984



Station Name	TAOS
Station ID	NOAA, 8668
State	NEW MEXICO
County	TAOS
Latitude	36:23:00
Longitude	105:36:00
Elevation	6970

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	48	16314	93	30.52	33.04	27.86
AIR TEMP FAHN	Maximum	1948	1995	48	16321	93	62.88	65.77	60.35
PRECIP TOT DAY IN	Sum	1889	1995	48	17355	99	12.57	22.73	7.79

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1889						0.24	1.08	0.17	1.21	2.70	1.64	1.22	8.26
1890	0.78	0.54	0.52	0.90	0.62	0.89	1.98	0.00	0.29	2.55	2.64	0.88	12.59
1891	0.79	0.80	1.39	0.39	1.34	1.01	0.00	2.85	1.34	1.17	0.40	3.55	15.03
1892	0	0.00	2.26	0.96	1.35	1.69	0.57	0.75	0.84	1.60	0.00	0.00	10.02
1893	0.85	0.27	0.65	0.97	1.32	1.05	0.00	1.62	0.00	0.70	2.29	2.09	11.81
1894	0	0.00	0.17	0.69	0.79	0.91	0.67	1.39	0.15	1.17	2.11	1.87	9.92
1895	0.93					0.26	0.21	3.60	1.18	3.84	2.20	0.26	12.48
1896	1.31	1.40	1.60	0.52	0.39	0.48							5.70
1897													0
1898													0
1899													0
1900													0
1901													0
1902		0.88	0.40	0.50	0.15	0.97	0.00	1.90	0.00	0.53	2.57	0.98	8.88
1903	0.30	2.00	0.85	0.25	1.93	1.40	1.58	0.00	3.56	0.37	2.26	0.30	14.80
1904	0.00	0.00	0.10	0.40	0.90	1.28	0.15	0.25	2.01	0.77	1.18	3.06	10.10
1905	1.26	0.21	0.30	1.16	2.09	0.64	1.80	0.47	1.27	2.94	0.68	0.97	13.79
1906	1.35	1.72	0.00	0.26	0.75	1.66	1.18	0.82	0.76	3.05	1.25	1.25	14.05
1907	0.89	0.91	0.74	1.42	0.23	0.62	1.04	1.80	0.47	1.02	5.21	0.55	14.90
1908	1.24	0.03	0.11	2.11	0.97	0.48	2.87	1.33	0.00	2.75	2.33	0.92	15.14
1909	0.46	0.69	0.40	1.06	1.04	0.46	1.55					0.90	6.56
1910	1.40	0.71	0.69	1.07	1.15	0.27	0.88	0.46	0.37	1.24	1.80	0.26	10.30
1911	0.31	0.42	0.71	0.94	2.00	1.41	0.67	1.28	1.14	2.67	1.82	2.40	15.77
1912	3.24	0.81	0.40	0.06	0.29	0.30	0.93	0.77	1.97	0.90	0.95	0.38	11.00
1913	0.28	0.20	0.04	0.31	1.00	0.72	1.16	0.33	1.52	1.02	1.34	1.88	9.80
1914	0.26	1.13	1.05	0.30	0.47	0.44	1.01	2.17	1.04	1.92	1.23	0.56	11.58
1915	1.50	0.00	1.06	0.51	0.86	0.69	3.77	2.75	0.51	1.15	1.31	1.20	15.31
1916	0.01	0.38	0.32	3.39	0.23	0.85	2.08	0.83	0.24	0.90	1.15	0.54	10.92
1917	3.26	0.00	0.60	0.86	0.28	0.55	1.06	2.33	0.15	2.14	0.53	0.34	12.10
1918	0.26	0.21	0.00	1.82	1.06	1.98	0.75	0.33	0.76	1.67	3.74	1.04	13.62
1919	0.95	0.68	1.13	0.03	0.99	1.17	2.00	3.04	0.46	2.40	1.27	2.12	16.24
1920	1.68	0.63	1.58	0.25	1.44	0.73	0.62	2.00	1.26	1.67	1.81	0.92	14.59
1921	1.70	0.22	0.66	0.47	0.27	0.41	1.71	1.84	3.50	4.20	1.97	1.01	17.96
1922	0.43	0.00	0.29	0.73	0.43	0.88	1.15	0.32	1.80	0.65	1.28	0.46	8.42
1923	0.39	0.65	0.32	0.20	0.31	1.14	0.88	0.68	0.74	2.04	1.61	2.04	11.00
1924	2.74	0.90	1.00	0.08	0.34	1.19	1.36	0.60	0.26	2.32	0.78	1.14	12.71
1925	0.24	0.54	1.75	0.44	0.36	0.63	0.06	1.69	0.40	1.97	1.81	1.01	10.90

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1926	1.76	1.14	0.29	0.45	0.35	0.91	1.61	1.67	0.49	2.81	1.04	0.95	13.47
1927	0.81	0.00	0.63	0.44	0.96	1.52	1.12	0.31	2.30	1.40	1.49	2.45	13.43
1928	0.46	0.13	0.40	0.00	0.71	1.10	0.57	2.05	0.13	1.88	0.83	0.09	8.35
1929	0.66	1.35	0.49	0.59	1.03	0.69	0.59	3.49	0.13	2.43	2.54	2.54	16.53
1930	0.87	0.55	0.10	0.43	0.30	0.64	0.67	1.32	0.15	4.38	1.93	0.82	12.16
1931	0.41	0.95	0.09	0.13	0.84	0.82	1.05	0.37	0.81	1.13	1.79	3.39	11.78
1932	1.01	1.69	0.44	1.06	0.87	1.13	0.68	1.12	0.48	2.89	1.05	0.84	13.26
1933	0.76	0.00	0.19	0.72	0.34	0.16	0.69	0.88	2.44	2.04	1.33	0.78	10.33
1934	0.52	0.59	0.29	0.68	0.52	0.01	0.30	2.34	0.77	1.49	1.70	2.02	11.23
1935	0.20	0.70	0.21	0.42	0.57	0.25	1.04	4.45	0.23	1.19	1.86	1.86	12.98
1936	0.87	0.45	0.20	0.34	0.64	0.67	0.26	1.32	0.53	1.65	4.18	1.72	12.83
1937	1.49	0.25	0.48	0.80	0.39	0.45	0.00	0.84	1.85	1.46	2.23	1.15	11.39
1938	0.82	0.00	0.00	0.40	0.75	0.58	0.22	0.75	1.21	0.30	0.64	1.70	7.37
1939	0.95	0.90	0.24	0.87	0.69	0.27	0.78	0.00	0.00	0.63	0.74	1.21	7.28
1940	0.47	0.40	0.33	0.77	0.82	0.12	0.15	0.72	0.08	1.23	0.86	1.91	7.86
1941	0.97	1.30	1.42	0.83	0.90	2.10	1.27	1.10	2.45	2.04	0.73	2.25	17.36
1942	2.30	0.98	0.74	0.34	0.61	0.92	4.33	0.27	1.06	0.25	1.72	2.44	15.96
1943	0.79	0.80	1.39	0.70	0.49	1.24	0.11	1.18	1.65	0.49	2.15	0.21	11.20
1944	1.34	1.02	0.59	1.35	0.67	0.64	2.32	0.64	0.17	1.44	1.77	0.64	12.59
1945	2.93	0.89	1.37	1.07	0.60	1.47	2.04	0.17	0.00	0.97	2.04	0.85	14.40
1946	1.16		0.44		0.28	1.12	0.45	0.13	0.00	0.95	2.78	0.21	7.52
1947	2.15	1.66	1.30	0.37	1.08	0.38	0.64	1.45	0.28	1.13	1.90	0.53	12.87
1948	0.56	0.93	0.19	0.44	1.65	0.76	0.72	1.42	1.43	0.90	1.46	0.10	10.56
1949	0.94	0.33	0.19	1.29	1.11	0.79	1.05	1.12	1.28	2.49	1.23	1.02	12.84
1950	1.73	0.27	0.38	1.27	0.23	0.63	0.61		0.20	3.05	0.42	1.63	10.42
1951	0.12	0.00	0.00	0.96	0.96	1.08	1.87	1.39	0.02	2.05	2.32	0.11	10.88
1952	0.81	0.53	1.57	1.42	0.28	1.47	0.92	0.55	0.14	1.94	1.68	0.71	12.02
1953	0.00	2.13	0.31	0.24	0.77	0.58	0.73	1.62	0.33	2.95	0.31	0.11	10.08
1954	1.97	2.57	0.56	0.91	0.41	1.44	0.00	1.41	0.27	1.76	1.48	0.61	13.39
1955	0.48	0.15	0.00	0.98	1.70	0.43	1.24	4.42	0.15	1.54	2.63	0.80	14.52
1956	0.00	0.15	0.79	1.30	0.72	0.28	0.21	0.61	0.41	2.59	1.17	0.00	8.23
1957	0.72	0.56	0.26	2.66	0.65	1.41	1.13	2.64	0.12	3.39	5.13	0.00	18.67
1958	4.04	1.49	0.07	0.28	0.92	1.05	1.08	0.69	0.08	0.63	2.41	2.72	15.46
1959	0.67	0.87	0.00	0.37	0.45	0.60	0.95	1.74	1.40	0.81	3.09	0.24	11.19
1960	1.40	0.33	1.96	1.37	0.80	0.76	0.61	0.76	1.32	1.93	0.30	1.57	13.11
1961	1.11	0.07	0.76	0.50	0.37	1.54	1.45	0.04	1.31	2.45	3.34	2.61	15.55
1962	0.59	0.54	1.40	0.92	0.36	0.52	0.19	0.07	0.41	0.74	0.23	2.08	8.05
1963	0.75	1.16	0.46	0.93	1.04	0.96	0.00	0.09	0.55	0.62	1.88	1.18	9.62
1964	0.41	0.89	0.11	0.21	0.73	0.48	0.67	0.88	0.55	1.63	1.72	1.40	9.68
1965	0.02	0.56	1.81	0.97	0.55	0.41	1.12	0.51	2.54	2.50	1.88	2.42	15.29
1966	0.86	0.90	1.54	0.29	0.10	0.12	0.61	0.27	3.60	2.08	3.16	0.60	14.13
1967	0.53	0.47	0.79	0.25	0.32	1.04	0.15	0.94	1.73	2.57	4.17	0.82	13.78
1968	0.21	0.16	1.08	0.11	0.65	0.52	0.64	1.86	0.01	2.54	5.15	0.18	13.11
1969	0.39	0.74	1.03	1.36	0.38	1.20	0.91	1.58	1.36	1.80	1.09	2.17	14.01
1970	1.95	0.28	0.74	0.08	0.36	1.02	0.89	0.45	0.42	1.79	1.82	2.17	11.97
1971	1.05	0.82	0.06	0.11	0.67	0.02	0.53	0.28	0.01	1.22	1.03	2.68	8.48
1972	2.35	1.13	1.25	0.33	0.21	0.10	0.04	0.92	0.90	1.02	1.33	0.82	10.40
1973	1.99	1.48	0.81	0.50	0.24	1.43	0.68	0.99	0.94	2.43	0.67	1.56	13.72
1974	1.25	0.37	0.21	1.68	0.10	0.30	0.23	0.01	1.45	1.07	3.64	0.36	10.67
1975	1.92	0.51	0.79	0.97	0.44	0.90	0.20	0.36	0.79	1.32	2.01	2.78	12.99
1976	0.13	1.61	0.26	0.11	0.56	0.84	0.60	0.95	0.29	0.99	1.45	1.34	9.13

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1977	0.32	0.22	0.12	1.02	0.08	0.10	1.52	0.75	0.89	2.22	2.12	2.06	11.42
1978	0.97	1.15	0.04	0.54	0.77	1.03	0.23	1.79	1.73	0.98	0.26	0.59	10.08
1979	0.86	2.06	1.11	1.75	0.70	0.54	1.00	2.09	2.27	0.93	2.07	0.21	15.59
1980	0.95	0.63	0.32	0.84	0.45	1.27	1.64	1.78	0.07	0.47	1.03	0.33	9.78
1981	1.29	0.22	0.02	0.27	0.05	1.09	0.90	0.68	0.70	1.08	2.08	0.47	8.85
1982	0.70	0.38	0.29	0.40	1.52	0.64	0.16	2.12	0.15	3.15	1.64	1.93	13.08
1983	0.98	1.31	1.29	0.19	0.83	1.37	0.62	0.37	1.19	1.96	2.12	1.37	13.60
1984	0.76	1.28	0.96	0.57	0.27	1.16	1.84	0.52	0.75	0.80	1.55	1.25	11.71
1985	2.15	0.37	0.95	0.70	0.40	2.73	2.04	1.71	0.96	1.58	1.57	1.77	16.93
1986	2.52	0.74	0.21	0.08	0.56	0.22	2.07	2.09	2.24	2.32	0.82	2.74	16.61
1987	0.98	1.06	0.57	0.72	1.08	0.76	0.37	1.28	0.42	0.54	1.95	1.02	10.75
1988	0.60	0.60	0.65	0.68	0.21	0.10	1.21	0.97	2.48	2.07	3.01	2.23	14.81
1989	0.51	0.69	0.27	0.83	1.22	0.33	0.11	0.69	0.42	1.87	1.52	1.30	9.76
1990	2.83	0.00	0.78	0.43	1.13	1.70	1.70	0.45	0.61	1.80	2.54	1.92	15.89
1991	1.19	1.53	2.70	0.18	0.00	1.24	0.00	2.46	1.58	1.50	3.41	2.67	18.46
1992	0.19	1.57	0.82	0.64	0.17	0.51	0.03	1.59	0.51	1.26	1.43	0.32	9.04
1993	0.20	1.21	1.31	0.95	0.85	0.95	0.40	2.26	0.19	0.40	6.12	1.00	15.84
1994	0.91		0.35	0.26	0.58	0.88	1.60	2.27	0.24	0.31	1.83	1.42	10.65
1995	1.84	2.57	0.75	0.44	0.36	1.06	0.56	3.78	0.50	0.85	1.22	1.17	15.10
AvgMonth	1.02	0.74	0.66	0.71	0.69	0.83	0.93	1.24	0.88	1.67	1.85	1.26	
StdDevn	0.81	0.59	0.56	0.56	0.44	0.49	0.77	0.98	0.84	0.89	1.12	0.86	

Figure A-15. NOAA Station Taos
Annual Precipitation 1890-1995

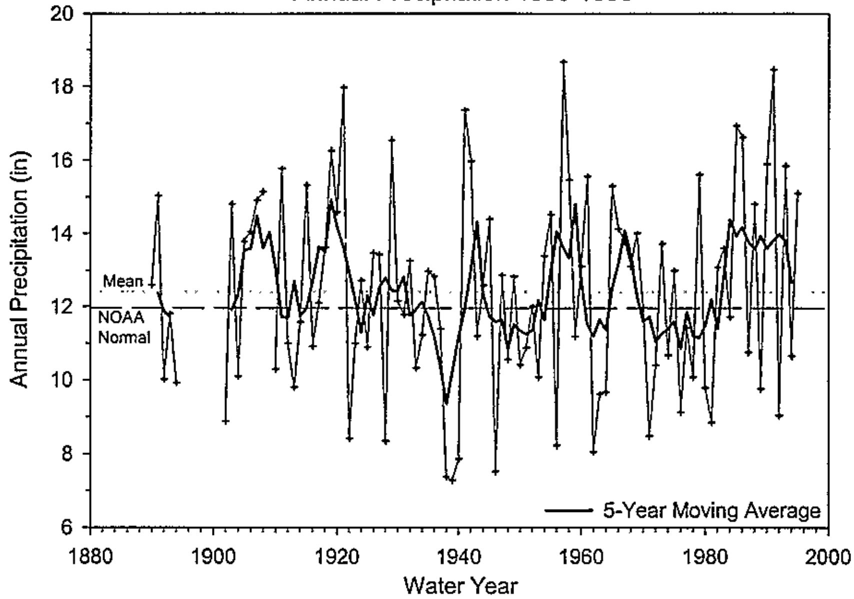
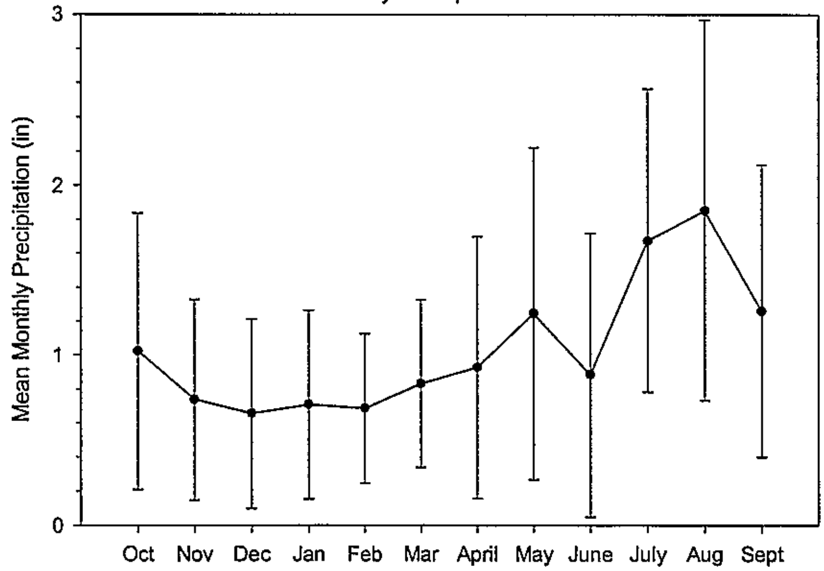


Figure A-16. NOAA Station Taos
Mean Monthly Precipitation 1890-1995



Station Name	TAOS CANYON
Station ID	NRCS, 05N02
State	NEW MEXICO
County	TAOS
Latitude	36:24:00
Longitude	105:20:00
Elevation	9100

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1937	1996	60	176	98	4.9	13.7	0.0

Parameter: Snow Water Equivalent

	February			March			April			May		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1937				7-Mar	31.0	9.2	31-Mar	30.0	9.9			
1938				8-Mar	10.0	3.4	31-Mar	14.0	4.4			
1939				1-Mar	20.0	5.8	2-Apr	6.0	2.4			
1940	1-Feb	16.0	4.4	4-Mar	23.0	7.6	31-Mar	9.0	4.4			
1941	31-Jan	32.0	8.5	1-Mar	36.0	11.7	31-Mar	39.0	13.7			
1942	2-Feb	15.0	4.4	28-Feb	23.0	5.2	31-Mar	23.0	7.4			
1943	31-Jan	16.0	6.2	27-Feb	14.0	4.8	2-Apr	11.0	5.1			
1944	31-Jan	22.0	6.2	28-Feb	29.0	8.1	31-Mar	21.0	8.1			
1945	2-Feb	24.0	7.5	3-Mar	29.0	9.3	1-Apr	35.0	13.1			
1946	29-Jan	12.0	3.1	2-Mar	9.0	2.6	31-Mar	11.0	4.5			
1947	1-Feb	21.0	6.9	1-Mar	26.0	7.6	1-Apr	18.0	9.0			
1948	30-Jan	19.0	3.6	29-Feb	25.0	6.9	1-Apr	29.0	9.0			
1949	1-Feb	14.0	3.6	5-Mar	14.0	5.0	1-Apr	15.0	3.7			
1950	1-Feb	15.0	3.5	1-Mar	13.0	3.8	28-Mar	9.0	2.8			
1951	29-Jan	1.0	0.1	26-Feb	8.0	1.2	30-Mar	14.0	2.5			
1952	29-Jan	22.0	8.4	29-Feb	26.0	7.7	1-Apr	26.0	9.0			
1953	27-Jan	14.0	4.6	26-Feb	18.0	4.9	30-Mar	7.0	2.3			
1954	28-Jan	12.0	3.6	3-Mar	11.0	3.7	1-Apr	7.0	2.6			
1955	28-Jan	11.0	3.2	28-Feb	18.0	5.9	30-Mar	7.0	3.2			
1956	31-Jan	18.0	3.4	29-Feb	14.0	4.5	28-Mar	4.0	1.7			
1957	4-Feb	24.0	6.3	26-Feb	16.0	6.3	1-Apr	10.0	3.5			
1958	30-Jan	13.0	3.7	1-Mar	15.0	4.3	29-Mar	23.0	7.8			
1959	2-Feb	11.0	3.9	3-Mar	13.0	4.0	1-Apr	6.0	2.2			
1960	28-Jan	18.0	4.6	29-Feb	23.0	5.8	31-Mar	13.0	4.0			
1961	30-Jan	14.0	3.4	28-Feb	17.0	3.6	28-Mar	12.0	2.4			
1962	30-Jan	13.0	3.0	1-Mar	16.0	5.0	30-Mar	23.0	7.5			
1963	29-Jan	9.0	2.1	27-Feb	10.0	2.0	28-Mar	10.0	3.5			
1964	29-Jan	8.0	2.1	27-Feb	18.0	4.2	30-Mar	13.0	3.6			
1965	29-Jan	5.0	2.5	25-Feb	24.0	6.3	30-Mar	24.0	7.3	29-Apr	20.0	6.5
1966	1-Feb	17.0	3.2	24-Feb	22.0	4.0	30-Mar	6.0	1.1			
1967	26-Jan	11.0	1.4	27-Feb	11.0	2.0	29-Mar	1.0	0.2			
1968	29-Jan	14.0	3.3	27-Feb	17.0	4.6	28-Mar	19.0	6.4			
1969	28-Jan	22.0	4.1	26-Feb	18.0	5.9	27-Mar	31.0	8.5			
1970	28-Jan	7.0	1.4	26-Feb	7.0	1.6	31-Mar	18.0	2.9			
1971	27-Jan	0.0	0.0	23-Feb	8.0	2.2	29-Mar	0.0	0.0			
1972	26-Jan	8.0	2.0	24-Feb	5.0	1.6	29-Mar	6.0	1.1			
1973	30-Jan	19.0	5.2	23-Feb	23.0	6.4	29-Mar	37.0	8.4	27-Apr	22.0	7.8

Year	February			March			April			May		
	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1974	29-Jan	23.0	5.8	26-Feb	19.0	5.6	26-Mar	14.0	4.3			
1975	23-Jan	17.0	3.8	25-Feb	27.0	7.3	26-Mar	29.0	7.4	28-Apr	11.0	4.0
1976	27-Jan	22.0	6.8	25-Feb	23.0	7.6	30-Mar	18.0	4.9			
1977	24-Jan	17.4	4.0	22-Feb	12.3	2.8	28-Mar	11.2	3.0			
1978	27-Jan	13.0	1.8	23-Feb	15.6	4.3	28-Mar	15.1	5.1			
1979	31-Jan	27.0	6.8	23-Feb	29.4	8.8	28-Mar	25.0	8.3			
1980	30-Jan	16.3	3.3	28-Feb	19.7	5.9	28-Mar	23.0	6.0			
1981	28-Jan	0.0	0.0	25-Feb	0.0	0.0	26-Mar	0.0	0.0			
1982	26-Jan	13.0	3.9	23-Feb	22.1	7.6	1-Apr	15.3	6.1			
1983	27-Jan	17.3	4.1	24-Feb	20.8	5.2	29-Mar	28.9	8.4			
1984	27-Jan	28.9	11.6	27-Feb	24.2	7.2	26-Mar	28.8	9.5			
1985	29-Jan	23.1	4.9	27-Feb	20.2	7.1	26-Mar	20.0	6.7			
1986	27-Jan	10.2	2.3	23-Feb	10.8	2.8	26-Mar	4.1	1.2			
1987	30-Jan	13.0	3.2	25-Feb	22.0	4.6	25-Mar	24.8	7.5			
1988	28-Jan	15.0	4.1	26-Feb	14.9	5.3	30-Mar	5.7	1.9			
1989	27-Jan	21.2	4.3	28-Feb	22.2	8.0	27-Mar	6.8	2.7			
1990	31-Jan	14.0	3.4	27-Feb	21.8	5.9	29-Mar	17.0	4.7			
1991	28-Jan	17.1	5.4	26-Feb	14.6	4.7	26-Mar	25.7	7.8			
1992	28-Jan	20.1	5.3	24-Feb	19.5	5.8		22.7	7.1			
1993	27-Jan	20.0	6.0	24-Feb	30.0	8.2	29-Mar	20.9	7.5			
1994	27-Jan	17.7	4.4	24-Feb	28.4	8.1	28-Mar	32.6	8.1			
1995	31-Jan	20.1	4.3	28-Feb	15.1	7.3		11.6	3.7			
1996		11.3	2.6					8.6	3.2			
Average		15.7	4.1		18.5	5.4		16.6	5.2		17.7	6.1
Min		0.0	0.0		0.0	0.0		0.0	0.0		11.0	4.0
Max		32.0	11.6		36.0	11.7		39.0	13.7		22.0	7.8
StdDevn			2.1			2.3			3.1			1.9

Station Name	TAOS POWDERHORN
Station ID	NRCS, 05N14
State	NEW MEXICO
County	TAOS
Latitude	36:35:00
Longitude	105:27:00
Elevation	11250

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1974	1996	23	82	71	21.8	44.8	2.0

Parameter: Snow Water Equivalent

	Jan			Feb			March			April			May		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1974				31-Jan	51.0	15.2	27-Feb	60.0	20.3	27-Mar	55.0	19.8			
1975				29-Jan	50.0	13.6	26-Feb	74.0	22.3	27-Mar	102.0	32.1			
1976				28-Jan	46.0	15.0	27-Feb	65.0	22.8	31-Mar	79.0	29.7			
1977				26-Jan	40.7	9.7	24-Feb	38.3	12.0	28-Mar	45.3	15.5			
1978				30-Jan	46.2	12.6	24-Feb	57.5	17.1	3-Apr	74.3	26.4			
1979				1-Feb	107.3	30.3	26-Feb	106.8	37.9	27-Mar	110.2	43.7			
1980				25-Jan	60.2	18.4	29-Feb	77.2	24.7	1-Apr	105.6	34.3			
1981				29-Jan	32.7	7.6	27-Feb	37.8	9.7	31-Mar	57.6	15.9			
1982				25-Jan	44.6	13.2	22-Feb	61.0	17.7	26-Mar	66.3	23.6			
1983				28-Jan	65.5	19.3	25-Feb	74.0	23.0	27-Mar	109.8	34.2			
1984							18-Feb	75.0	24.5	30-Mar	93.4	33.6			
1985				1-Feb	74.2	22.8	1-Mar	83.9	29.6	12-Apr	90.5	37.4			
1986				31-Jan	36.0	11.7	28-Feb	56.4	17.9	27-Mar	59.1	20.2			
1987				2-Feb	63.3	19.2	27-Feb	93.4	25.0	30-Mar	95.6	29.2			
1988								64.0	20.3						
1989	29-Dec	45.8	12.0	30-Jan	67.6	17.5	27-Feb	82.0	26.9	30-Mar	64.7	25.8	26-Apr	40.3	19.2
1990	29-Dec	19.8	4.7	26-Jan	35.4	9.2	23-Feb	50.2	13.6	28-Mar	63.0	20.5	30-Apr	64.6	25.8
1991	28-Dec	64.0	14.3	31-Jan	68.8	21.8	27-Feb	65.3	22.6	28-Mar	105.0	35.4	29-Apr	71.4	29.3
1992	30-Dec	47.8	13.9	29-Jan	53.6	16.9	28-Feb	67.0	20.8		77.8	25.9	30-Apr	56.2	23.0
1993	29-Dec	57.6	15.4	28-Jan	90.3	25.0	25-Feb	114.0	35.1	1-Apr	110.5	40.8	28-Apr	93.4	40.1
1994	27-Dec	46.9	13.6	28-Jan	68.3	17.7	25-Feb	88.9	25.8	31-Mar	99.5	33.8	28-Apr	100.7	36.4
1995	27-Dec	55.7	18.8	27-Jan	82.8	24.9	24-Feb	85.0	27.0		108.0	39.0	26-Apr	118.0	44.8
1996		17.0	2.0		33.6	8.3					52.4	17.0	26-Apr	39.0	16.1
Avg		44.3	11.8		58.0	16.7		71.7	22.6		82.9	28.8		73.0	29.3
Min		17.0	2.0		32.7	7.6		37.8	9.7		45.3	15.5		39.0	16.1
Max		64.0	18.8		107.3	30.3		114.0	37.9		110.5	43.7		118.0	44.8
StdD			5.6			6.0			6.7			8.3			10.3

Station Name	TRES PIEDRAS
Station ID	NOAA, 9085
State	NEW MEXICO
County	TAOS
Latitude	36:40:00
Longitude	105:59:00
Elevation	8140

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
AIR TEMP FAHN	Minimum	1948	1995	47	13909	81	25.54	27.99	21.92
AIR TEMP FAHN	Maximum	1948	1995	47	14328	83	58.86	61.29	56.73
PRECIP TOT DAY IN	Sum	1905	1995	48	16423	94	13.06	20.36	5.92
SNOW DEPTH INCHES	Sum	1948	1995	48	15770	90	33.82	93	0

Parameter: Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1905								0.68	0.11	2.31	0.60	0.92	4.62
1906	0.30	2.93	0.10	0.70	0.10	2.70	1.10	0.40	0.20	5.58	0.73	1.42	16.26
1907	1.65		1.45	1.32	0.35	0.30	1.82	1.90	0.50	2.20	3.80	0.72	16.01
1908	0.80	0.35	1.10	0.67	2.65	1.05	1.41	0.32	0.10	2.03	2.90	1.10	14.48
1909	0.25	2.05	0.70	1.30	0.95	0.10	0.96	0.90	0.60	1.75	1.85	1.10	12.51
1910	0.65	0.95	1.75	1.05	1.22	0.70	0.90	0.60	0.05	1.55	2.23	1.00	12.65
1911	2.00	0.45	0.30	1.20	2.50								6.45
1912		0.74	0.37	0.29	0.57	1.32	0.67		1.27	1.79	1.09	0.33	8.44
1913	0.96	0.00	0.25	0.85		1.18	1.09	0.21	2.62	2.21	1.30	1.29	11.96
1914	0.83	2.17	1.27	0.39	0.51	0.65	1.50	1.63	1.03	3.83	1.90	1.12	16.83
1915	1.30	0.00	1.78	2.18	0.65	0.48	3.85						10.24
1916		0.93	2.19	2.30	0.41	2.74	1.67	0.00	0.00	3.76	3.00	0.05	17.05
1917	3.30	0.00	0.40	0.85	1.58						1.01	1.03	8.17
1918	0.02	0.12	0.00	1.45	1.43	1.14	0.27	0.31	1.23	4.94	1.69	1.37	13.97
1919	1.67	1.29	1.31	0.09	1.21	1.16	1.64	3.30	0.38	5.06	1.85	1.15	20.11
1920	2.48	1.08	1.22	0.52	1.43	0.84	1.35	2.24	1.99	1.85	3.27	0.69	18.96
1921	1.96	0.20	0.72	1.15	0.88	0.00	0.18	2.20	4.56	4.58	3.29	0.78	20.50
1922	0.35	0.00	0.63	0.63	0.98	0.80	1.22	0.52	1.50	1.26	1.96	0.79	10.64
1923	0.00	1.34	0.58	0.12	0.79	0.74	0.60	0.40	2.07	2.55	4.07	2.27	15.53
1924	4.19	0.30	1.15	1.05	0.53	2.87	0.78	0.30	0.65	1.99	1.19	1.40	16.40
1925	0.97	0.16	2.04	0.21	0.29	0.47	0.08	1.40	0.31	3.49	2.16	0.69	12.27
1926	1.72	0.54	0.65	0.54	0.10	2.19	2.01	0.54	1.88	1.81	2.69	1.85	16.52
1927	2.05	0.00	1.28	0.59	3.46	1.75	1.08	0.17	2.78	4.73	1.96	3.11	22.96
1928	0.20	0.04	0.93	0.10	1.01	0.60	0.43	0.78	0.00	3.70	2.63	0.00	10.42
1929	0.47	0.44	0.12	0.67	0.71	0.44	0.08	2.20	0.31	3.92	4.60	2.31	16.27
1930	1.69	0.84	0.00	1.23	0.12	1.24	0.27	1.08	0.18	5.06	1.95	0.83	14.49
1931	1.96	1.33	0.03	0.28	1.08	1.03	0.66	0.67	0.53	1.91	1.36	4.00	14.84
1932	3.15	2.57	0.60	0.87	0.52	0.37	0.30	0.57	1.23	2.47	2.62	0.74	16.01
1933	0.87	0.00	1.07	0.52	0.50	0.08	0.80	0.25	1.29			0.80	6.18
1934	0.80	0.50	0.88	0.25	0.99	0.23	0.18	1.42	0.24	2.02	1.69	2.87	12.07
1935	0.20	0.31	0.65	2.36	1.55	1.32	1.01	5.50	0.10	2.44	1.45	1.01	17.90
1936	0.83	0.74	0.26	0.49	2.28	1.67	1.49	3.02	1.57	2.60	6.72	3.34	25.01
1937	0.40	0.20	1.05	0.84	3.04	1.54	0.20	0.19	1.24	0.72	1.46	2.55	13.43
1938	2.56	0.30	0.90	1.08	1.23	1.24	0.42	0.76	1.46	2.19	0.80	2.43	15.37
1939	2.10	0.22	0.82	1.10	0.81	0.89	0.07	0.12	0.20	2.71	2.62	2.56	14.22
1940	1.06	0.48	0.49	1.40	1.14	0.57	0.71	1.56	0.33	1.35	3.07	3.23	15.39

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1941	0.77	1.73	2.89	0.79	0.52	2.93	1.09	1.14	1.16	3.85	0.80	3.96	21.63
1942	1.90	0.22	1.19	0.34	0.55	0.48	2.82	0.25	0.30	2.30	1.50	1.80	13.65
1943	0.26	0.00	1.14	0.40	1.00	0.80	0.08	0.54	1.74	0.35	3.41	1.25	10.97
1944	0.26	0.31	0.33	0.85	1.37	1.14	1.81	0.48	0.68	2.75	1.45	0.70	12.13
1945	1.28	0.60	0.84	1.90	0.70	1.15	2.00	0.00	0.08	1.98	2.80	0.69	14.02
1946	0.79	0.11	0.91	0.41	0.37	0.81	0.16	0.14	0.03	0.19	3.94	0.00	7.86
1947			0.25								0.33	0.03	0.61
1948	2.65									0.58	2.15	0.43	5.81
1949	0.83	0.00	1.63	3.40	0.72	0.71	0.50	0.66	0.00	1.48	1.40	1.70	13.03
1950	0.00	0.00	0.63	0.75	0.44	0.61	1.20	0.00	1.40	2.11	1.02	1.15	9.31
1951	0.10	0.01	0.00	0.84	0.31	0.25	0.87	0.75	0.00	0.42	4.98	0.00	8.53
1952		0.91	2.75	1.74	0.12	0.18	0.67	1.22	0.00	2.00	2.69	0.68	12.96
1953	0.00	2.12	0.35	0.08	0.13	0.22	0.32	0.76	0.72	2.19	0.35	0.02	7.26
1954	0.25	1.15	0.98	0.28	0.00	0.96	0.67	1.01	0.70	3.01	0.49	1.50	11.00
1955	0.00	0.18	0.39	0.21	0.75	0.06	0.92	2.90	0.00	2.00	6.88	0.69	14.98
1956	0.20	0.54	0.74	0.52	0.36	0.00	0.00	0.79	0.65	1.70	1.38	0.15	7.03
1957	0.36	0.00	0.01	1.14	0.30	0.79	1.66	1.93	0.28	4.04	2.84	0.00	13.35
1958	3.26	2.46	0.00	0.59	0.43	0.55	2.00	0.40	0.24	1.97	3.57	1.24	16.71
1959	0.54	0.28	0.17	0.05	0.56	0.74	1.42	2.14	1.68	0.97	3.82	0.32	12.69
1960	2.91	0.10	0.36	0.43	0.78	0.27	0.34	0.33	0.93	2.02	0.68	0.98	10.13
1961	2.26	0.22	0.53	0.00	0.49	0.85	0.60	0.21	0.68	0.90	2.12	1.86	10.72
1962	1.64	0.71	0.70	0.12	0.51	0.69	0.10	0.10	0.58	1.89	1.53	2.78	11.35
1963	0.56	0.38	0.08	0.18	1.81	0.84	0.33	0.27	0.93	0.96	2.01	1.25	9.60
1964	0.74	0.94	0.16	0.21	0.54	0.13	0.87	0.68	0.83	2.46	2.15	2.05	11.76
1965	0.00	0.28	0.63	1.28	0.58	1.04	1.64	1.08	2.40	3.91	1.91	2.51	17.26
1966	1.66	0.85	1.26	0.37	0.15	0.06	0.14	0.31	1.67	2.13	2.45	0.12	11.17
1967	1.05	0.60	1.11	0.26	0.21	0.44	0.00	0.61	0.47	3.82	5.19	0.69	14.45
1968	0.20	0.05	1.58	0.13	0.67	0.75	0.48	1.18	0.02	1.24	4.51	0.27	11.08
1969	0.69	0.29	0.56	1.52	0.12	0.82	0.61	0.87	1.35	0.97	1.04	1.20	10.04
1970	3.22	0.03	0.22	0.15	0.30	2.11	0.33	0.56	1.00	2.43	0.99	1.41	12.75
1971	1.02	0.34	0.05	0.32	0.53	0.30	0.86	0.21	0.00	2.32	6.99	2.42	15.36
1972	3.02	0.58	1.78	0.22	0.05	0.10	0.04	0.92	1.33	3.12	1.68	1.57	14.41
1973	3.23	0.92	0.84	0.62	0.23	2.09	0.24	0.72	0.41	1.82	0.63	1.37	13.12
1974	1.82	0.04	0.08	1.33	0.00	0.57	0.66	0.35	1.75	3.21	2.59	0.16	12.56
1975	3.22	1.00	1.10	0.77	2.33	2.31	2.00	0.00	0.42	3.23	1.44	2.07	19.89
1976	0.26	1.43	0.35	0.07	0.53	0.63	0.97	1.15	0.33	2.52	1.88	1.12	11.24
1977	0.15	0.58	0.01	0.74	0.17		1.16	0.67	1.19	3.13			7.80
1978	0.23		0.02	0.53	1.23	0.42	0.30	2.03	1.42	1.06	2.26	0.80	10.30
1979	0.99	4.14	1.04		0.73	0.76	0.59	2.36	1.83	0.80	1.53	0.45	15.22
1980	0.79	0.16	0.16	0.44			0.40	1.48	0.00	0.12	0.92	0.88	5.35
1981	1.21	0.99	0.20	0.00	0.00		0.58	1.93	1.29	3.31	1.00	0.13	10.64
1982	0.04		0.00		0.39	0.46	2.21	0.98	1.10	3.05	3.82	2.31	14.36
1983	0.10	1.26			0.61	1.16	0.64		1.26	0.68	4.19	1.41	11.31
1984		0.65		0.36	0.04	0.28	0.20	0.11		2.53	2.94	1.11	8.22
1985	2.60	0.20	0.50		0.10	2.37	0.97	0.56	0.89	1.04	0.23	0.36	9.82
1986	0.36	0.17		0.00	0.10	0.04	0.00	1.35	3.26	3.68	2.62	2.14	13.72
1987	1.90	1.34	0.15	1.21	0.21	0.60	0.04	1.65	0.71		0.43	2.23	10.47
1988	0.07	0.70	2.23	0.70	0.80	0.10	0.39	0.02	3.06	0.93	3.55	1.80	14.35
1989	0.68	0.80	0.28	0.45	1.10	0.47	0.33	0.53	2.06	1.17	4.19	2.70	14.76
1990	0.36	0.00	0.05	0.90	0.87	1.43	1.78	0.92	0.65	4.00	1.82	2.34	15.12
1991	1.17	2.18	2.30	0.59	0.00	1.48	0.02	1.28	2.50	1.13	6.41	1.78	20.84

Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Annual
1992	0.60	2.29	1.37	0.51	0.56	1.24	0.00	2.30	0.30	1.99	4.85	0.29	16.30
1993	0.52	1.08	1.15		1.55	1.38	0.52	2.56	0.36	2.68	3.77	1.05	16.62
1994	0.52	1.43	0.34	0.24	0.50	1.18	2.28		1.34	0.54	3.59		11.96
1995	1.89		0.23	0.45	0.61	1.62	1.50		0.90	1.68	4.94	2.44	16.26
AvgMonth	1.16	0.73	0.76	0.72	0.76	0.91	0.85	0.99	0.96	2.31	2.46	1.32	
StdDevn	1.03	0.79	0.67	0.61	0.69	0.71	0.73	0.93	0.88	1.23	1.55	0.95	

Figure A-17. NOAA Station Tres Piedras
Annual Precipitation 1906-1995

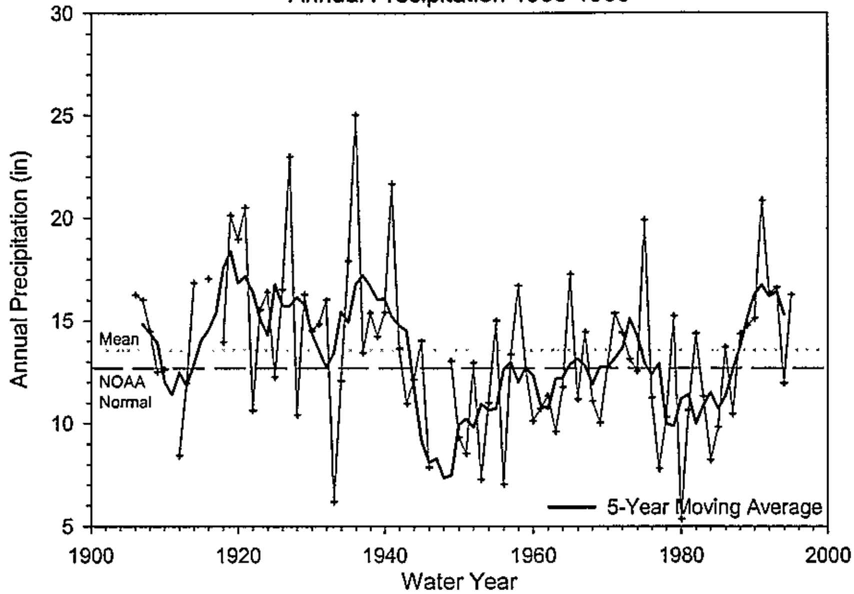
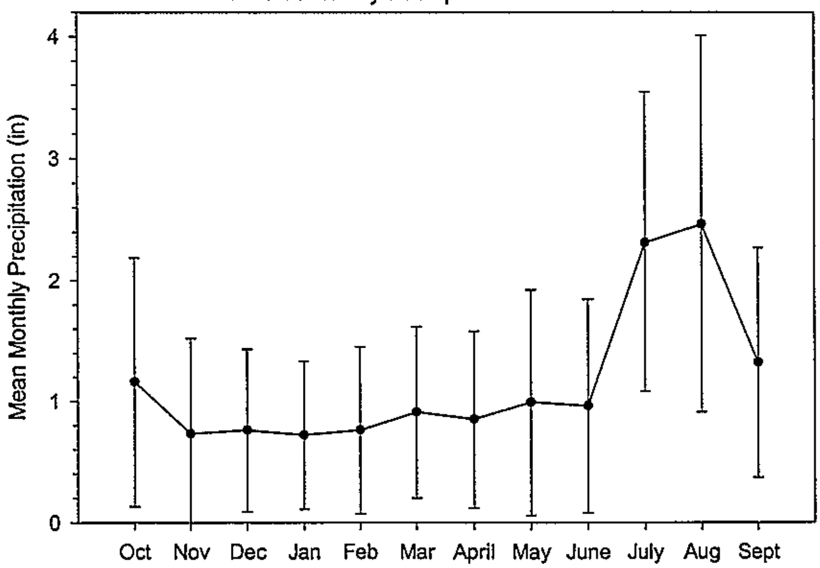


Figure A-18. NOAA Station Tres Piedras
Mean Monthly Precipitation 1906-1995



Station Name	TRES RITOS
Station ID	NRCS, 05N04
State	NEW MEXICO
County	TAOS
Latitude	36:08:00
Longitude	105:32:00
Elevation	8600

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum
SNOW WATER EQUIVALENT, INCHES	Sum	1938	1996	59	176	99	4.9	11.6	0

Parameter: Snow Water Equivalent

	Feb			March			April		
Year	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
1938				1-Mar	8	2.7	2-Apr	4	1
1939	3-Feb	26	6.5	1-Mar	31	8.3	3-Apr	2	0.6
1940	1-Feb	15	3.6	1-Mar	25	6.7	1-Apr	9	3.8
1941	1-Feb	31	7	3-Mar	31	8.6	1-Apr	35	10.7
1942	3-Feb	22	4.8	28-Feb	30	7.2	2-Apr	31	10
1943	2-Feb	17	2.9	3-Mar	16	3.9	2-Apr	12	3.2
1944	1-Feb	27	5.8	2-Mar	29	7.6	2-Apr	23	6.6
1945	2-Feb	24	4.6	4-Mar	28	6.7	1-Apr	29	9.5
1946	31-Jan	13	2.7	28-Feb	12	3.1	2-Apr	6	2.1
1947	2-Feb	18	4.8	2-Mar	25	5.7	1-Apr	10	3.3
1948	31-Jan	20	4.2	1-Mar	35	7.4	1-Apr	37	9.3
1949	1-Feb	20	3.4	1-Mar	27	6	1-Apr	25	7.1
1950	1-Feb	17	2.7	1-Mar	13	3.6	29-Mar	1	0.2
1951	31-Jan	10	2.3	26-Feb	9	3.6	29-Mar	11	2.7
1952	30-Jan	20	7.5	28-Feb	30	8.2	1-Apr	29	8.4
1953	3-Feb	17	3.8	4-Mar	29	3.9	1-Apr	3	0.6
1954	1-Feb	15	3	2-Mar	12	3.3	30-Mar	5	1.2
1955	1-Feb	14	2.4	1-Mar	20	3.9	30-Mar	3	0.8
1956	31-Jan	17	3.4	1-Mar	16	4.2	28-Mar	2	0.5
1957	1-Feb	24	4.8	28-Feb	16	4.8	29-Mar	18	7.2
1958	30-Jan	20	4.3	3-Mar	20	5	3-Apr	31	9
1959	2-Feb	15	2.9	2-Mar	15	3.4	1-Apr	11	2.4
1960	2-Feb	20	5	25-Feb	26	5.9	28-Mar	16	4.5
1961	27-Jan	20	3.3	24-Feb	22	5.4	27-Mar	21	6.8
1962	29-Jan	18	4.5	26-Feb	16	4.7	27-Mar	24	7.1
1963	28-Jan	13	2.8	26-Feb	20	6.5	26-Mar	15	5.9
1964	29-Jan	13	2.9	26-Feb	24	5.3	24-Mar	21	6.8
1965	22-Jan	20	5.4	25-Feb	30	9.2	25-Mar	34	8.5
1966	28-Jan	13	2.6	24-Feb	22	4.6	29-Mar	3	1
1967	25-Jan	9	1.4	24-Feb	6	1.8	27-Mar	0	0
1968	24-Jan	14	4	23-Feb	20	5	27-Mar	24	7.9
1969	28-Jan	17	3.9	25-Feb	17	5.3	26-Mar	18	7.8
1970	27-Jan	9	2.9	26-Feb	10	3.6	30-Mar	13	4
1971	29-Jan	2	0.6	26-Feb	7	1.5	25-Mar	0	0
1972	31-Jan	10	3.2	24-Feb	6	1.9	29-Mar	3	0.5
1973	27-Jan	31	6.7	1-Mar	28	7.7	28-Mar	40	11.1
1974	31-Jan	21	4.6	26-Feb	20	5.2	27-Mar	7	2.2

Year	Feb Date	Feb Depth	Feb SWE	March Date	March Depth	March SWE	April Date	April Depth	April SWE
1975	30-Jan	22	4.4	25-Feb	27	6.4	25-Mar	24	8
1976	26-Jan	20	4	23-Feb	25	7.4	26-Mar	14	4.6
1977	1-Feb	12	3.7	28-Feb	17	3	29-Mar	7	2.4
1978	30-Jan	10	2.3	28-Feb	13	3.5	29-Mar	11	4.4
1979	30-Jan	25	7.2	28-Feb	32	6.5	30-Mar	24	7.4
1980	28-Jan	14	3.8	26-Feb	23	8	25-Mar	24	6.8
1981	29-Jan	3	0.5	25-Feb	0	0	31-Mar	9	2.2
1982	28-Jan	16	5	26-Feb	23	7.2	29-Mar	18	7.9
1983	28-Jan	23	5.5	1-Mar	25	7.1	31-Mar	31	10.6
1984	30-Jan	26	8.2	27-Feb	31	9	29-Mar	37	11.6
1985	31-Jan	30	6.6	28-Feb	26	7.5	29-Mar	25	9.5
1986	27-Jan	8	3.1	25-Feb	9	3.4	26-Mar	0	0
1987	3-Feb	20	4	26-Feb	40	7	26-Mar	28	11.2
1988	28-Jan	21	2.5	26-Feb	18	5.1	28-Mar	2	0.9
1989	1-Feb	18	5.3	1-Mar	24	6.2	30-Mar	2	1.1
1990	29-Jan	16	4	27-Feb	29	6.7	28-Mar	17	2.4
1991	4-Feb	19	4.7	1-Mar	25	7.3	29-Mar	22	7.3
1992	30-Jan	23	5.4	27-Feb	25	7.3	30-Mar	30	8.2
1993	1-Feb	19	4.4	26-Feb	29	4.6	30-Mar	22	8.1
1994	27-Jan	15	4	25-Feb	27	8	29-Mar	29	7.2
1995	1-Feb	17	2.5	28-Feb	19	5.3	29-Mar	12	3.2
1996	1-Feb	18	2	1-Mar	11	3.3	1-Apr	22	7.3
Avg		17.7	4.0		21.2	5.4		16.7	5.2
Min		2	0.5		0	0		0	0
Max		31	8.2		40	9.2		40	11.6
StdD			1.62			2.07			3.58

APPENDIX B

Streamflow Data and Statistics

08251500 RIO GRANDE NEAR LOBATOS, CO

LOCATION.--Lat 37 04'42", long 105 45'22", in sec.22, T.33 N., R.11 E., Conejos County, Hydrologic Unit 13010002, on right bank at highway bridge, 6 mi north of Colorado-New Mexico State line, 7 mi downstream from Culebra Creek, 10 mi east of Lobatos, and 14 mi east of Antonito.

DRAINAGE AREA.--7,700 mi2, approximately, includes 2,940 mi2 in closed basin in northern part of San Luis Valley, Colo.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1899 to current year. Monthly discharge only for some periods, published in WSP 1312. Published as "at Cenicero" 1899-1901, and as "near Cenicero" 1902-4.

REVISED RECORDS.--WSP 1312: 1919 (monthly runoff). WSP 210: Drainage area. WDR CO-78-1: 1976.

GAGE.--Water-stage recorder. Datum of gage is 7,427.63 ft above National Geodetic Vertical Datum of 1929. Prior to 1910, nonrecording gages at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Mar. 1, Mar. 3-5. Records good except for estimated daily discharges, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversion for irrigation, and return flow from irrigated areas.

COOPERATION.--Records collected and computed by Colorado Division of Water Resources and reviewed by Geological Survey.

AVERAGE DISCHARGE.--31 years (water years 1900-30), 846 ft3/s; 612,900 acre-ft/yr, includes period of extensive development for irrigation: 55 years (water years 1931-85), 433 ft3/s; 313,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 13,200 ft3/s, June 8, 1905, gage height, 9.1 ft, from rating curve extended above 8,000 ft3/s, no flow at times in 1950-51, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of June 8, 1905.

EXTREMES,FOR CURRENT YEAR.--Maximum discharge, 6,240 ft3/s at 2230 June 13, gage height, 6.42 ft; minimum daily, 40 ft3/s, Sept. 10.

Table B-1. Mean daily streamflow (cfs), station 08251500 Rio Grande near Lobatos, Co, 1900 - 1994

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1900	117.5	258.6	255	200	250	300	339	1730	1812	19.16	11.87	20.1	320387
1901	27.16	54.43	275	250	250	262.1	286.4	2004	1112	80.84	55.42	43.3	284576
1902	47.94	35	150	180	160	322.4	307.8	464	112	12	9.68	16.1	109833
1903	21.68	19.20	26.84	25	25	33.9	314.1	2012	6375	1178	46.77	89.6	611515
1904	63.87	140	120	120	110	110	152.8	21.55	20.27	17.1	139.8	197	72851
1905	1591	300.1	300	350	325	897.9	772.6	5691	7217	272.4	162.8	64.4	1084837
1906	102.4	228.8	250	275	270	339.6	760.6	3334	4368	1470	504.7	423	744802
1907	923.3	954.3	500	500	525	778.6	1962	3272	6896	5440	1741	1228	1494954
1908	575.6	473.0	358.5	350	400	678.2	628.7	765	1146	315.9	623.7	306	399655
1909	289.1	249.6	240	300	350	490.2	1061	3455	4528	607.2	466.4	2362	866976
1910	868.7	569.2	441.5	390	354.8	1245	2030	3367	1013	32.87	74.19	43.3	631924
1911	121	228.5	288.5	370.1	380.8	375.2	461	2090	4086	3604	578.7	700	803628
1912	3142	800	500	497.3	486.4	597.5	840.3	4259	5141	804.9	275.7	197	1061788
1913	282.9	363.6	300	250	250	400	959.1	821.5	885.1	80.35	37.65	69.3	282955
1914	384.0	403.5	350	300	300	513.9	647	1662	2614	786.8	710.4	817	572754
1915	734.6	428.6	274.5	291.9	287.5	399	823.3	1664	2099	646	423.9	281	504677
1916	254.4	327	307.6	367.5	455.7	777.6	864.9	2658	1924	612.8	1356	428	625649
1917	1529	1100	600	500	500	526.7	938.4	1878	4978	2556	286.7	160	939089
1918	196	376.3	356.8	280.5	370	535.9	259.3	457	876.9	343	51.19	378	269536
1919	170	331.4	320	272.5	276.7	562.4	2025	3864	1066	580	330.3	119	601122
1920	198.3	433.4	382.8	375.5	477.4	506.1	554.2	4317	6858	1944	359.5	276	1006811
1921	377.3	628.2	542.3	500	480.7	839.8	408.1	1508	6534	933.7	1030	694	870826
1922	449.4	528	435.9	480.9	517.1	536	429.3	3210	4337	667.3	95.19	82.2	709859

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1923	97.52	338.8	391.7	374.7	424.9	400.1	400.3	2042	2688	465.3	698.5	1028	563530
1924	1315	1004	655.5	390	672.7	708	2890	5345	1369	162.7	74.58	71.3	886681
1925	123.5	288.7	340.4	260.1	467.7	644.5	538.9	617.7	297.6	138	299	394	265368
1926	536.2	590	571.5	432.2	540.5	630.8	729.1	1832	1799	239.4	59.42	61.9	483730
1927	81.87	279.1	378.4	319.6	485.7	433.9	445.2	1568	1989	2082	274.3	1840	613838
1928	1375	736	439.5	393.5	408.5	636.8	465.3	1531	1025	42.87	54.58	68.3	434271
1929	75.03	299.7	359	272.7	284.3	454.7	457.5	1948	1550	166.8	1236	1362	511565
1930	907.6	721.1	515.3	303.1	437.9	531.2	746.3	618.2	555.1	193.7	265.3	91.9	355159
1931	145.8	263.1	345.2	198	308.6	524	236	176.8	50.73	20.39	33.13	54.6	141850
1932	95.26	116.2	275.6	264	377.6	526.5	478.4	2727	2863	1413	179.2	156	572948
1933	179	348.7	342	267.8	250	467.5	187.1	535.8	1267	160.9	45.65	98.1	249886
1934	121.6	196.9	333.4	324.8	400.2	268.8	147.3	109	29.57	10.94	20.1	32.4	119481
1935	49.45	79.27	184.9	205.5	234.3	100.4	32.3	739.8	2795	791.7	151.2	155	331871
1936	199.5	273.7	310.2	250.1	344.2	260.2	1015	1280	185.6	17.26	145.9	130	266030
1937	225.8	414.8	378.5	253.9	301.2	521.4	1491	2944	1316	313	35.13	51.9	498775
1938	82.29	115	276	214.6	299.3	353	1190	2109	2818	491.9	81.35	231	497568
1939	555.3	579.1	545.6	385.6	337.1	784.7	760.4	713.9	86.23	13.24	17.52	41.4	291456
1940	57.13	86.87	158.5	204.1	252.7	270.6	100.8	373.5	121.4	11.13	12.03	26.5	100838
1941	55.26	112.3	206.8	210.6	237.9	517.7	314.3	4284	4470	2007	168.8	169	772694
1942	1401	1199	762.6	321.1	282.9	540.4	2007	3651	3575	199.8	65.26	79.6	850737
1943	83.84	174	324.1	311.2	376	325.7	379.4	556.8	333	94.1	74.39	75.7	186972
1944	92.97	192.2	241.1	263.5	315.3	551.5	493.1	3564	3037	938.1	64.06	42.8	592963
1945	105.5	269.1	360.3	282.6	314.1	334.5	276.8	1779	680.7	148.3	71.19	46.8	282684
1946	95.97	300.9	242.1	220.6	240.3	240.2	170	131.6	78.47	29.71	33.26	50.1	110102
1947	67.39	348.9	305.6	241.1	322.3	254.3	216.8	1081	386	182.9	101.9	208	224292
1948	162	344.8	312.3	301	302.6	562.8	1410	3327	4185	233.2	59.26	38.7	677374
1949	81.71	241.6	269.8	280.8	293.6	405.1	391.4	1440	4311	1398	171.7	94	564930
1950	123.4	281.5	313.7	300.6	419	262.9	186.6	209.5	343.3	27.52	33.48	41.8	152197
1951	61.52	108.5	215.8	279.3	285.6	168.7	94.53	52.96	34.2	1.28	8.23	25.9	79956
1952	40.97	77.47	174.4	236.8	220.5	303	521.8	2424	2185	451.5	588.3	171	447490
1953	124.3	206.1	301.2	335.9	338.8	223.8	210.5	176.5	212.5	52.71	30.2	30	134564
1954	63.16	125.3	237.5	190.4	262.7	121.5	60.1	51.84	19.84	12.58	13.08	39.4	71576
1955	47.55	59.57	121.6	174.5	197.2	162.2	59.27	97.9	65.33	11.66	20.35	19.1	62135
1956	27.29	77.87	140.1	198.9	195.5	146.8	71.87	156.8	240.5	11.21	3.21	1.91	76268
1957	12.85	62.73	62.97	75.74	102.1	66	65.83	673.1	2000	1997	842.1	356	382820
1958	162.7	621.7	382	256	328.7	398.4	701.5	2587	1200	71.77	33.26	29.3	409395
1959	48.94	125.2	212.3	193.7	241	218	113.5	61.19	33.07	12.11	22.26	13.6	77618
1960	92.77	227.7	245.1	226.5	225.5	469	843.4	252.1	742.4	109.2	41.06	22.4	210046
1961	65.48	192.1	152.5	152.3	219.1	197.4	348.8	611.5	252.7	58.97	50.19	83.5	143575
1962	86.26	469.8	279.6	270	510.4	388	1146	1195	700.6	242.7	81.97	67.2	326572
1963	74.29	356.8	216.7	143	315	320.9	156	42.94	24.3	10.08	20.81	20.9	101651
1964	27.93	76.27	61.68	113.7	128.6	217.2	86.97	73.13	30.53	8.55	17.4	9.9	51209
1965	25.99	159.3	80.32	182.7	222.1	355.7	345.5	1227	2274	1218	516.8	321	418557
1966	525.4	609.6	447.3	386.1	398.6	657.8	607.1	646.5	367.9	82.71	99.74	44.6	294044
1967	79.74	575.4	297.1	228.4	298.6	269.8	73.1	121.7	370.7	114.2	380.6	122	176176
1968	69.94	370.8	249	244.2	287.6	509	276.8	813.2	1431	358.5	721.6	108	328408
1969	98.84	367.9	251.9	333.9	362.7	419.6	477.2	858.3	1262	422.3	310.2	233	325110
1970	804.7	882.5	511	334.8	431	477.2	438.2	860.6	460.5	180.1	79.19	600	365294
1971	429.2	679.2	403.7	343.5	468.2	657.1	282.3	102.1	136.3	143.9	81.26	108	230605
1972	374.8	421.5	320.3	281.9	341.3	505.5	154.4	70.19	106.3	40.81	98.9	138	171832
1973	180.2	468	303.1	280.3	295.7	544.8	504.8	1747	2354	1158	355.4	298	513052
1974	413	357.2	301.9	271.8	272.3	561.2	279.2	174.6	83.7	21.81	22.23	16.2	167555

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1975	47.74	103.4	163.9	170.3	244.5	397	459.6	1217	1732	1192	480.5	402	399617
1976	273.6	843.3	312.6	225.2	354.3	528.8	521.2	765.7	873.8	294.2	154.1	46.4	312676
1977	96.55	133.1	129.8	114.7	180.5	287	125.4	52.68	19.8	25.61	15.65	14	71808
1978	18	79.5	88.06	153.1	205.6	220.5	95.07	415.9	543.1	408.7	125.9	63.2	145818
1979	242.3	252.1	162.3	170	200.9	404.8	823.2	2084	3611	2006	647.5	75.4	646011
1980	49.58	107.7	165.3	276.5	338.4	377.1	709.3	2190	2294	637	173.4	35.2	443893
1981	28.23	123.5	287	237	247	257.8	78.73	93.58	100.5	105	109.3	113	107192
1982	241.2	424.5	178.1	220.6	292.5	384.9	370.6	1155	1510	759.6	523.7	779	412708
1983	488.3	492.7	303.5	318.4	456.4	561.4	598.8	861.4	2123	861.3	180.5	31.9	438323
1984	63.65	106.8	278.4	274.2	294.7	577.1	918.5	1919	1246	344.8	176.5	123	382259
1985	153.3	471.2	360.2	341.5	339.3	662.3	2326	3704	4418	724.9	292.1	139	840016
1986	294.6	732.2	569.9	521.5	595.4	708.6	997.5	1587	4155	2156	161.9	246	766753
1987	610.2	948.1	654.3	482.7	540	884	2305	4958	3181	446.6	79.16	58.8	915308
1988	75.42	378.6	407.1	306.5	394.7	635.8	486.2	147.9	156.2	89.97	43.87	56.8	190985
1989	78	344	323.9	309.7	313.9	806.8	1038	416.5	218.2	67	50.39	43	241401
1990	72.55	89.33	151.1	179.7	232.9	310.8	108.9	539.2	269.3	213	150.7	64.7	144032
1991	237.7	343.8	252.6	287.1	320.9	458.6	933	1032	750.6	326.3	230.3	208	324507
1992	75.35	277.2	274.4	259.8	272.8	599.7	1091	398.4	469	116.3	153.9	95.7	245627
1993	87.71	188.9	256.8	279.7	327.9	606.1	666.6	1681	1463	324.8	173	361	387279
1994	140.1	260.4	337.4	301.9	351.1	489.5	484.8	1169	1063	99.03	37.32	58.2	288842

Table B-2. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08251500 Rio Grande near Lobatos, CO, Water Years 1900 - 1994

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	2945	2850	2945	2945	2683	2945	2850	2945	2850	2976	2976	2880	-30746
Avg Day	297.6	355.8	308.8	280.4	328.3	453.2	621.4	1507	1758	552.4	232.8	226.3	576.3
Max Day	7510	1830	964	725	909	2060	5280	11700	13100	9580	3520	4550	13100
Min Day	4	12	8	25	25	0.8	14	2	7	0	0	0	0
# Months	95	95	95	95	95	95	95	95	95	96	96	96	95
SDev Month	456.5	257.2	138.5	96.44	111.9	207.7	565	1371	1850	839.7	309.5	375	394.6
Skew Month	3.54	1.18	0.701	0.356	0.366	0.606	1.84	1.05	1.27	3.09	2.5	3.52	1.04
Min Month	12.85	19.2	26.84	25	25	33.9	32.3	21.55	19.8	1.28	3.21	1.91	70.9
Max Month	3142	1199	762.6	521.5	672.7	1245	2890	5691	7217	5440	1741	2362	2065
Exceedences													
1%	2190	1255	775.1	530	700	1341	3710	7780	9065	5332	1977	2364	5341
5%	1230	938.5	600	500	540	897.3	2095	5020	6400	2592	988.4	950	2415
10%	735	733	500	429.5	500	730	1350	3773	4510	1586	594.8	517	1310
20%	400	530	400	350	420	608	878	2490	3020	764.4	304.6	270	629
50%	112	296	295	275	310	425	410	953.5	951	166	92	86	282
80%	56	106	195	200	240	264	150	184	126	28	32	35	88
90%	36.5	71	135	165	200	169	82	76	40	13	16	20	44
95%	25	53	90	125	160	110	53	49	25	9	9.9	14	24
99%	12	20	34	25	25	25	25.5	18	12	0	1.35	4.48	8

Figure B-1. Station 8251500 Rio Grande near Lobatos, CO.
Mean Annual Discharge, 1900-1994

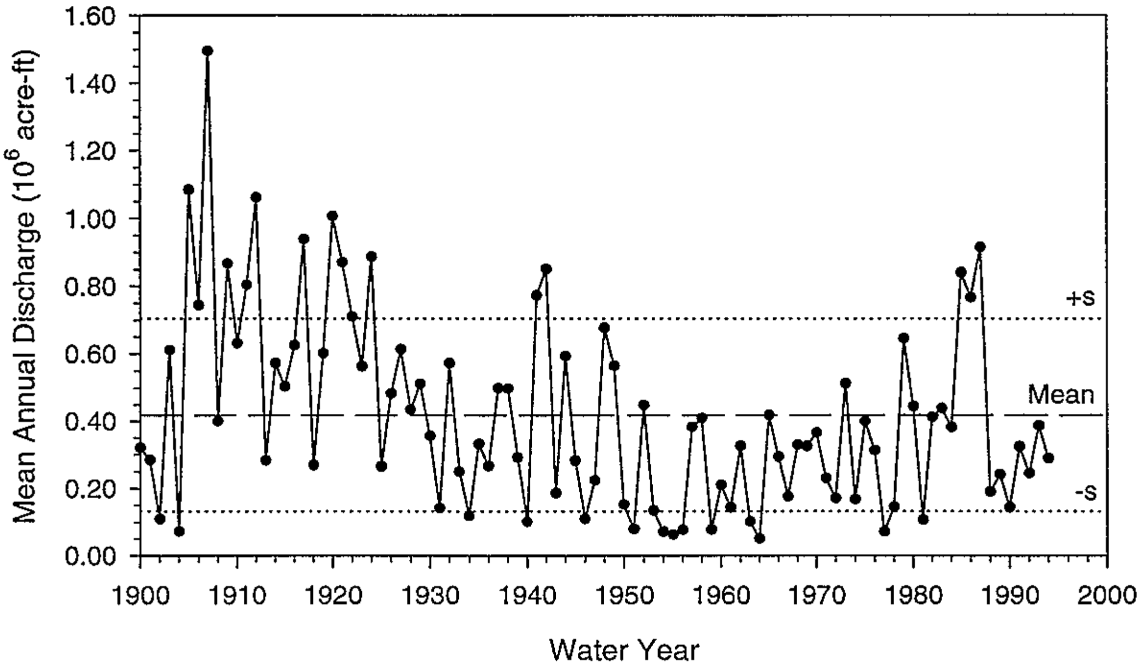


Figure B-2. Station 8251500, Rio Grande near Lobatos, CO.
Mean Monthly Discharge, 1900-1994

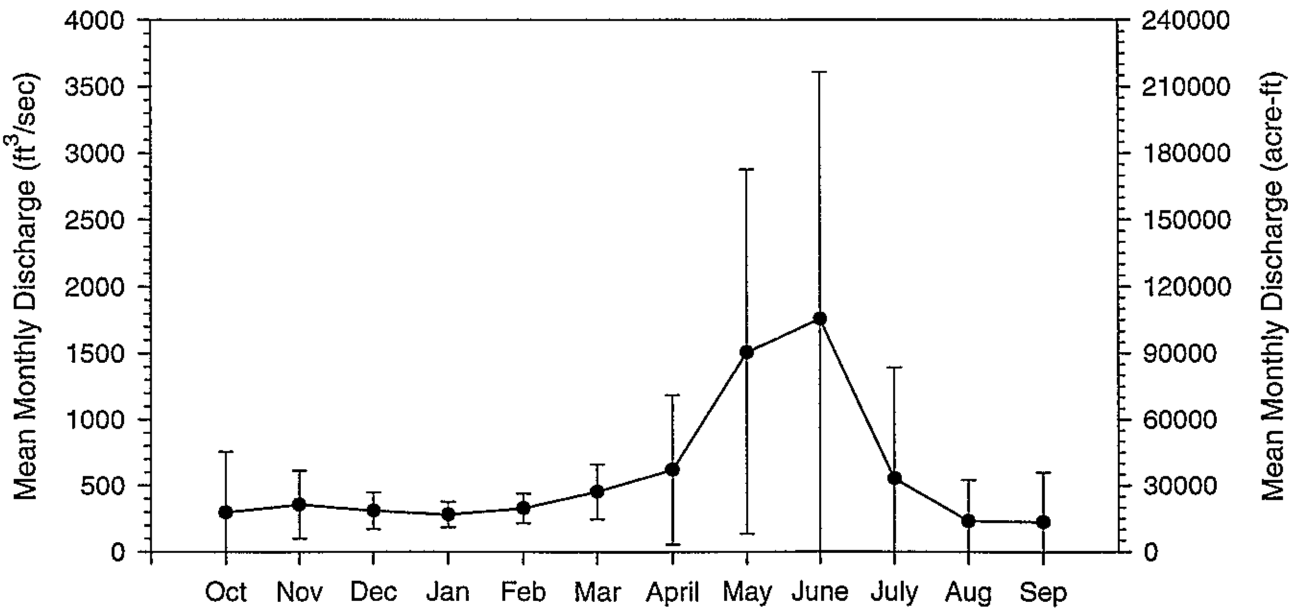
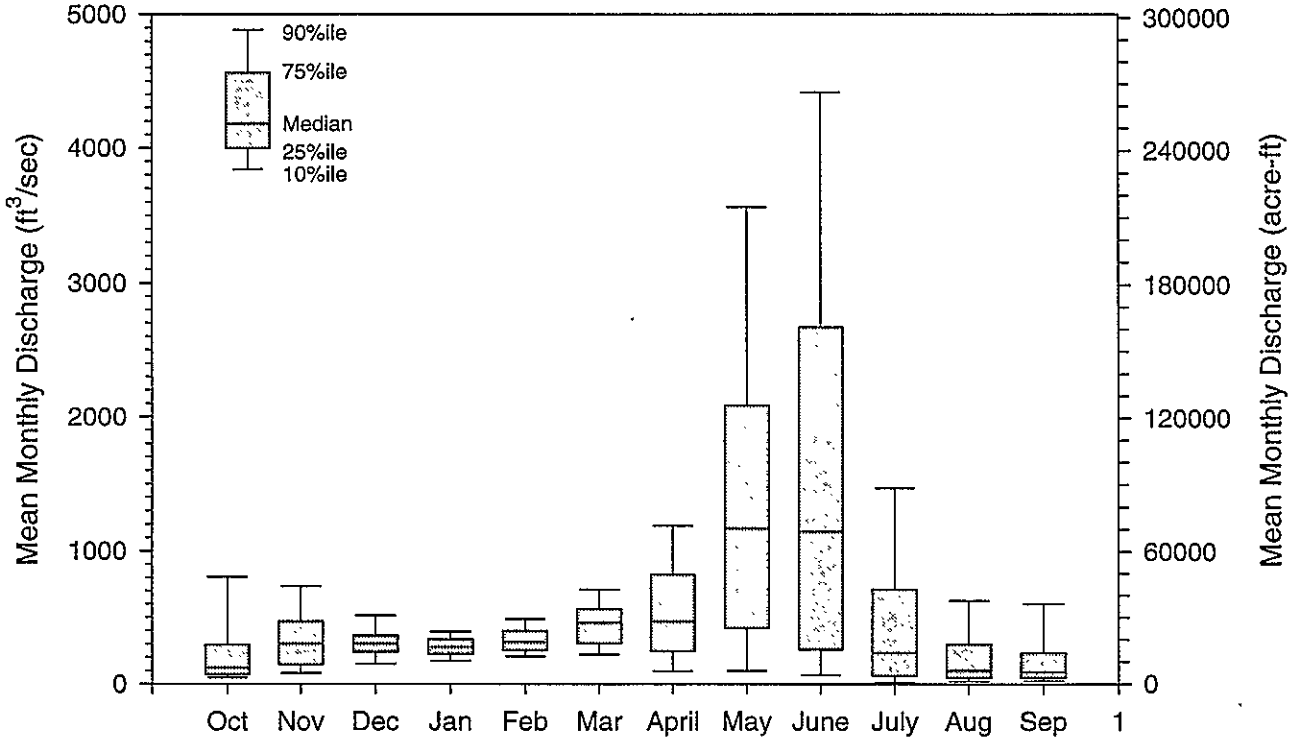


Figure B-3. Station 8251500, Rio Grande near Lobatos, CO.
Monthly Discharge, 1900-1994



08252000 RIO GRANDE AT COLORADO-NEW MEXICO STATE LINE

No Remarks Available for this Station.

Station Name	RIO GRANDE AT COLORADO-NEW MEXICO STATE LINE
Station ID	08252000
State	COLORADO
County	COSTILLA
Latitude	37:00:03
Longitude	105:43:19
Elevation	7390.00

Table B-3. Mean daily streamflow (cfs), station 08252000 Rio Grande at Colorado-New Mexico State Line, 1954 - 1982.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1954	65	130	239.8	194.8	278.6	132.8	67.1	54.06	18.28	12.2	13.23	41.2	74512
1955	47.45	55.87	124.2	177.1	200.1	171.7	57.57	101.2	74.77	10.94	21.36	21.62	63808
1956	26.58	70.2	136.9	192.1	195.3	152.8	69.97	156.3	246.4	11.25	2.07	0.89	75590
1957	12.16	59.73	63.58	77.61	102.9	68.06	68.1	660.9	2026	2000	849.9	360.1	384786
1958	154.4	595	425.6	287.7	346.8	383.5	666.3	2505	1208	78.81	34.35	37.6	406346
1959	49.16	130.6	215.9	195.3	243	213.2	114	57.55	31.33	11.16	23.27	12.84	77749
1960	90.97	227.8	230.7	226	225.7	467.7	780.9	256.3	709.6	111	39.55	20.27	203435
1961	66.39	187.5	151.2	155	220	203.1	346.2	624.7	280.6	56.1	45	75.07	145164
1962	84.42	451	288.8	280	500	369.7	1057	1242	769.6	252.9	84.65	66.2	327252
1963	70.9	327	211	148	318	334	155.6	40.9	24.39	10.17	21.66	19.09	100406
1964	25.04	75.73	56.32	110	130	215	93.9	66.94	28.49	5.99	16.05	11.56	50154
1965	26.16	153.6	80.13	183	222	353.7	341.4	1148	2154	1139	534.9	328.3	402536
1966	555.4	613.5	450.3	391.1	403.4	670.6	608	639.5	367.8	86.68	103.8	46.67	297902
1967	69.9	542.1	294.8	232.4	303.4	258.7	64.13	118.8	358.4	112.2	366	122.5	170867
1968	68.29	367.6	260.2	244.2	288.3	525.1	294.6	793	1365	353.6	696.2	126.8	324991
1969	94.74	367.4	252.9	334.4	362.3	419.6	476.8	869.3	1183	441	308.3	244.1	322532
1970	720.6	844.9	519.2	349.5	469.8	501.9	460.6	837.4	472.4	184.7	77.13	637	365957
1971	420.8	694.7	403.9	344	467.5	683.9	312.5	106.7	141.5	147	82.19	104.7	235110
1972	374.6	411.2	320.8	279	334.3	502.4	147.8	67.74	105.1	38.23	93.55	134.2	169140
1973	179.5	465.7	298.5	280.2	294.6	535.6	492.6	1719	2292	1116	344.3	284.7	501745
1974	418.1	362	302.9	272.3	272	560.8	293.1	183.2	84.2	22.71	22.55	15.33	169614
1975	46.45	104.7	163.9	170.2	243.6	405.6	469.9	1135	1722	1132	482.3	402.2	391502
1976	279.6	793.6	313.2	226.6	352.1	528.1	513.5	733.9	862.1	285.5	152.3	42	306028
1977	91.97	135.3	130	114.4	180.5	299.5	125.7	50.9	18.4	24.58	16.83	12.92	72192
1978	17.42	79.57	87.97	153.2	214.4	233.7	99.83	418	533	418.6	127.4	57.97	147290
1979	242.6	256.1	162.6	170.2	200.7	416.9	857.9	1968	3597	1991	651.6	91	641390
1980	50.26	111.5	165.5	274.2	342.9	390.3	707.3	2103	2231	644.1	169.9	34.4	436048
1981	29.58	123.1	286.6	237.4	246.4	259.3	76.43	88.58	93.83	98	108.5	113.3	106007
1982	246.5	447.2	187.6	222.3	299.8	415.8	391.2	1144	1469	747.3	518.5	764.5	413538

Table B-4. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08252000 Rio Grande at Colorado-New Mexico State Line, 1954 - 1982.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	899	870	899	899	819	899	870	899	870	899	899	870	10592
Avg Day	159.5	316.7	235.4	224.9	284.6	368.0	352.1	685.9	843.7	398.0	207.2	145.8	23.6
Max Day	1100	1270	725.0	490.0	550.0	1650	2300	4030	4860	3630	3590	2080	4860
Min Day	2.70	27.00	30.00	60.00	74.00	50.00	17.00	15.00	5.00	0	0	0	0
# Months	29	29	29	29	29	29	29	29	29	29	29	29	29
SDev Month	179.8	233.8	117.9	76.42	96.70	159.8	275.8	696.1	924.3	564.3	242.7	190.7	215.6
Skew Month	1.72	0.749	0.552	0.230	0.484	0.100	0.822	1.12	1.27	1.85	1.30	2.02	0.474
Min Month	12.16	55.87	56.32	77.61	102.9	68.06	57.57	40.90	18.28	5.99	2.07	0.890	69.44
Max Month	720.6	844.9	519.2	391.1	500.0	683.9	1057	2505	3597	2000	849.9	764.5	886.0
Exceedences													
1%	1030	1093	580.0	450.0	539.0	900.3	1600	3391	3966	2740	1331	1261	2691
5%	563.2	850.0	460.1	370.0	500.0	662.0	1175	2461	2930	1690	771.0	583.0	1314
10%	466.4	725.0	405.5	320.0	450.0	590.1	738.0	1840	2400	1351	555.4	394.0	769.2
20%	258.0	525.0	330.0	285.0	380.0	508.4	515.0	1190	1630	679.6	362.6	189.0	473.0
50%	76.00	261.0	230.0	220.0	270.0	365.0	264.0	398.0	470.0	118.5	85.00	61.00	213.0
80%	33.00	79.00	120.0	155.0	209.6	214.8	80.00	64.80	50.00	17.00	23.00	18.00	61.00
90%	21.00	56.00	80.00	125.0	180.0	140.9	54.00	46.00	24.00	8.76	10.00	11.00	30.00
95%	14.00	46.00	65.00	110.0	130.0	98.00	42.50	35.00	18.00	5.60	5.49	7.35	15.00
99%	7.00	39.00	43.00	68.99	96.76	61.00	27.70	18.00	9.74	2.00	0.60	0.00	5.00

Figure B-4. Station 8252000 Rio Grande at CO-NM State Line
Mean Annual Discharge, 1954-1982

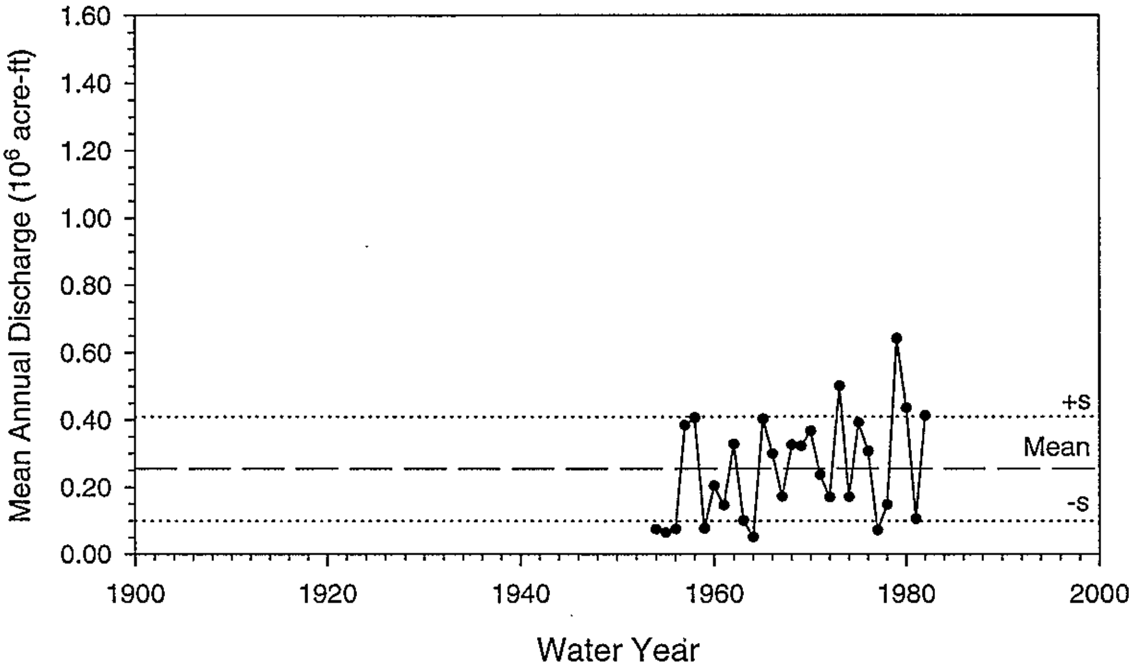


Figure B-5. Station 8252000 Rio Grande at CO-NM State Line
Mean Monthly Discharge, 1954-1982

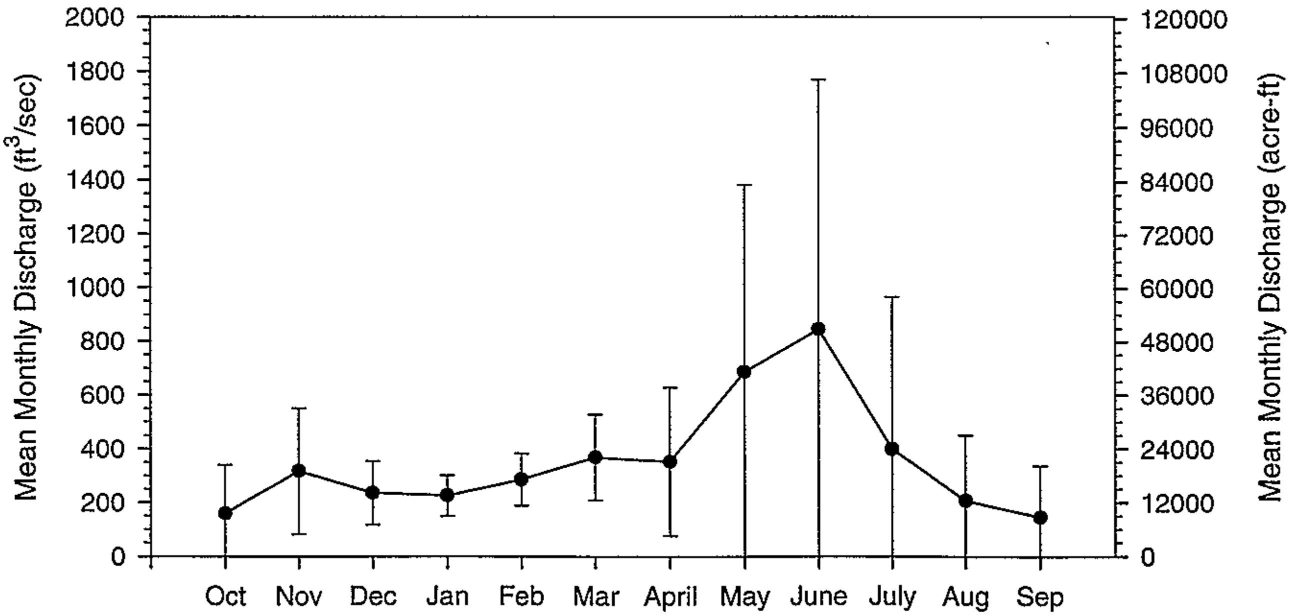
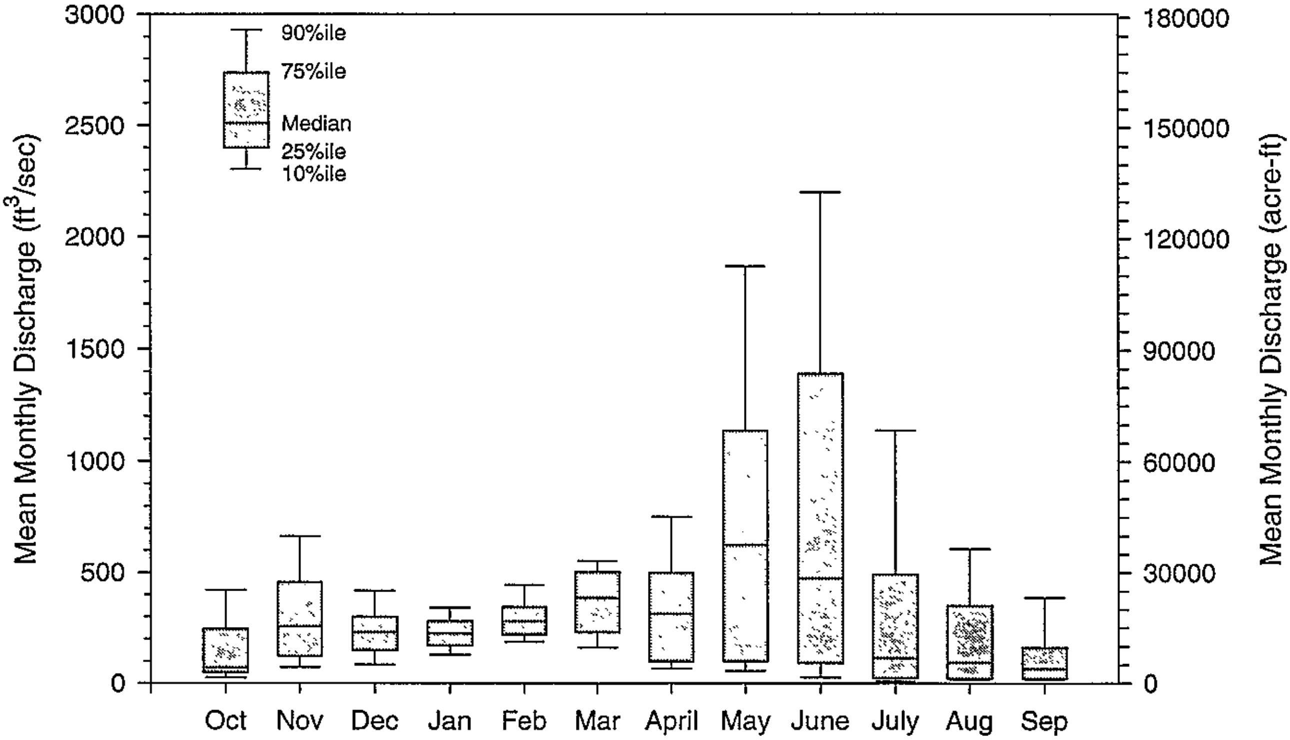


Figure B-6. Station 8252000 Rio Grande at CO-NM State Line
Monthly Discharge, 1954-1982



08252500 COSTILLA CREEK ABOVE COSTILLA DAM, NM

LOCATION.--Lat 36 53'52", long 105 15'16", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on left bank 1,900 ft upstream from normal high-water line of Costilla Reservoir, 2.1 mi northeast of Costilla Dam, 16 mi southeast of Costilla, and at mile 36.9.

DRAINAGE AREA.--25.1 mi2.

PERIOD OF RECORD.--April 1937 to current year (no winter records). Monthly discharge only for some periods, published in WSP 1312 and 1732. Prior to October 1951, published as "above reservoir, near Costilla."

REVISED RECORDS.--WSP 878: 1937. WSP 1923: 1937-50, drainage area.

GAGE.--Water-stage recorder. Concrete control since Sept. 17, 1965. Elevation of gage is 9,429 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WSP 1923 for history of changes prior to Sept. 17, 1965.

REMARKS.--No estimated daily discharges. Records good. Natural flow may be augmented by transbasin diversions or irrigation returns from about 1,300 acres irrigated from Casias Creek (station 08253000). Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,870 ft^3/s, July 22, 1954, gage height, about 4.8 ft, from floodmarks, site and datum then in use, on basis of slope-area measurement of peak flow; minimum not determined. The flood in 1954 destroyed the gaging station and is highest since about 1909, from information by local range rider. A portion of this flow may have originated in Casias Creek basin (see REMARKS).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 15	1900	51	2.74
June 5	2015	61	2.88
May 5	2130	*95	*3.14
June 18	2315	46	2.71
May 15	1800	87	3.08
July 15	1445	48	2.71
May 22	1930	80	3.03

Minimum discharge, not determined.

Table B-5. Mean daily streamflow (cfs), station 08252500 Costilla Creek above Costilla Dam, 1937-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1937								30.23	22.77	10.56	4.47	3.50	4346
1938								39.38	30.01	7.59	5.59	5.79	5362
1939	4.40							22.90	9.27	3.85	4.44	4.40	3002
1940									8.97	4.09	3.52	3.59	1215
1941										15.19	7.20	5.01	1675
1942								41.88	48.03	11.73	5.61	5.27	6813
1943	4.88							9.09	4.37	2.38	7.85	4.11	1993
1944	3.41	2.68						91.35	31.27	7.58	3.05	2.11	8626
1945	2.24								15.74	6.93	5.40	2.48	1980
1946	2.83							6.99	2.63	2.75	3.30	3.05	1314
1947													0
1948	3.14	2.34							23.62	6.86	3.69	2.00	2505
1949								10.54	16.06	12.48	6.39	2.60	2919
1950	2.64							3.88	5.91	4.92	2.23	2.27	1327

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1951									8.62	3.96	3.53	2.38	1115
1952								43.45	38.40	10.08	7.70	5.12	6354
1953									17.24	9.02	4.44	2.08	1977
1954								13.74	5.91	16.16	4.91	2.68	2652
1955								27.28	20.98	5.65	9.49	3.44	4061
1956								5.77	3.08	1.92	2.24	1.65	892
1957									50.27	21.71	22.58	6.55	6104
1958									25.59	7.85	6.59	5.13	2716
1959								11.09	9.39	5.58	7.21	2.81	2194
1960									13.13	5.71	2.80	2.57	1457
1961	3.82	3.83						28.90	19.20	5.71	10.48	7.36	4816
1962								26.26	9.87	6.15	3.51	3.48	3003
1963	2.44							4.26	2.27	1.89	3.30	2.58	1020
1964	1.99							9.37	3.62	2.29	2.87	2.20	1362
1965	1.23	1.43						23.77	25.33	12.25	12.44	6.11	5011
1966	3.97							16.29	9.73	6.53	7.88	3.45	2916
1967	2.60							3.58	5.04	5.27	16.71	9.09	2572
1968	3.60								21.34	7.75	9.14	3.84	2758
1969	3.63							17.87	12.94	15.21	11.95	6.56	4152
1970								24.39	17.03	9.53	5.38	4.42	3693
1971								7.37	7.35	6.16	5.40	3.12	1787
1972								7.02	4.72	2.56	3.14	2.43	1208
1973									43.87	12.65	4.26	2.86	3820
1974								6.35	3.89	2.45	2.48	1.84	1035
1975									16.61	9.31	4.19	3.03	1999
1976									13.13	6.23	3.73	2.51	1543
1977								7.72	4.10	3.41	3.27	2.48	1277
1978								19.91	16.08	3.91	2.25	1.72	2662
1979								39.74	45.57	11.28	5.61	3.14	6380
1980								29.92	31.17	6.53	3.48	2.72	4472
1981								6.60	6.54	4.45	5.67	5.14	1723
1982								19.19	13.98	4.58	11.41	9.92	3585
1983								53.03	62.47	18.32	10.91	5.39	9096
1984								46.97	18.73	7.46	8.46	4.85	5270
1985								55.58	33.20	10.57	6.22	5.71	6765
1986								17.26	19.87	16.99	5.81	5.26	3959
1987								57.65	40.10	9.00	6.21	4.64	7142
1988								10.44	9.04	6.24	3.72	4.21	2043
1989								11.44	7.12	4.45	4.74	3.76	1916
1990	4.61							27.05	13.84	8.58	6.54	4.93	3993
1991	5.40							34.61	21.80	11.50	12.36	11.51	5909
1992	4.81							34.16	24.60	6.72	4.95	3.12	4763
1993								40.10	20.73	6.42	5.52	6.77	4836
1994								71.58	32.00	6.37	5.66	5.15	7352

Table B-6. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08252500 Costilla Creek above Costilla Dam, 1937-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	703	127	0	0	0	0	121	1438	1680	1767	1767	1710	9313
Avg Day	3.53	2.61					15.05	25.52	18.72	7.78	6.21	4.14	11.23
Max Day	18	6.8					46	184	118	300	41	35	300
Min Day	0.8	1					5.8	2	1.1	1.3	1.2	1.2	0.8
# Months	18	4	0	0	0	0	0	44	56	57	57	57	0
SDev Month	1.13	0.99						19.70	13.85	4.39	3.76	2.05	
Skew Month	-0.05	0.34						1.28	1.12	1.08	2.08	1.48	
Min Month	1.23	1.43						3.58	2.27	1.89	2.23	1.65	
Max Month	5.40	3.83						91.35	62.47	21.71	22.58	11.51	
Exceedences													
1%	8.30	6.75					45.79	119.2	78.20	27.00	25.00	13.00	76.87
5%	6.50	6.00					33.90	77.00	55.00	19.00	16.00	8.85	40.00
10%	5.50	5.55					29.90	58.00	43.00	14.00	12.00	7.00	26.00
20%	4.60	3.00					22.80	39.00	28.00	10.00	8.10	5.20	15.00
50%	3.20	2.25					12.00	18.00	14.00	6.30	4.85	3.40	5.80
80%	2.30	1.50					7.52	7.20	5.80	3.70	3.10	2.30	3.00
90%	1.90	1.50					6.80	5.00	3.60	2.50	2.40	2.00	2.30
95%	1.70	1.00					6.51	3.70	2.40	2.00	2.00	1.70	2.00
99%	1.00	1.00					5.86	2.40	1.60	1.50	1.60	1.40	1.40

Figure B-7. Station 8252500 Costilla Creek above Costilla Dam
Mean Annual Discharge 1937-1994

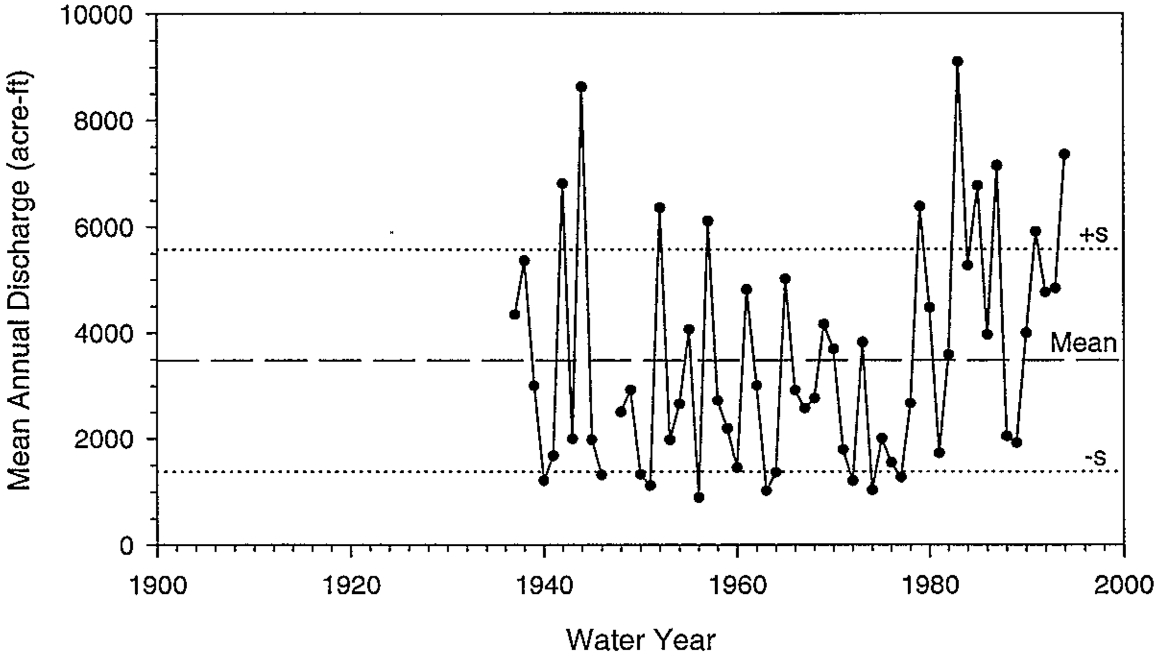


Figure B-8. Station 8252500 Costilla Creek above Costilla Dam
Mean Monthly Discharge 1937-1994

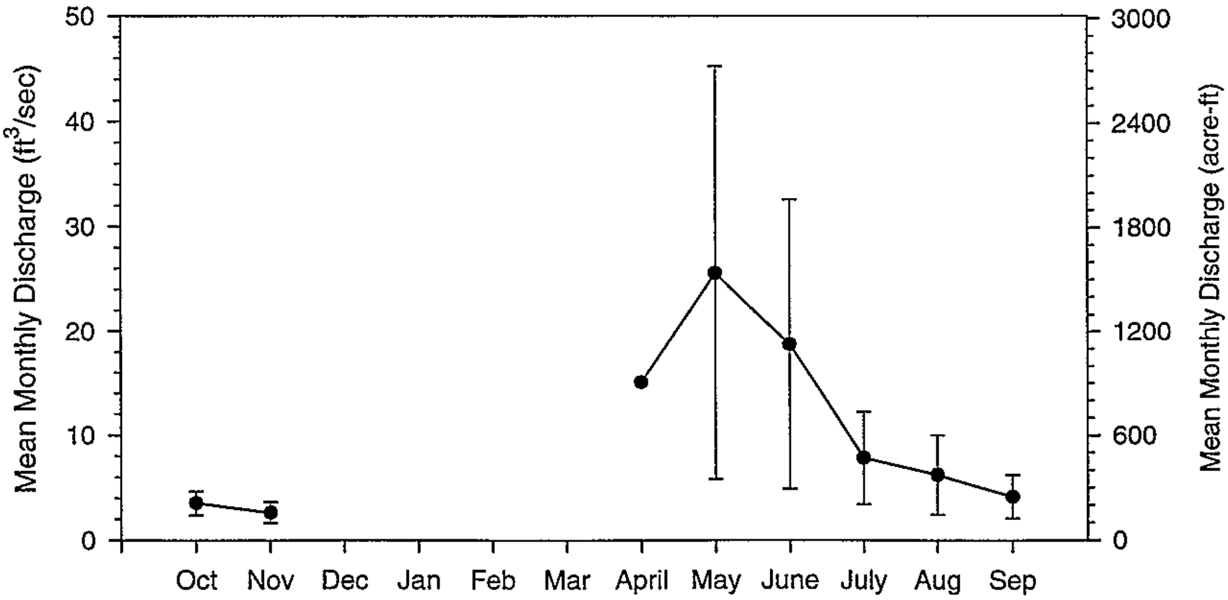
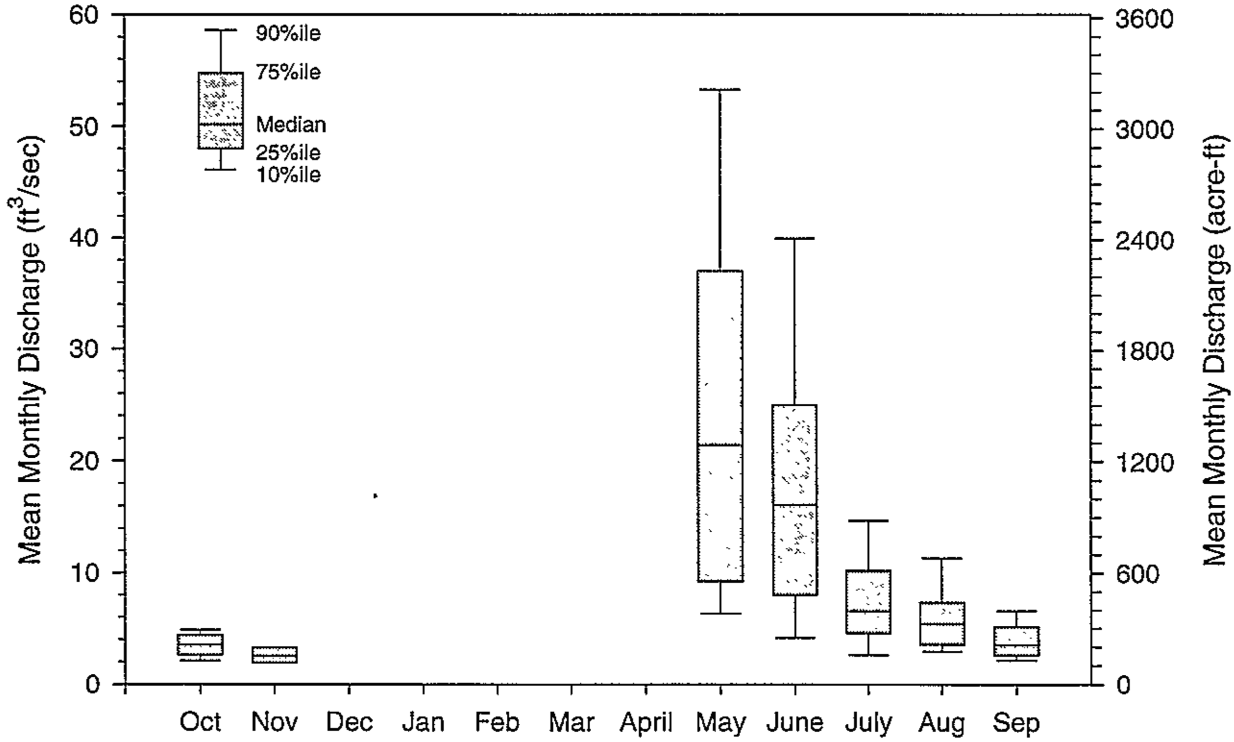


Figure B-9. Station 8252500 Costilla Creek above Costilla Dam
Monthly Discharge 1937-1994



08253000 CASIAS CREEK NEAR COSTILLA, NM

LOCATION.--Lat 36 53'48", long 105 15'35", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on left bank 200 ft downstream from road crossing, 900 ft upstream from normal high-water line of Costilla Reservoir, 1.8 mi northeast of Costilla Dam, and 16 mi southeast of Costilla.

DRAINAGE AREA.--16.0 mi2.

PERIOD OF RECORD.--April 1937 to current year (no winter records). Monthly discharge only for some periods, published in WSP 1312 and 1732. Records for Nov. 1-7, 1947 and Nov. 1-16, 1948, published in WSP 1118 and 1148, are unreliable and should not be used.

REVISED RECORDS.--WSP 1282: 1948-51. WSP 1923: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 9,404 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 18, 1940, water-stage recorder and wooden control 100 ft downstream at datum 1.56 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Diversion 3.5 mi upstream for irrigation of about 1,300 acres, part of which is in Costilla Creek basin. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD --Maximum discharge, 181 ft3/s, July 20, 1971, gage height, 2.07 ft, from rating curve extended above 85 ft3/s; minimum, not determined.

EXTREMES FOR CURRENT YEAR. -- Peak discharges greater than base discharge of 35 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 30	1530	58	1.24
June 11	2200	*92	*1.48
May 14	1845	63	1.27
July 19	0115	40	1.12

Minimum discharge, not determined.

Table B-7. Mean daily streamflow (cfs), station 08253000 Casias Creek near Costilla, 1937-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1937								43.74	43.53	15.45	6.12	5.92	6958
1938								29.34	67.70	18.45	8.86	10.30	8125
1939	7.53							27.00	12.37	5.53	4.57	6.26	3853
1940									17.47	7.26	6.50	6.36	2264
1941										45.77	18.13	10.63	4562
1942									79.83	36.23	14.70	9.41	8442
1943	6.24									8.43	15.79	9.06	2412
1944	6.49	5.35						40.35	61.40	29.97	10.61	5.17	9655
1945	4.45								36.30	18.45	14.19	6.60	4833
1946	5.40							14.48	10.07	4.39	4.81	5.20	2697
1947								16.92	33.70	17.95	7.00	7.49	5025
1948	4.47								60.57	24.58	11.98	5.09	6430
1949	4.57								50.43	34.23	17.84	7.97	6958
1950	5.59							5.74	6.38	3.95	2.43	2.36	1609
1951									11.19	3.37	3.63	1.45	1183
1952								24.68	59.27	18.07	8.23	4.15	6908
1953									27.03	11.59	4.98	3.19	2817
1954								11.10	8.55	7.58	6.55	4.38	2321
1955								16.18	32.50	10.64	11.85	6.10	4675
1956								4.37	3.33	1.98	2.41	2.90	909
1957									68.17	36.77	23.71	11.53	8461

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1958									41.83	8.11	4.55	5.78	3611
1959								12.54	12.58	5.69	5.37	1.77	2305
1960									19.63	7.47	2.85	2.60	1957
1961	5.84								39.17	13.84	14.65	15.87	5386
1962									19.07	11.02	5.10	4.75	2409
1963	4.21							2.30	1.83	1.55	2.32	3.74	970
1964	2.83							9.85	3.81	3.09	5.23	4.27	1772
1965	3.00	2.10						21.03	40.13	22.39	12.34	10.50	6751
1966	6.41							11.84	12.33	5.44	6.60	5.14	2902
1967	4.03							3.25	3.72	3.84	8.03	10.53	2025
1968	5.42								32.37	9.42	12.23	7.91	4061
1969	5.89							20.69	23.37	13.51	21.29	11.97	5877
1970								24.43	26.87	12.20	8.73	8.14	4872
1971								5.80	4.68	5.78	9.77	5.97	1946
1972								5.85	7.96	4.17	3.36	4.34	1555
1973									62.17	41.32	15.45	8.19	7677
1974								11.27	13.67	7.95	6.18	3.90	2607
1975									28.43	16.18	5.88	5.18	3356
1976									15.17	8.81	6.79	5.46	2187
1977								9.39	10.01	4.10	4.43	4.55	1968
1978							6.67	18.11	32.50	14.03	6.88	4.30	4986
1979								27.45	73.13	39.94	14.34	7.20	9805
1980								17.44	47.83	21.84	9.10	5.12	6125
1981								10.54	17.33	9.71	11.26	8.87	3496
1982								19.97	29.33	15.29	19.87	14.80	6016
1983								32.97	82.00	53.84	23.32	9.89	12239
1984								43.98	43.77	19.58	10.20	5.53	7469
1985								42.32	66.17	27.16	14.65	8.72	9629
1986								18.71	41.90	29.35	11.50	9.98	6749
1987								39.84	52.07	17.52	7.71	4.53	7369
1988								11.28	15.30	9.14	7.35	8.97	3152
1989								15.16	15.13	6.87	5.17	3.69	2792
1990	4.44							16.95	23.20	10.49	8.01	6.31	4209
1991	5.82							24.76	30.40	14.97	12.84	9.44	5961
1992	6.31							30.97	40.67	22.94	12.28	6.97	7293
1993								29.39	49.57	24.19	13.87	12.65	7850
1994								53.58	50.57	16.16	10.75	9.13	8501

Table B-8. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08253000 Casias Creek near Costilla, 1937-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	720	78	0	0	0	2	199	1327	1680	1798	1798	1740	9342
Avg Day	5.4	4.0				8.4	8.4	20.5	32.5	15.9	9.7	6.9	15.6
Max Day	19	7				9	28	88	111	79	40	26	111
Min Day	1.4	1.5				8	3	1.2	1.2	1	1.3	1.3	1
# Months	19	2	0	0	0	0	1	40	56	58	58	58	0
SDev Month	1.23	2.30						12.80	21.92	11.98	5.32	3.15	
Skew Month	-0.29							0.74	0.51	1.24	0.81	0.68	
Min Month	2.83	2.10					6.67	2.30	1.83	1.55	2.32	1.45	
Max Month	7.53	5.35					6.67	53.58	82.00	53.84	23.71	15.87	

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	11.80	7.00				8.70	27.01	79.73	94.40	64.00	28.02	18.00	80.00
5%	8.60	6.10				8.70	16.00	57.00	80.00	44.00	22.00	14.00	52.00
10%	7.70	6.00				8.70	15.00	42.00	70.00	34.00	18.00	12.00	37.00
20%	6.70	5.50				8.70	11.20	31.60	52.00	24.00	14.00	9.40	23.00
50%	5.20	4.50				8.70	7.30	15.50	29.00	12.00	8.40	6.10	9.30
80%	3.90	2.10				8.28	5.00	7.10	11.00	5.70	4.86	4.10	4.80
90%	3.40	2.00				8.14	4.20	4.97	5.40	3.50	3.40	3.20	3.60
95%	2.80	2.00				8.07	3.50	3.80	3.60	2.80	2.50	2.30	2.80
99%	2.14	1.50				8.01	3.50	1.80	1.80	1.50	1.80	1.40	1.60

Figure B-10. Station 8253000 Casias Creek near Costilla
Mean Annual Discharge 1937-1994

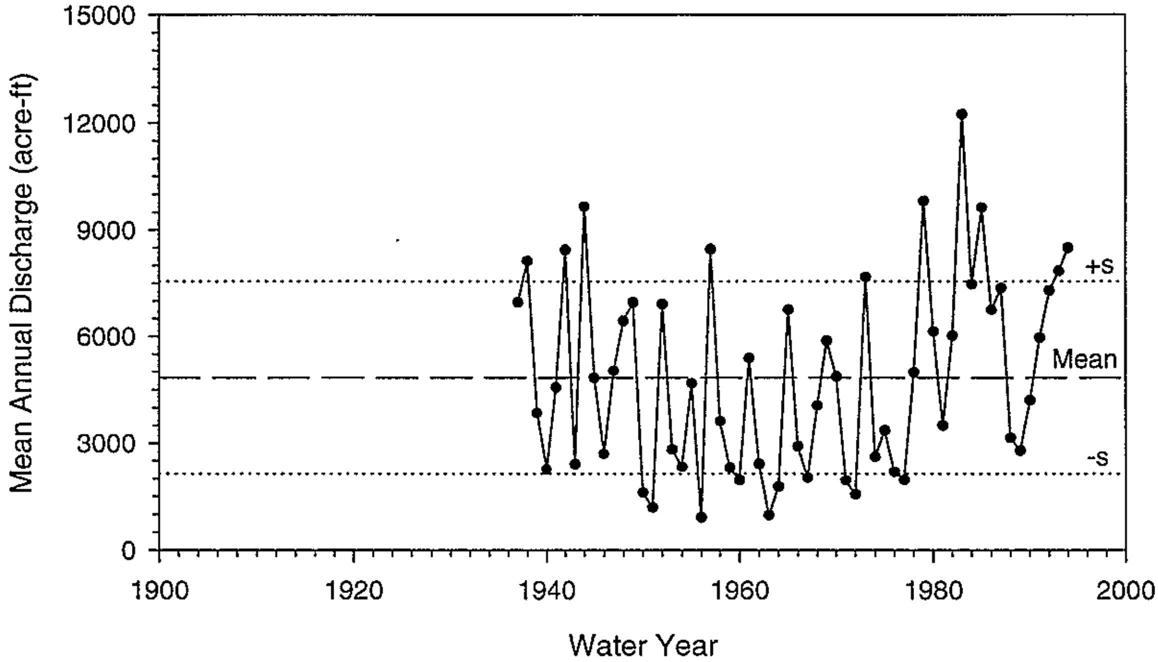


Figure B-11. Station 8253000 Casias Creek near Costilla
Mean Monthly Discharge 1937-1994

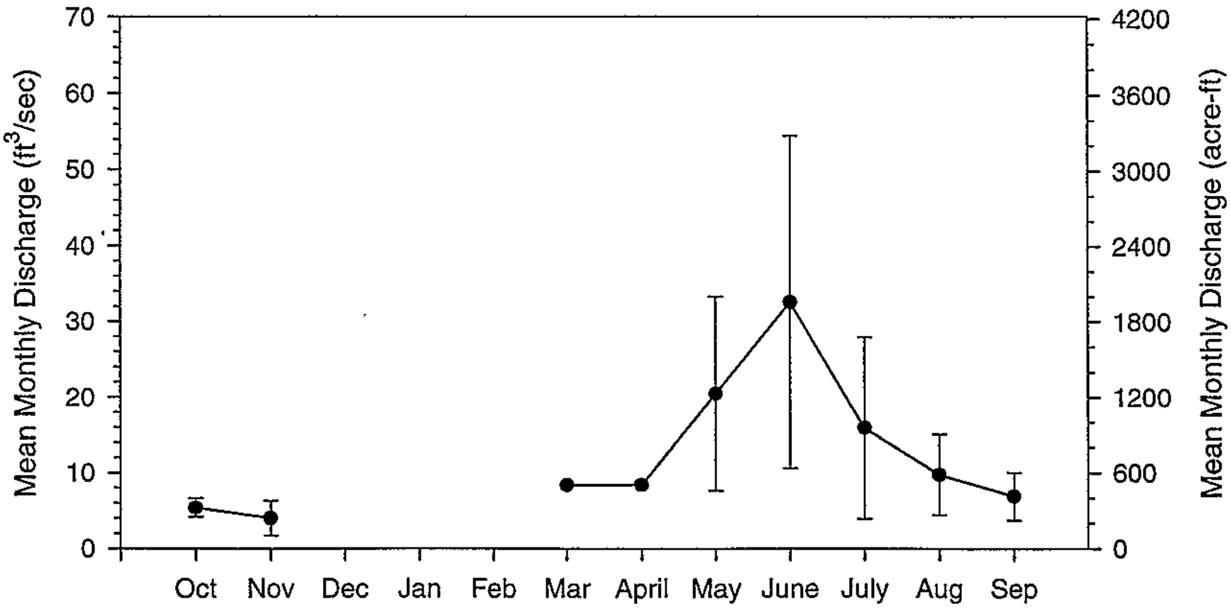
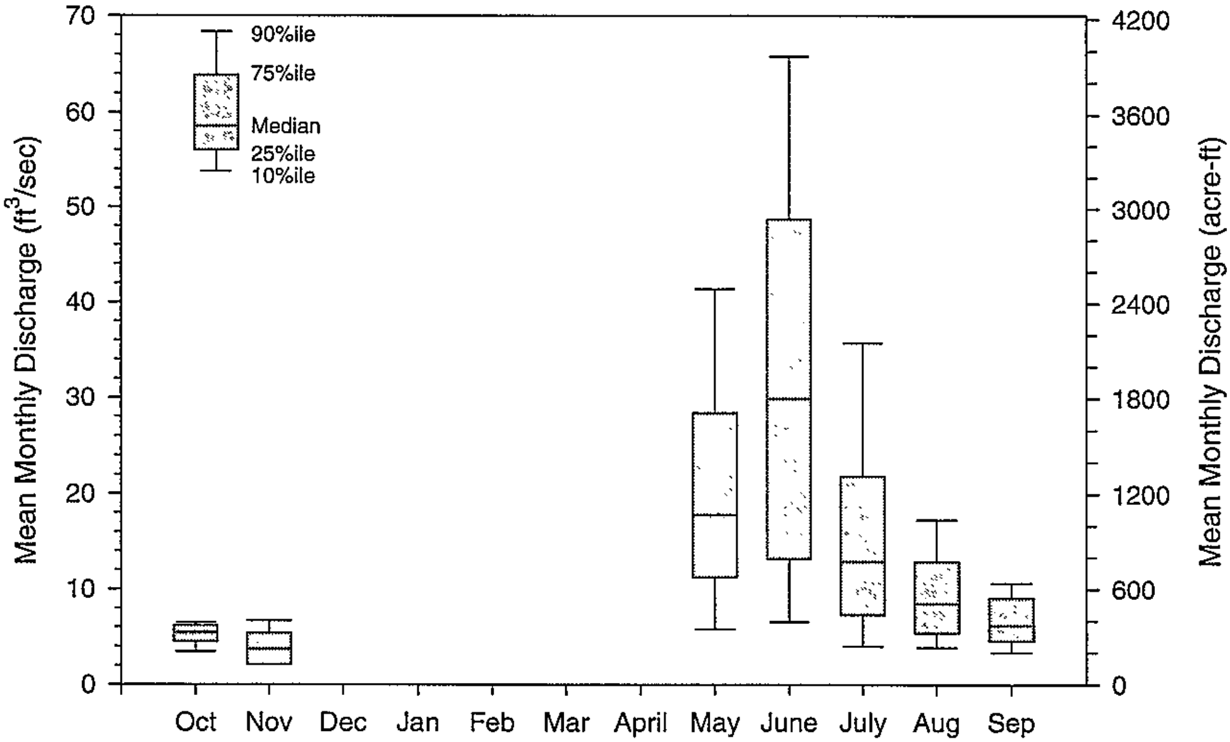


Figure B-12. Station 8253000 Casias Creek near Costilla
Monthly Discharge 1937-1994



08253500 SANTISTEVAN CREEK NEAR COSTILLA, NM

LOCATION.--Lat 36 53'03", long 105 16'50", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on left bank 200 ft upstream from road crossing, 1,300 ft upstream from normal high-water line of Costilla Reservoir, 0.6 mi north of Costilla Dam, and 16 mi southeast of Costilla.

DRAINAGE AREA.--2.15 mi2.

PERIOD OF RECORD.--April 1937 to current year (no winter records). Monthly discharge only for some periods, published in WSP 1312 and 1732.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 9,487 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 27, 1940, water-stage recorder and wooden control at datum 0.99 ft lower.

REMARKS.--No estimated daily discharges. Records fair. No diversions upstream from station. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18 ft^3/s, Aug. 11, 1941, July 12, 1957; maximum gage height, 1.73 ft, Aug. 11, 1941; minimum not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6.0 ft^3/s and maximum (*).

Date	Time	Discharge (ft3/s)	Gage height (ft)
May 13	1345	8.0	0.89
July 15	0045	9.8	0.99
June 11	1715	*16	*1.35
Aug. 3	1515	8.8	0.84

Minimum discharge not determined.

Table B-9. Mean daily streamflow (cfs), station 08253500 Santistevan Creek near Costilla, 1937-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (acre-ft)
1937								5.24	5.1	2.85	1.45	1.1	954
1938								4.17	10.72	4.1	2.07	1.4	1356
1939	1.03							3.68	3.57	1.85	1.53	1.1	774
1940									5.08	2.23	1.29	1.1	582
1941										7.98	3.53	2.1	831
1942	1.82							6.74	12.56	5.62	2.39	1.5	1855
1943	0.98							1.41	1.62	1	1.26	1	444
1944	0.89							4.21	8.09	4.28	1.65	0.9	1216
1945	0.88								6.66	3.34	2.28	1	858
1946	0.90							1.66	1.55	1.1	0.82	0.7	410
1947										2.62	1.86	1	334
1948	0.66								7.39	2.9	1.75	1.2	835
1949	0.78								5.73	3.26	2.37	1.2	804
1950	0.7							1.09	1.31	1.29	1.02	0.7	372
1951									2.34	1.2	0.92	0.7	310
1952								4.22	8.86	3.64	1.82	1.6	1219
1953									5.76	2.56	1.45	0.9	643
1954								2.98	2.48	1.69	1.18	0.7	551
1955								1.43	4.19	2.38	1.61	1.3	662
1956								1.03	1.17	0.63	0.57	0.4	231
1957									10.19	7.16	4.28	2.3	1447
1958									8.87	3.16	1.83	1.3	909
1959								1.24	2.63	1.76	1.35	0.8	470

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (acre-ft)
1960									4.24	2.73	1.45	1.1	572
1961	0.98								6.13	2.73	2.35	2.2	865
1962								4.82	4.32	2.71	1.39	1	866
1963	0.96							1.16	1.11	0.63	0.99	0.9	351
1964	0.62							1.46	2.39	1.51	0.98	0.7	463
1965	0.68	0.34						2.85	6.76	4.66	2.46	1.5	1166
1966	0.99							1.84	2.55	1.83	1.86	1	612
1967	0.70							0.80	1.25	1.36	1.89	1.8	476
1968	1								6.59	3.29	2.12	1.4	870
1969	1.06							2.42	4.52	3.08	2.69	1.8	942
1970	1.43							3.25	5.55	4.35	2.16	1.4	1101
1971								1.11	1.98	1.94	2.18	1.8	544
1972								1.58	2.17	1.31	0.95	0.8	412
1973									9.68	6.61	2.58	1.4	1224
1974								1.06	1.63	1.19	0.98	0.7	337
1975									5.5	3.83	1.8	1.2	745
1976									3.55	2.16	1.7	1.3	528
1977								1.58	1.96	1.38	1.04	0.9	416
1978							1.03	2.48	4.92	2.91	1.75	1	855
1979								5.43	12.63	7.91	3.47	1.6	1882
1980								2.75	8.12	4.44	1.99	1.3	1122
1981								1.83	2.97	1.7	1.71	1.4	582
1982								2.12	4.4	2.49	2.1	1.9	789
1983								3.51	12.09	7.8	3.53	1.6	1729
1984								4.75	6.61	3.62	2.32	1.4	1134
1985								6.16	11.73	5.41	3.01	1.9	1705
1986								2.81	6.05	4.24	2.23	1.7	1031
1987								5.02	9.03	4.29	2.26	1.3	1326
1988								1.46	2.15	1.93	1.61	1.5	525
1989								2.62	2.21	1.42	1.21	0.9	509
1990	0.79							2.41	5.68	3.01	1.8	1.2	900
1991	1.36							3.57	5.56	2.96	2.1	1.8	1055
1992	1.17							4.33	6.75	3.68	2.12	1.5	1183
1993								2.73	5.88	3.32	1.73	1.4	912
1994								5.91	8.86	3.01	1.95	1.6	1292

Table B-10. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08253500 Santistevan Creek near Costilla 1937-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	781	48	0	0	0	2	249	1395	1680	1798	1798	1740	9491
Avg Day	1	0.54				0.66	1.11	2.92	5.42	3.1	1.87	1.27	2.68
Max Day	2.2	1.2				0.71	3.5	14	16	13	5.4	3.3	16
Min Day	0	0.1				0.61	0.3	0.5	0.7	0.4	0.4	0.4	0
# Months	21	1	0	0	0	0	1	42	56	58	58	58	0
SDev Month	0.29							1.62	3.21	1.79	0.73	0.41	
Skew Month	1.41							0.65	0.60	1.18	0.96	0.35	
Min Month	0.62	0.34					1.03	0.78	1.11	0.626	0.56	0.42	
Max Month	1.82	0.34					1.03	6.74	12.63	7.98	4.28	2.3	

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	2	1.2				0.71	2.85	10.05	14	10	4.6	2.5	12
5%	1.7	1.1				0.71	2.2	7.2	12	7.2	3.5	2	7.6
10%	1.5	1.02				0.71	1.9	5.95	11	5.62	2.8	1.9	5.9
20%	1.2	0.88				0.71	1.4	4.5	7.8	4.2	2.4	1.6	3.9
50%	0.93	0.5				0.71	0.99	2.1	4.9	2.6	1.8	1.2	1.8
80%	0.7	0.26				0.65	0.71	1.2	2.2	1.5	1.2	0.9	1.1
90%	0.63	0.2				0.63	0.59	1	1.6	1.2	0.99	0.7	0.8
95%	0.6	0.14				0.62	0.55	0.8	1.3	1	0.8	0.61	0.7
99%	0.5	0.1				0.61	0.46	0.67	0.9	0.6	0.5	0.4	0.5

Figure B-13. Station 8253500 Santistevan Creek near Costilla
Mean Annual Discharge 1937-1994

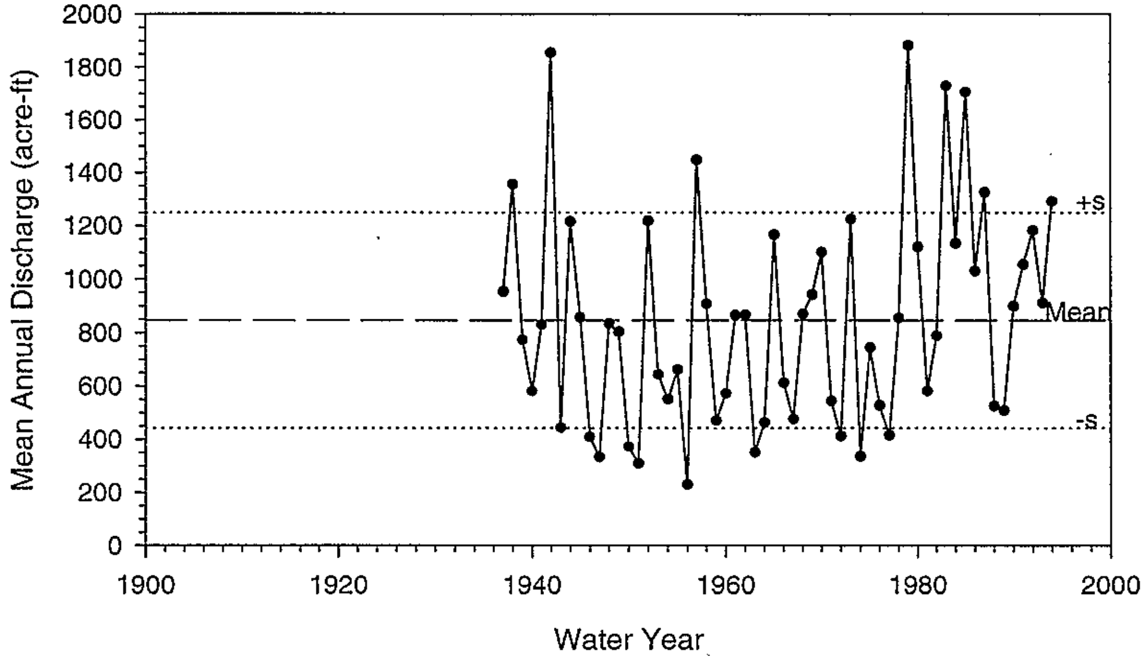


Figure B-14. Station 8253500 Santistevan Creek near Costilla
Mean Monthly Discharge 1937-1994

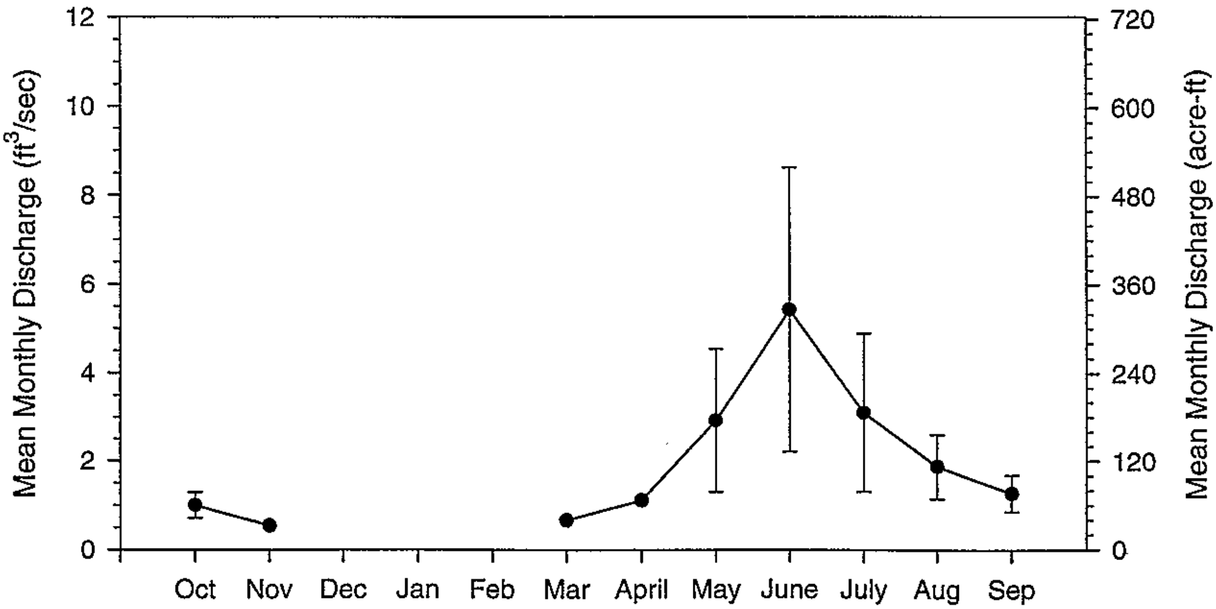
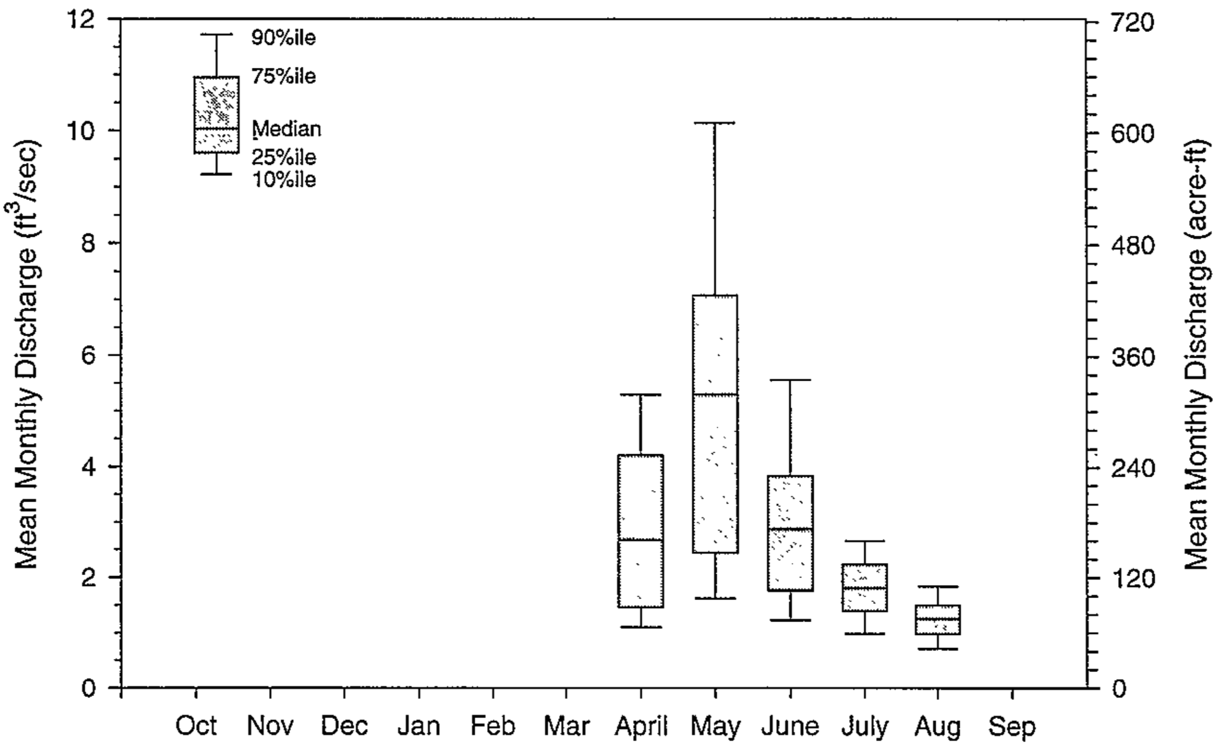


Figure B-15. Station 8253500 Santistevan Creek near Costilla
Monthly Discharge 1937-1994



08254000 COSTILLA CREEK BELOW COSTILLA DAM, NM

LOCATION.--Lat 36 52'26", long 105 16'47", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on left bank 125 ft downstream from Costilla Dam, 16 mi southeast of Costilla, and at mile 34.7.

DRAINAGE AREA.--54.6 mi2.

PERIOD OF RECORD.--April 1937 to current year (no winter records 1937-44, 1947-49). Monthly discharge only for some periods, published in WSP 1312. Prlor to October 1951, published as "below reservoir near Costilla."

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage in 9,290 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 11 to Apr. 24. Records good except for estimated daily discharges, which are poor. Flow regulated by Costilla Reservoir (station 08253900). Diversions for irrigation of about 1,300 acres upstream from Reservoir. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--39 years (water years 1945-47, 1950-85), 17.9 ft^3/s, 12,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301 ft^3/s, June 19, 1979, gage height, 3.04 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 158 ft^3/s. June 9-12, gage height, 2.25 ft; minimum, not determined.

Table B-11. Mean daily streamflow (cfs), station 08254000 Costilla Creek below Costilla Dam, 1937-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1937								5.44	78.50	117.0	86.62	34.15	322
1938									82.18	115.5	115.2	20.53	333
1939	6.83							32.11	77.20	77.19	58.03	22.15	274
1940	8.40								66.49	79.29	25.10	14.73	194
1941									123.1	172.0	87.06	27.59	410
1942	1.17							172.7	145.3	123.6	94.29	22.88	560
1943	12.33									16.85	25.35	27.33	82
1944	10.12								119.3	129.1	81.16	31.38	371
1945	8.97	6.02	1.66	1.70	1.70	1.08	0.64	0.8	70.83	113.4	54.03	21.42	282
1946	6.94	3.52	0.68	0.60	0.60	0.60	0.40	38.53	30.20	20.21	13.12	7.60	123
1947	3.63	0.59	0.50	0.50	0.50	0.54	0.69	0.629	56.51	52.00	44.58	14.81	175
1948	4.38								121.3	98.97	65.42	31.00	321
1949	9.12								35.06	77.84	81.52	26.67	230
1950	8.62	3.87	4.20	2.81	3.00	3.40	0.77	32.98	32.17	50.88	47.36	12.17	202
1951	6.55	1.45	0.37	0.23	0.22	0.23	0.25	11.14	42.83	41.46	14.02	15.19	134
1952	4.54	0.03	0	0	0	0	0	0	30.27	64.97	40.52	16.33	157
1953	10.35	3.96	0.60	0.60	0.60	0.60	0.60	5.26	43.96	67.1	69.97	26.77	230
1954	5.75	1.33	1.05	0.85	0.98	1.13	1.26	10.63	69.70	49.76	43.3	14.60	200
1955	4.28	0.43	0.23	0.20	0.20	0.20	0.30	0.345	29.63	63.29	36.34	19.70	155
1956	0.27	0.18	0.20	0.20	0.20	0.20	0.20	29.92	41.13	39.05	25.97	9.88	147
1957	3.64	0	0.00	0.00	0.10	0.10	0.10	0.123	10.46	64.03	84.71	83.53	247
1958	7.88	0.33	0.20	0.20	0.20	0.20	29.69	138.5	100.8	75.61	39.44	10.21	403
1959	0.49	0.07	0.02	0.00	0.00	0.10	0.15	5.01	49.37	59.25	23.27	14.63	152
1960	1.12	0.31	0.22	0.20	0.10	0.20	0.20	8.88	46.43	61.32	51.78	15.98	187
1961	1.58	0.27	0.27	0.30	0.30	0.38	0.40	0.45	48.29	57.75	52.48	28.33	191
1962	30.74	10.93	0.50	0.50	0.50	0.50	18.99	37.71	69.67	65.03	53.76	26.75	316
1963	0.1	0.12	0.10	0.10	0.10	0.10	0.10	37.14	45.87	46.13	8.97	8.4	147
1964	0.41	0.06	0.01	0.02	0.01	0.07	0.10	18.94	42.86	17.95	14.93	8.32	104

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1965	1.38	0	0	0	0	0.00	0.04	0.1	11.64	45.37	62.87	18.8	140
1966	22.72	0.71	0	0	0	0.00	0.04	35.51	65.58	51.4	37.49	21.23	235
1967	0.17	0.11	0.08	0.07	0.07	0.07	0.08	21.56	38.89	36.82	26.07	20.42	144
1968	0.03	0.02	0.02	0.01	0.02	0.02	0.05	0.05	63.05	80.06	34.36	31.56	209
1969	4.42	0.02	0.02	0.02	0.03	0.04	0.04	2.75	63.93	70.03	65.87	17.24	224
1970	0.06	0.10	0.09	0.06	0.07	0.07	0.07	20.42	81.63	92.35	65.48	24.35	285
1971	0.05	0.04	0.04	0.03	0.04	0.04	0.04	35.62	81.3	35.84	32.52	9.76	195
1972	0.05	0.03	0.03	0.03	0.03	0.03	0.03	28.82	49.03	21.72	16.74	7.39	124
1973	0.01	0.01	0.01	0.02	0.03	0.03	0.03	0.03	29.96	94.42	120	16.11	261
1974	0.03	0.02	0.02	0.02	0.03	0.03	0.04	55.27	65.57	49.06	14.01	3.43	188
1975	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.11	49.74	72.45	53.4	4.95	181
1976	0.02	0.01	0.01	0.01	0.01	0.01	0.015	15.26	57.83	32.48	26.58	4.53	137
1977	0.02	0.01	0.01	0.01	0.01	0.02	0.033	26.86	48.13	18.53	10.45	2.39	106
1978	0.02	0.04	0.05	0.05	0.04	0.04	0.03	0.31	63.77	48.03	59.62	13.43	185
1979	0.07	0.05	0.03	0.03	0.03	0.04	0.04	0.04	65.18	90.9	74.61	38.28	269
1980	0.03	0.03	0.04	0.04	0.05	0.06	10.16	26.88	73.93	107.9	69.43	22	311
1981	0.05	0.05	0.04	0.03	0.02	0.02	0.03	44.09	62.1	54.54	41.12	10.8	213
1982	0.03	0.02	0.02	0.02	0.01	0.01	0.02	8.77	57.57	71.13	43	6.6	187
1983	0.02	0.02	0.02	0.02	0.02	0.02	4.32	78.77	133.7	83.06	97.84	46.65	444
1984	0.02	0.02	0.02	0.02	0.02	5.95	61.93	21.06	98.4	86.94	76.16	39.34	390
1985	0.03	0.03	0.03	0.03	0.03	0.03	0.03	60.91	105.4	96.42	63.48	36.05	362
1986	0.04	0.04	0.04	0.04	0.04	0.05	0.05	34.19	50.49	64.58	93.61	33.49	277
1987	0.04	0.04	0.04	0.04	0.04	13.21	39.57	99.23	86.17	128.3	76.0	33.49	476
1988	0.05	0.03	0.03					21.25	61.37	52.67	49.45	14.75	200
1989						27.94	10.04	29.44	60.63	50.32	37.39	8.32	224
1990							0	7.55	49.9	40.13	45.42	28.07	171
1991	0.77							25.08	62.67	71.45	41.48	28.01	229
1992	1.15					48.76	11.15	22.71	72.80	92.55	63.68	33.39	346
1993							9.65	0.00	49.49	94.58	69.11	11.22	234
1994							0.00	24.76	108	103	89.61	42.77	368

Table B-12. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08254000 Costilla Creek below Costilla Dam, 1937-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1607	1346	1302	1271	1157	1363	1430	1649	1722	1798	1798	1740	18183
Avg Day	3.70	0.94	0.28	0.24	0.24	3.23	5.60	25.72	64.22	69.89	53.37	21.41	23.78
Max Day	118	106	4.9	3	3	122	235	286	212	218	189	150	286
Min Day	0	0	0	0	0	0	0	0	0	0	0.2	0.01	0
# Months	51	42	42	41	41	43	46	51	57	58	58	58	41
SDev Month	5.96	2.07	0.70	0.52	0.55	8.62	11.74	33.96	28.86	31.94	26.95	13.55	7.70
Skew Month	2.68	3.58	4.73	3.81	3.90	4.54	3.61	2.60	0.81	0.64	0.35	1.78	1.14
Min Month	0.01	0	0	0	0	0	0	0	10.46	16.85	8.97	2.39	8.64
Max Month	30.74	10.93	4.2	2.81	3	48.76	61.93	172.7	145.3	172	120	83.53	40

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	32.93	8.00	4.20	3.00	3.00	101.4	99.00	192.0	187.6	176.0	164.0	101.0	159.00
5%	15.65	4.47	1.20	0.90	1.00	12.00	41.00	108.6	139.0	156.0	135.0	71.00	111.00
10%	9.20	2.14	0.60	0.60	0.60	1.70	3.00	83.00	119.0	135.0	114.0	56.00	85.00
20%	6.50	0.50	0.30	0.30	0.20	0.50	0.70	50.00	98.60	113.0	91.00	35.00	50.00
50%	0.20	0.04	0.04	0.04	0.04	0.06	0.10	1.00	62.00	64.00	44.00	13.00	0.80
80%	0.03	0.02	0.01	0.01	0.02	0.02	0.03	0.05	23.00	26.00	13.00	5.20	0.03
90%	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.03	8.82	12.00	8.50	0.09	0.02
95%	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	7.50	6.30	0.03	0.00
99%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	2.60	0.01	0.00

Figure B-16. Station 8254000 Costilla Creek below Costilla Dam
Mean Annual Discharge 1937-1994

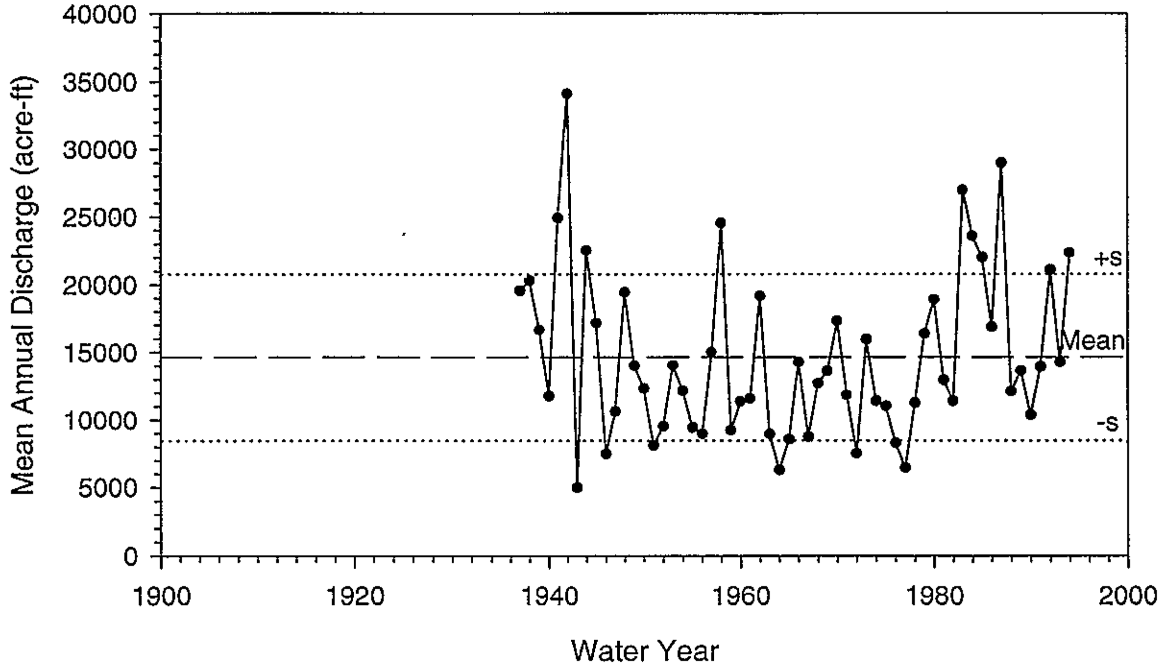


Figure B-17. Station 8254000 Costilla Creek below Costilla Dam
Mean Monthly Discharge 1937-1994

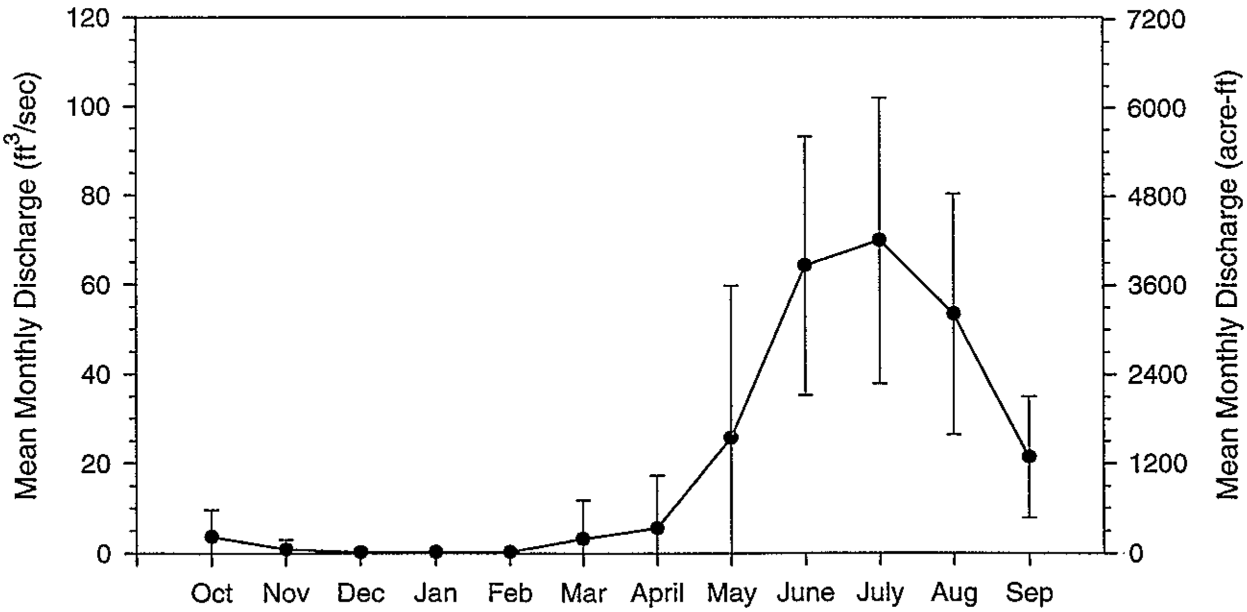
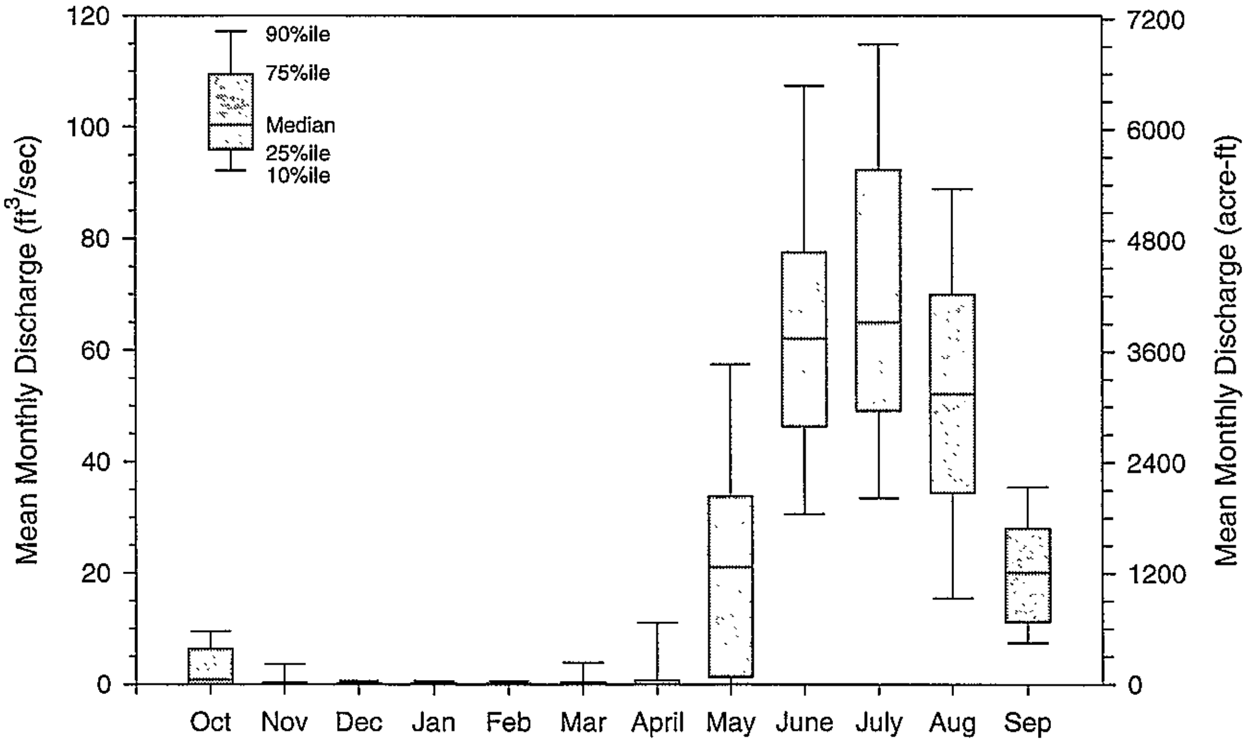


Figure B-18. Station 8254000 Costilla Creek below Costilla Dam
Monthly Discharge 1937-1994



08254500 COSTILLA CREEK NEAR AMALIA , NM

No Remarks Available for this Station.

Station Name	COSTILLA CREEK NEAR AMALIA, NM
Station ID	08254500
State	NEW MEXICO
County	TAOS
Latitude	36:52:33
Longitude	105:23:22
Elevation	8521.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1949	1981	32	5559	0	58.82	420.00	3.60		
STREAM STAGE FEET	Mean	1979	1982	4	481	0	1.84	3.01	0.24		

Table B-13. Mean daily streamflow (cfs), station 08254500 Costilla Creek near Amalia, 1949-1981.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1949									97.67	114	94.61	34.33	20681
1950	16.9							47.29	46.90	52.03	50.24	17.74	14081
1951								40.61	54.63	48.61	21.91	18.58	11189
1952								128.8	106.8	87.16	55.52	23.80	24464
1953								47.32	78.00	80.39	74.84	31.10	18946
1954								43.29	80.13	57.42	47.84	20.01	15093
1955								64.48	82.30	76.55	51.52	28.97	18460
1956								43.68	49.10	40.72	25.68	12.37	10426
1957								58.65	101.5	93.39	112.2	101.1	28303
1958								286.4	144.2	84.32	53.61	19.92	35857
1959								38.84	77.43	68.42	33.10	19.97	14426
1961								89.55	82.60	68.97	62.55	37.83	20759
1962								109.1	86.47	74.58	61.58	36.04	22370
1963	7.87							45.55	48.77	50.34	15.87	14.57	11125
1964	5.38							48.03	50.63	25.36	20.80	12.01	9850
1965								96.29	66.83	63.65	75.32	33.00	20406
1966	31.18						28.23	77.42	86.73	62.71	56.94	30.57	22694
1967								33.32	52.30	43.06	41.74	34.30	12416
1968									100.6	89.52	50.06	39.43	16915
1969								65.71	93.67	89.61	81.48	30.47	21947
1970								91.61	104.1	98.55	71.87	32.05	24213
1971								43.71	77.47	37.06	35.71	15.52	12695
1972								43.26	54.80	25.71	20.40	11.63	9448
1973								137.5	113.3	116.7	128.4	23.87	31687
1974								72.42	79.03	55.00	22.10	8.57	14406
1975								87.26	86.97	86.23	62.29	12.38	20409
1976								61.65	79.77	45.00	36.23	11.19	14198
1977								41.35	54.93	26.77	15.32	8.92	8930
1978							23.57	51.77	83.40	54.29	59.74	17.70	17613
1979								179.8	204.5	118.5	91.03	50.4	39106
1980								146.4	140.1	118.8	75.90	29.28	31052
1981								52.55	67.60	60.03	55.03	19.15	15468

Table B-14. Daily streamflow statistics, period statistics, and exceedances (cfs), station 08254500 Costilla Creek near Amalia, 1949-1981.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	313	9	0	0	0	1	359	973	960	992	992	960	5559
Avg Day	12.36	11.07				29	41.88	79.75	85.42	69.17	55.04	26.15	58.82
Max Day	94	42				29	321	420	328	184	167	123	420
Min Day	4	4.5				29	10	10	11	5.4	5.5	3.6	3.6
# Months	4	0	0	0	0	0	2	30	32	32	32	32	0
SDev Month	11.67						3.30	53.64	32.71	27.24	27.78	17.19	
Skew Month	1.08							2.38	1.74	0.26	0.657	2.79	
Min Month	5.38						23.57	33.32	46.9	25.36	15.32	8.57	
Max Month	31.18						28.23	286.4	204.5	118.8	128.4	101.1	
Exceedences													
1%	88.22	42.00				29.00	235.3	347.4	248.8	158.0	158.0	116.0	226.0
5%	36.00	42.00				29.00	119.0	178.4	158.0	139.4	129.0	77.00	140.0
10%	20.00	42.00				29.00	100.0	149.0	133.0	122.0	108.0	58.00	117.0
20%	16.00	18.00				29.00	69.00	103.4	111.0	104.0	86.00	38.00	94.00
50%	8.65	6.70				29.00	24.00	69.00	81.00	68.00	48.00	18.00	49.00
80%	6.10	6.34				29.00	16.00	32.00	51.00	29.00	19.00	8.40	17.00
90%	4.69	5.58				29.00	13.00	21.00	34.00	19.00	14.00	6.90	11.00
95%	4.00	5.04				29.00	12.00	17.00	23.00	15.00	11.00	5.50	7.70
99%	4.00	4.61				29.00	11.00	12.00	13.00	9.40	7.70	4.06	4.90

Figure B-19. Station 8254500 Costilla Creek near Amalia
Mean Annual Discharge 1949-1959,1961-1981

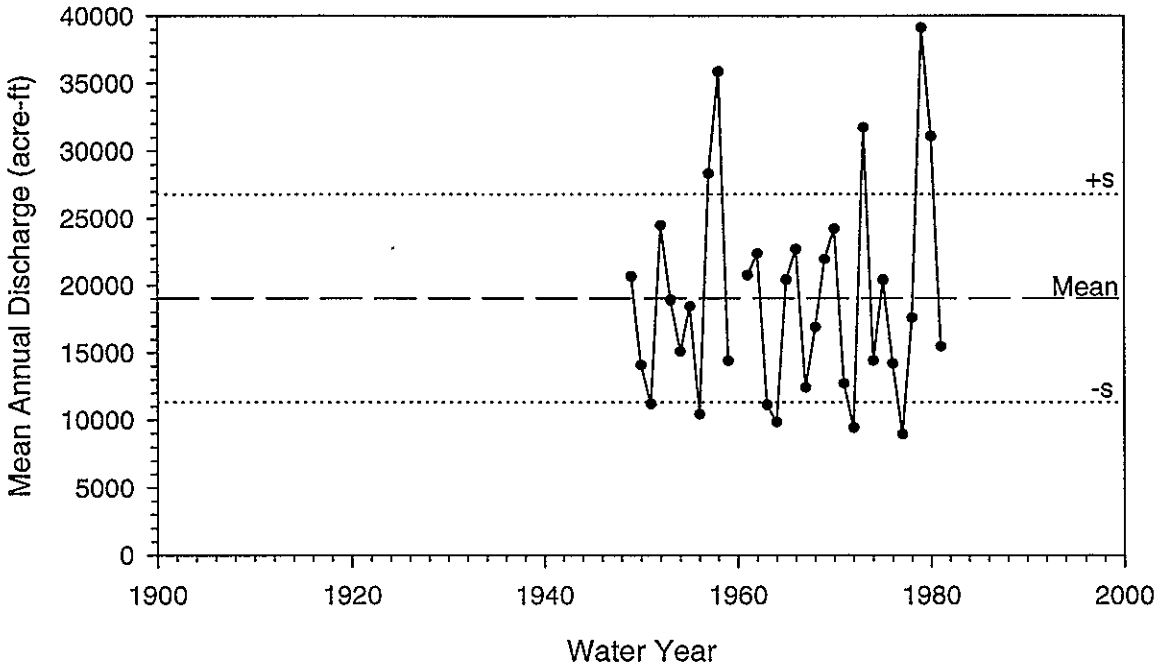


Figure B-20. Station 8254500 Costilla Creek near Amalia
Mean Monthly Discharge 1949-1959,1961-1981

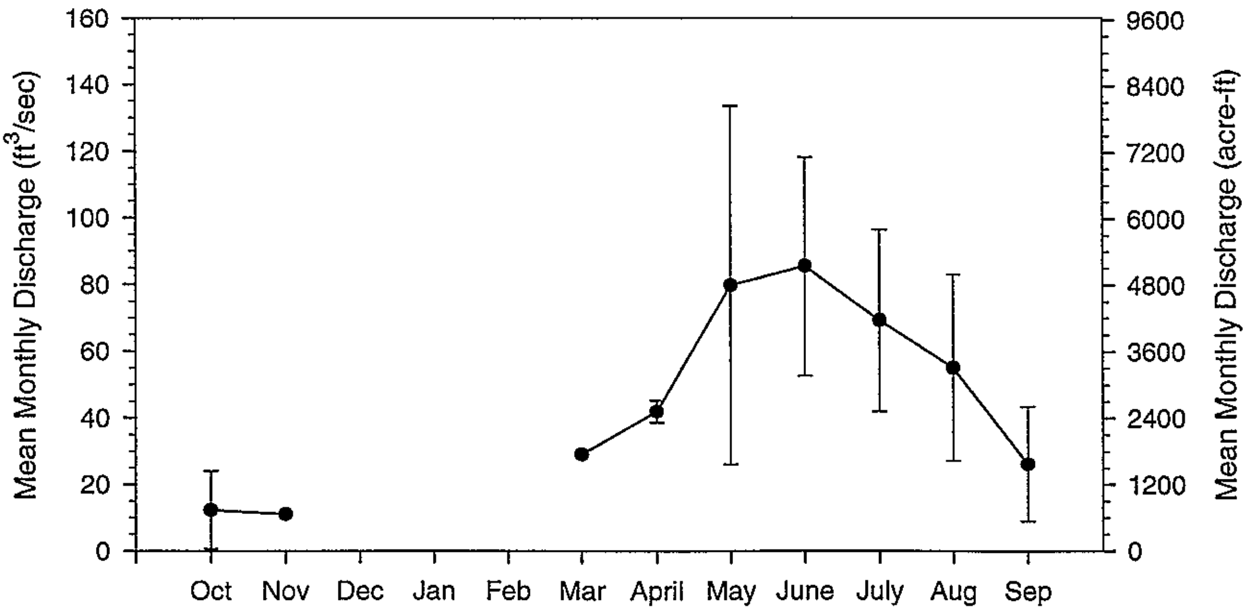
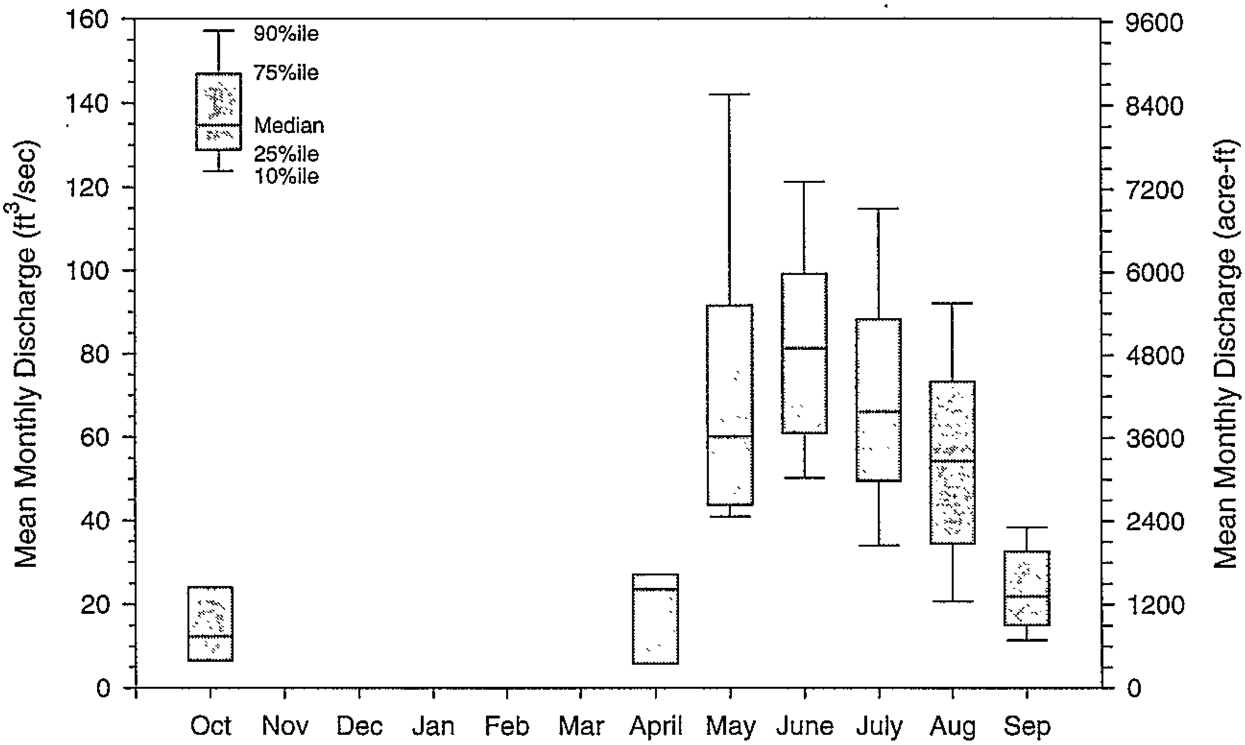


Figure B-21. Station 8254500 Costilla Creek near Amalia
Monthly Discharge 1949-1959,1961-1981



08255000 UTE CREEK NEAR AMALIA, NM

No Remarks Available for this Station.

Station Name	UTE CREEK NEAR AMALIA, NM
Station ID	08255000
State	NEW MEXICO
County	TAOS
Latitude	36:57:10
Longitude	105:24:35
Elevation	8900.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1949	1959	11	1806	0	5.37	50.00	0.40		

Table B-15. Mean daily streamflow (cfs), station 08255000 Ute Creek near Amalia, 1949-1959.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1949								7.52	12.29	19.45	6.85	2.61	2966
1950	2.04							1.57	2.35	1.56	0.89	0.66	552
1951							1.08	5.66	3.07	0.97	0.95	0.73	756
1952								10.56	13.21	3.30	1.91	1.59	1850
1953								10.41	9.19	2.92	1.12	0.75	1480
1954								6.27	4.68	2.15	1.46	0.91	940
1955								8.93	17.54	3.11	3.12	2.44	2121
1956								2.45	1.60	0.56	0.71	0.43	349
1957								8.51	33.4	11.16	8.76	4.63	4011
1958	3.04							24.39	15.47	3.27	1.87	1.64	3021
1959	1.52							5.83	6.07	2.42	2.25	1.26	1175

Table B-16. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08255000 Ute Creek near Amalia, 1949-1959.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	93	0	0	0	0	0	30	341	330	341	341	330	1806
Avg Day	2.2						1.08	8.37	10.81	4.62	2.72	1.6	5.37
Max Day	3.8						2	40	50	28	13	8.6	50
Min Day	1.1						0.6	1.1	0.7	0.4	0.4	0.4	0.4
# Months	3	0	0	0	0	0	1	11	11	11	11	11	0
SDev Month	0.77							6.05	9.30	5.67	2.64	1.23	
Skew Month	0.90							1.96	1.49	2.25	1.75	1.63	
Min Month	1.52						1.08	1.57	1.60	0.56	0.71	0.43	
Max Month	3.04						1.08	24.39	33.4	19.45	8.76	4.63	
Exceedences													
1%	3.80						2.00	38.59	46.00	24.00	12.00	7.08	38.00
5%	3.50						2.00	28.90	36.50	20.00	9.80	3.90	20.00
10%	3.10						2.00	17.90	26.00	14.00	7.50	3.20	13.00
20%	2.90						2.00	11.80	16.00	5.20	3.58	2.30	7.90
50%	2.05						0.90	6.20	7.20	2.40	1.60	1.30	2.50
80%	1.56						0.70	2.70	3.00	1.50	0.90	0.70	1.20
90%	1.43						0.70	2.00	2.00	0.80	0.60	0.50	0.80
95%	1.30						0.65	1.60	1.50	0.60	0.50	0.40	0.60
99%	1.19						0.60	1.40	0.73	0.40	0.50	0.40	0.40

Figure B-22. Station 8255000 Ute Creek near Amalia
Mean Annual Discharge 1949-1959

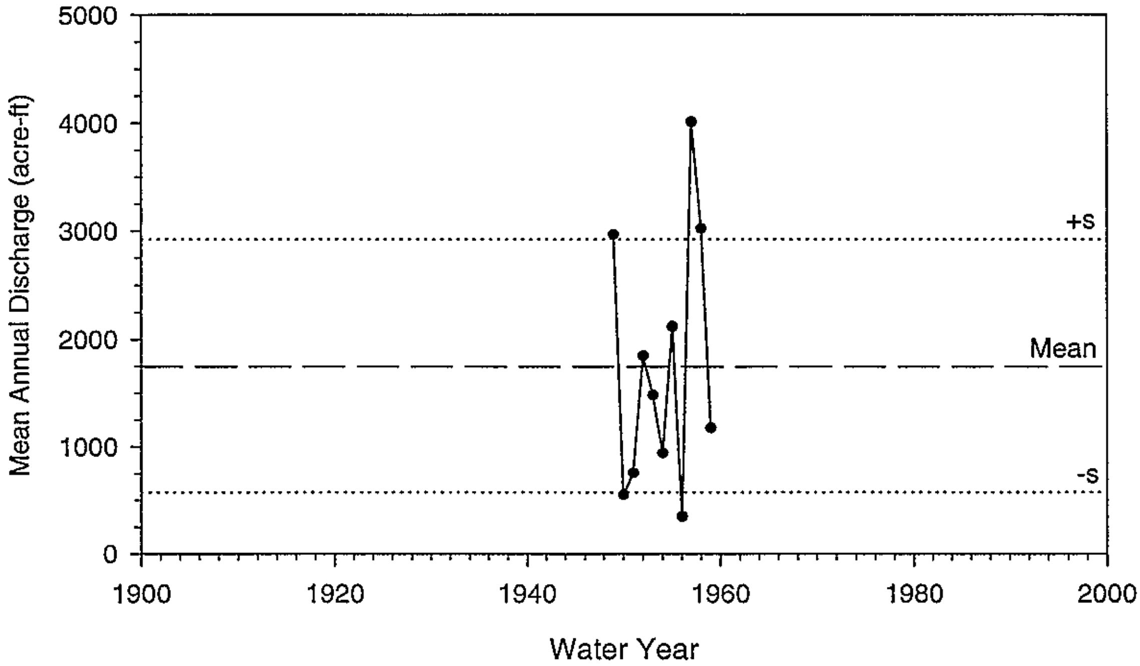


Figure B-23. Station 8255000 Ute Creek near Amalia
Mean Monthly Discharge 1949-1959

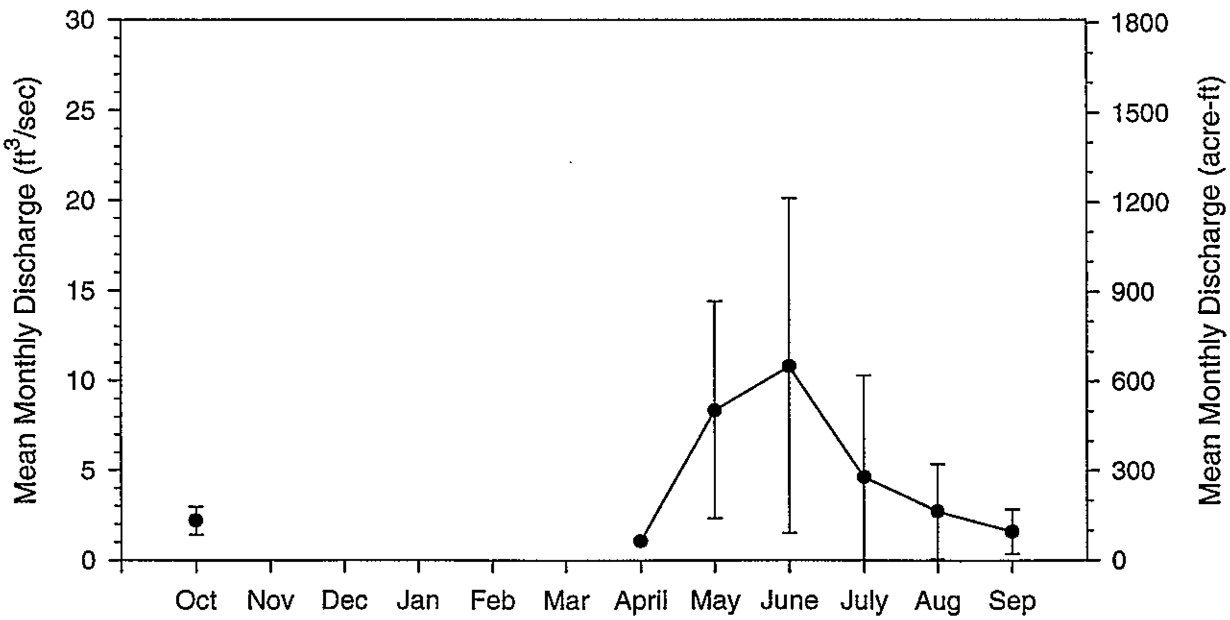
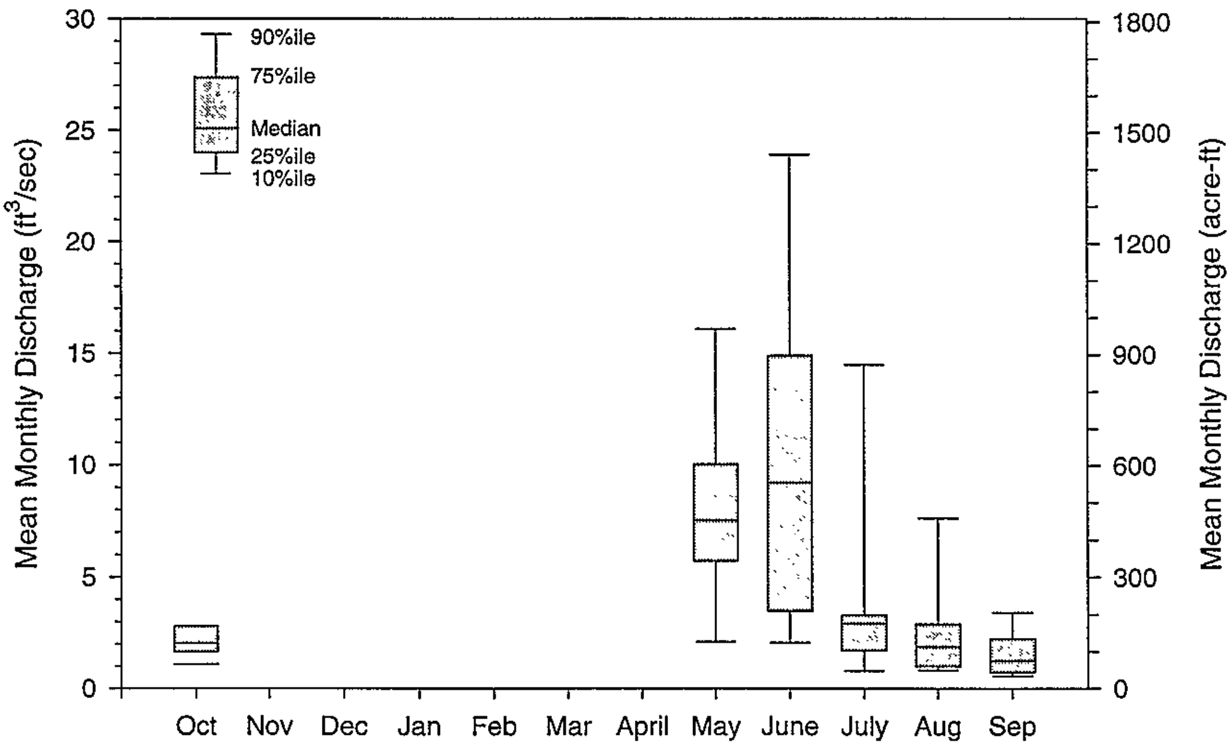


Figure B-24. Station 8255000 Ute Creek near Amalia
Monthly Discharge 1949-1959



08255500 COSTILLA CREEK NEAR COSTILLA, NM

LOCATION.--Lat 36 58'01", long 105 30'23", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on right bank 70 ft downstream from bridge on State Highway 196, 0.5 mi upstream from diversion dam, 1.6 mi southeast of Costilla, and at mile 15.9.

DRAINAGE AREA.--195 mi2.

PERIOD OF RECORD.--March 1936 to current year (no winter records 1936-41, 1943). Monthly discharge for March 1943 and water-year estimate for 1943, published in WSP 1312.

REVISED RECORDS.--WSP 1312: 1937-39(M).

GAGE.--Water-stage recorder. Concrete control since Oct. 13, 1952. Elevation of gage is 7,900 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 18, 1944, at site 200 ft downstream at different datum. June 18, 1944 to Sept. 30, 1964, at site 0.4 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 15 to Feb. 20. Records good except for estimated daily discharges, which are poor. Flow regulated by Costilla Reservoir (station 08253900) 19 mi upstream. Diversions for irrigation of about 2,000 acres upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--44 years (water years 1942-85), 43.6 ft^3/s, 31,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,150 ft^3/s, May 11, 1942, gage height, 5.37 ft, site and datum then in use; minimum, 0.34 ft^3/s, Mar. 15, 1969, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--A major flood occurred in 1886, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 341 ft3/s, May 23, gage height, 3.76 ft; minimum, not determined, probably occurred during period of ice effect.

Table B-17. Mean daily streamflow (cfs), station 08255500 Costilla Creek near Costilla, 1961-1994 [streamflow data are available for this station from 1936 to 1994, but pre-1961 data are not available from Hydrosphere (1996b) and are not compiled here].

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1961	11.87	8.83	6.65	5.55	7.14	14.93	73.17	103.8	82.17	65.48	72.81	43.83	30057
1962	44.90	22.72	4.38	6.90	12.75	16.00	123.7	117.3	88.90	74.23	57.48	34.80	36530
1963	9.98	8.11	6.72	4.74	7.69	20.64	20.20	40.52	48.30	50.84	19.19	16.20	15334
1964	4.85	4.83	3.71	3.44	3.38	6.92	31.33	39.87	47.83	24.35	18.36	9.47	11990
1965	5.04	4.11	3.77	6.20	4.62	7.56	44.43	114.2	91.50	77.13	82.94	40.27	29238
1966	33.04	14.40	9.84	7.46	7.00	20.41	33.33	75.13	85.50	69.00	65.32	31.10	27396
1967	8.56	8.40	6.17	4.91	6.01	13.03	15.77	30.77	47.93	45.48	51.00	39.83	16827
1968	9.31	10.56	5.40	7.80	7.81	10.75	28.67	83.03	109.1	95.19	62.19	43.83	28695
1969	17.39	8.47	5.27	7.13	7.80	9.56	41.20	77.74	108.9	95.39	94.94	38.93	31088
1970	20.10	20.20	9.47	6.98	9.24	9.57	48.77	109.2	118.3	110.8	83.26	38.13	35408
1971	12.50	11.41	7.86	7.30	9.05	13.75	14.80	44.03	79.07	46.29	42.84	20.17	18701
1972	14.08	9.85	7.84	9.10	10.76	18.23	20.63	41.10	57.93	27.90	23.18	12.64	15307
1973	5.90	7.57	8.18	6.36	6.93	11.13	31.26	172.3	160.7	134.9	137.1	29.28	43260
1974	9.89	7.29	5.97	7.02	8.29	14.65	17.97	71.26	75.07	57.42	23.03	7.93	18538
1975	6.87	7.39	5.37	4.89	6.83	11.23	50.00	95.10	101.2	97.68	65.10	16.39	28391
1976	5.76	6.86	7.69	7.57	10.67	14.25	34.17	67.10	80.37	46.87	38.52	12.90	20129
1977	6.97	6.90	6.02	4.39	4.63	9.91	23.40	42.61	55.03	32.19	17.29	11.54	13362
1978	7.82	7.00	6.44	5.06	5.42	10.79	26.83	59.52	85.40	55.45	62.48	19.04	21291
1979	5.21	7.78	6.45	8.48	8.79	16.96	76.17	220.2	282.4	140.1	100.9	50.20	55914
1980	10.49	11.12	14.48	11.71	10.93	13.16	48.27	159.8	153.0	126.3	80.55	32.66	40797
1981	8.43	8.18	7.73	5.22	6.91	9.49	20.67	54.77	67.40	61.94	57.90	26.37	20314
1982	11.81	10.45	8.37	7.15	7.31	13.56	31.33	74.52	95.23	81.32	72.71	35.30	27226
1983	18.74	14.90	8.20	8.23	9.71	16.87	56.77	245.4	341.8	139.4	120.7	64.03	63234
1984	15.16	13.07	8.81	8.11	10.38	23.87	106.4	198.2	153.0	100.6	95.45	48.87	47379

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1985	19.97	13.65	19.05	9.84	10.84	25.77	96.13	264.1	215.8	127.8	84.61	53.90	57071
1986	25.71	16.47	8.86	9.61	10.36	19.45	40.43	102.6	136.5	115.9	116.8	55.23	39899
1987	20.26	14.77	10.40	4.85	4.59	34.10	146.1	288.2	179.4	148.7	91.52	43.57	59866
1988	11.22	12.23	7.38	5.47	9.14	18.26	27.60	51.81	81.73	67.81	64.84	42.97	24242
1989	19.58	10.67	8.11	7.85	9.91	70.87	74.97	67.94	73.03	55.10	49.65	19.63	28321
1990	24.71	13.66	9.52	10.27	11.81	18.39	44.30	75.74	84.63	62.84	61.77	44.00	27945
1991	16.87	10.93	4.90	6.11	10.63	14.42	65.47	138.7	119.9	95.03	78.68	62.27	37786
1992	18.19	13.31	17.58	13.16	11.21	66.55	92.30	140.0	167.4	120.7	87.81	46.17	48144
1993	14.16	13.82	10.96	8.73	10.63	52.81	66.40	147.1	114.6	107.4	96.23	36.47	41247
1994	16.23	12.77	15.39	10.77	14.41	29.35	78.77	282.4	209.7	131.3	114.8	59.9	59197

Table B-18. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08255500 Costilla Creek near Costilla, 1961-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1054	1020	1054	1054	960	1054	1020	1054	1020	1054	1054	1020	12418
Avg Day	14.46	10.96	8.32	7.31	8.64	19.92	51.52	114.6	117.6	84.97	70.35	34.94	45.48
Max Day	120	105	65	18	40	154	293	514	571	224	196	138	571
Min Day	3.2	2.5	2	2	2.5	2.5	7.8	10	13	9.8	6.5	4.1	2
# Months	34	34	34	34	34	34	34	34	34	34	34	34	34
SDev Month	8.58	4.08	3.62	2.22	2.55	15.16	32.55	74.23	66.49	35.86	30.75	15.99	20.16
Skew Month	1.64	0.865	1.51	0.637	-0.072	2.4	1.2	1.1	1.74	0.132	0.003	-0.07	0.579
Min Month	4.85	4.11	3.71	3.44	3.38	6.92	14.8	30.77	47.83	24.35	17.29	7.93	16.53
Max Month	44.9	22.72	19.05	13.16	14.41	70.87	146.1	288.2	341.8	148.7	137.1	64.03	87.35
Exceedences													
1%	66.9	25	20	15	18.4	128.9	252.4	390.4	431.4	178	172.5	113	276.6
5%	29.3	20	17	12	14	56.3	158	296.6	272	160	149	83	155
10%	24	17	14	11	13	32	121	248	206	149.6	130.6	72	119
20%	19	14	10	9.5	11	23	75	171.2	154	130	105.2	54	81
50%	12	10	7.5	7	8.5	14	32	89	99	79	65	30	18
80%	7.4	7	5	5	6	9.4	19	53	65	40	32	13	8
90%	5.5	5.5	4.04	4	4.6	8	15	29	50	28	19	8.8	6
95%	4.5	4.7	3.57	3.5	4	6	14	18	36	21	14	6.8	5
99%	3.5	3.5	2.5	3	3	3.5	11	11.54	22	15	9.31	5.54	3.5

Figure B-25. Station 8255500 Costilla Creek near Costilla
Mean Annual Discharge 1961-1994

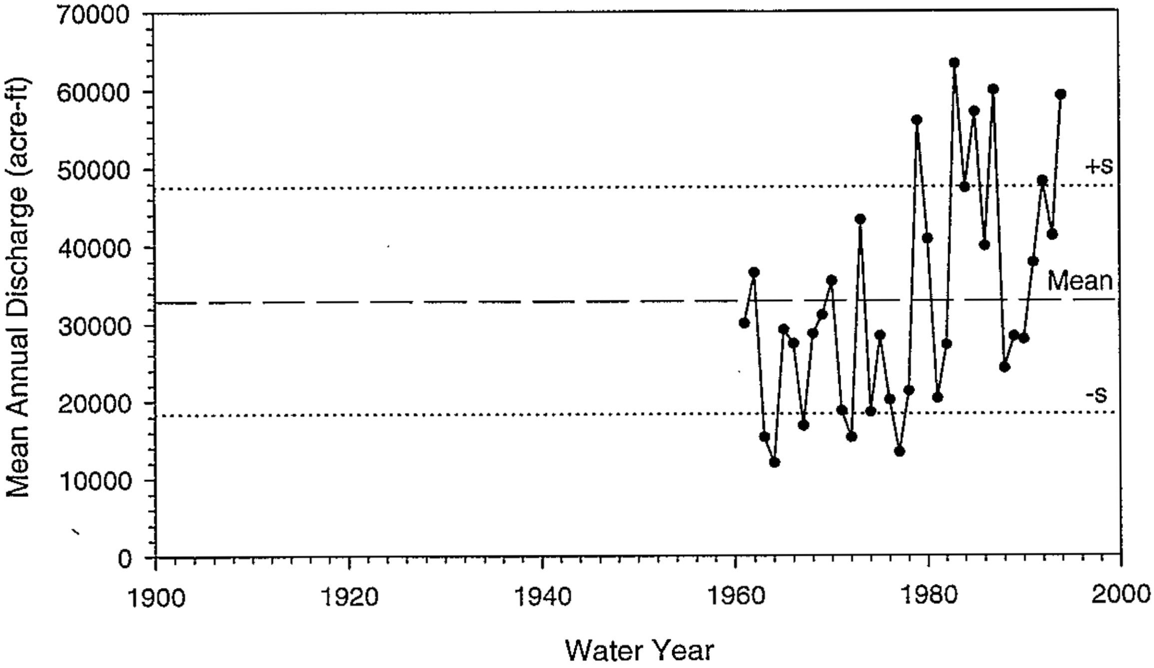


Figure B-26. Station 8255500 Costilla Creek near Costilla
Mean Monthly Discharge 1961-1994

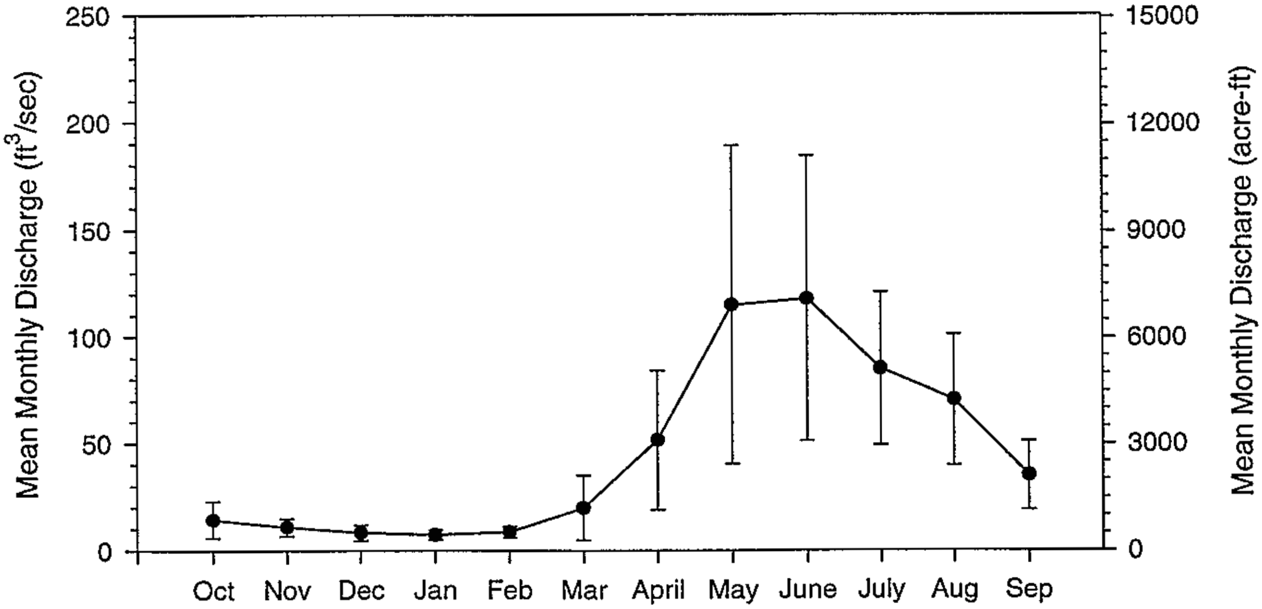
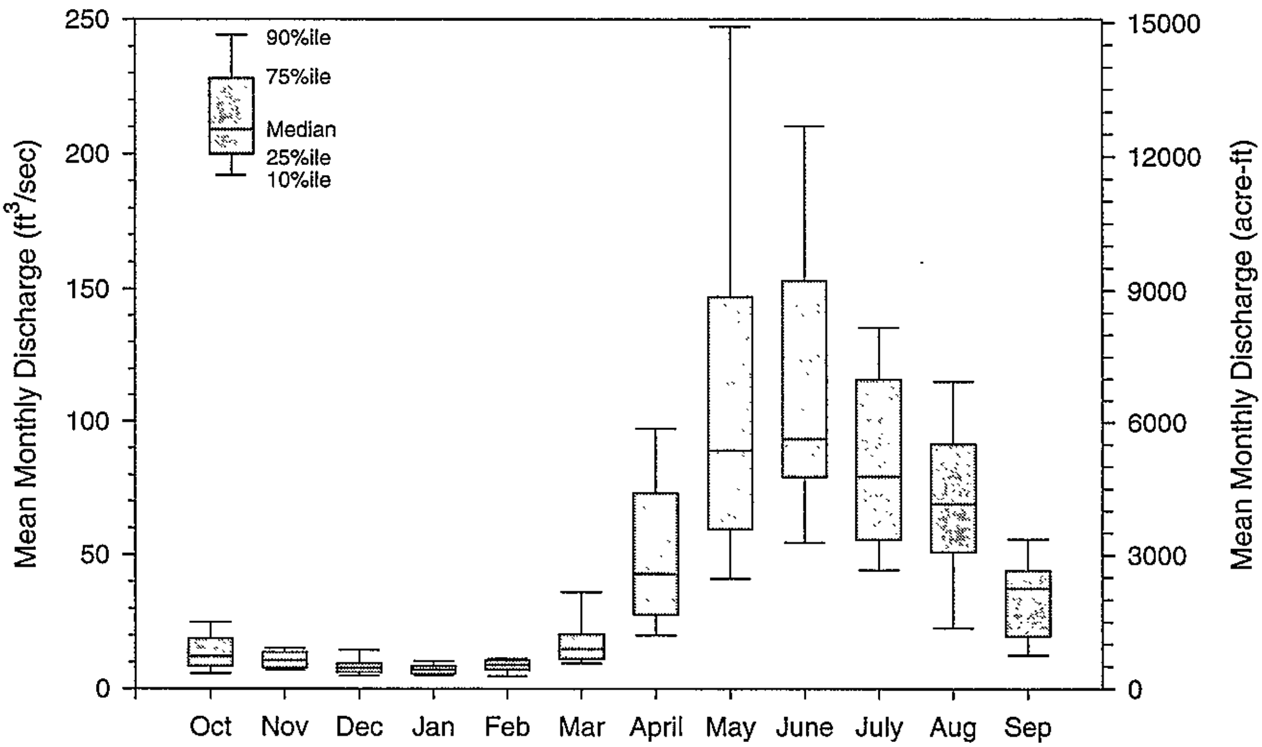


Figure B-27. Station 8255500 Costilla Creek near Costilla
Monthly Discharge 1961-1994



08256000 ACEQUIA MADRE AT COSTILLA, NM

LOCATION.--Lat 36 58'03", long 105 30'57", Taos County, Hydrologic Unit 13020101, on right bank 135 ft downstream from new diversion dam, and 1.2 mi southeast of the intersection of State Highways 3 and 196 at Costilla.

PERIOD OF RECORD.—October 1965 to June 1992.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,870 ft above National Geodetic Vertical Datum of 1929, from topographic map. Acequia diverts from right bank of Costilla Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 50 ft3/s, June 25, 1944, July 31, 1945; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 33 ft3/s, June 11-13; no flow at times.

MONTHLY DIVERSIONS, IN ACRE-FEET,
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

October	-
November	-
December	-
January	-
February	-
March	-
April	-
May	739
June	1180
July	1020
August	771
September	547

Table B-19. Mean daily streamflow (cfs), station 08256000 Acequia Madre at Costilla, 1966-1992.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1966	1.07					0.44	10.33	12.84	13.55	10.36	5.85		54
1967						0.17	5.18	10.54	10.21	11.37	6.79		44
1968							11.43	17.95	18.28	13.09	9.62		70
1969							10.31	14.04	12.70	10.59	8.22		56
1970							10.25	15.48	12.55	10.40	7.72		56
1971							4.99	11.29	11.57	11.58	7.31		47
1972							8.93	11.98	7.83	5.62	5.40		40
1973							9.75	17.67	14.01	18.14	5.95		66
1974							9.50	12.62	11.10	7.39	3.25		44
1975							10.89	13.62	13.24	10.48	2.72		51
1976							12.33	12.74	12.55	10.41	5.78		54
1977							6.43	12.74	9.75	8.17	3.81		41
1978						1.88	12.22	13.62	11.38	9.80	5.10		54
1979						1.52	9.87	15.27	14.16	16.35	11.84		69
1980							5.40	16.37	14.20	10.85	5.53		52
1981							7.25	12.67	12.73	10.96	6.73		50
1982							9.63	11.85	11.63	10.44	5.16		49
1983							12.61	21.67	20.45	16.85	7.73		79
1984							16.76	19.01	15.22	16.10	12.66		80
1985							12.02	19.90	16.65	12.54	9.19		70
1986							15.77	16.77	17.00	17.28	11.16		78
1987							9.56	18.87	17.18	12.03	8.87		67
1988							8.84	15.47	14.90	11.88	9.58		61

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1989								11.23	8.49	11.05	10.03		41
1990						1.43	12.83	14.73	15.39	14.10	9.90		68
1991	0.93					2.27	16.50	17.97	15.84	16.00	14.23		84
1992	3.79						18.58	22.73					45

Table B-20. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08256000 Acequia Madre at Costilla, 1966-1992.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	228	5	0	0	0	13	415	832	810	806	806	780	4695
Avg Day	2.99	0				0.52	1.33	10.75	15.25	13.56	12.07	7.70	10.48
Max Day	10	0				1.4	14	41	36	78	30	27	78
Min Day	0	0				0	0	0	0.18	2.0	2.5	0.15	0
# Months	3	0	0	0	0	0	6	26	27	26	26	26	0
SDev Month	1.61						0.82	3.51	3.31	3.00	3.14	2.92	
Skew Month	1.72						-0.44	0.43	0.63	0.19	0.30	0.37	
Min Month	0.93						0.17	4.99	10.54	7.83	5.62	2.72	
Max Month	3.79						2.27	18.58	22.73	20.45	18.14	14.23	
Exceedences													
1%	10.00	0				1.40	12.00	32.00	31.00	26.00	26.00	21.00	28.00
5%	7.10	0				1.40	5.40	24.00	26.00	21.00	21.00	15.00	22.00
10%	6.12	0				1.37	3.40	20.00	22.00	19.00	18.00	13.00	18.00
20%	5.30	0				1.12	1.80	16.00	19.00	17.00	16.00	12.00	16.00
50%	2.60	0				0.67	0.63	12.00	15.00	14.00	12.00	7.70	11.00
80%	0.24	0				0.05	0.13	1.94	11.00	9.30	7.42	3.30	3.70
90%	0	0				0.01	0.00	0.65	9.00	7.06	5.90	1.80	0.89
95%	0	0				0.00	0.00	0.32	6.75	5.43	4.53	1.30	0.26
99%	0	0				0.00	0.00	0.00	2.40	3.21	3.50	0.59	0.00

Figure B-28. Station 8256000 Acequia Madre at Costilla
Mean Annual Discharge 1966-1992

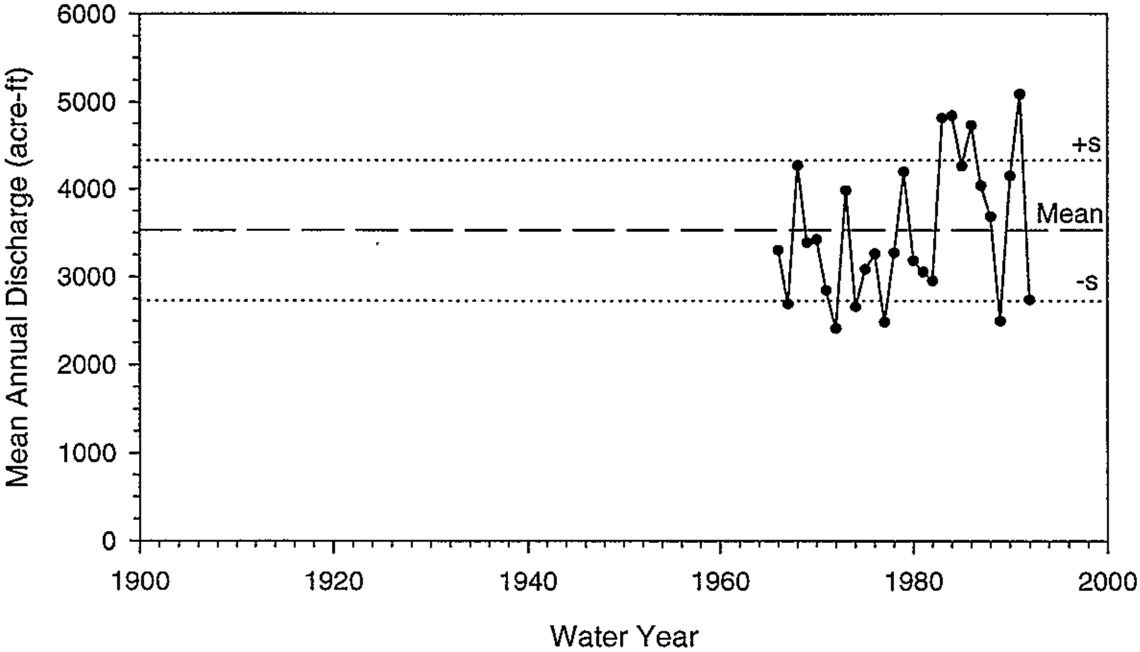


Figure B-29. Station 8256000 Acequia Madre at Costilla
Mean Monthly Discharge 1966-1992

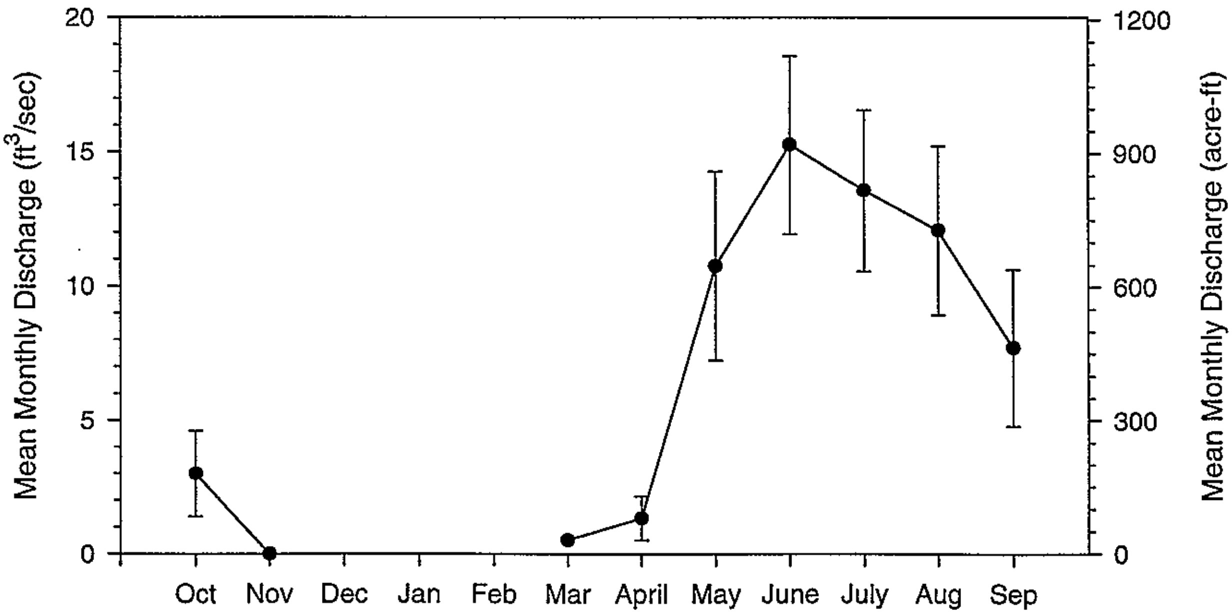
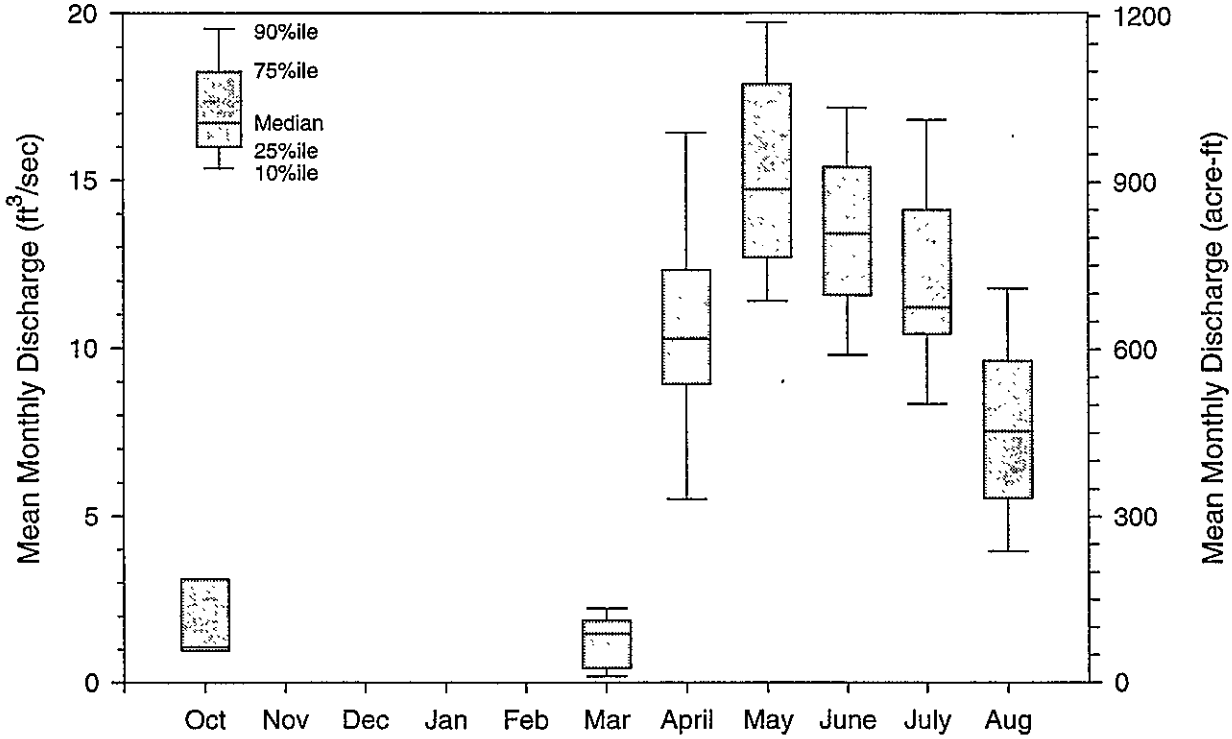


Figure B-30. Station 8256000 Acequia Madre at Costilla
Monthly Discharge 1966-1992



08257500 CORDILLERA DITCH AT GARCIA, CO

No Remarks Available for this Station.

Station Name	CORDILLERA DITCH AT GARCIA, CO
Station ID	08257500
State	NEW MEXICO
County	TAOS
Latitude	36:59:41
Longitude	105:31:39
Elevation	

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1964	1991	27	4345	0	0.73	9.90	0.00		
STREAM STAGE FEET	E.Mean	1976	1977	2	169	0	0.35	0.80	-0.02		
STREAM STAGE FEET	Mean	1974	1983	10	1633	0	0.48	1.66	-0.06		

Table B-21. Mean daily streamflow (cfs), station 08257500 Cordillera Ditch at Garcia, 1965-1991.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1965	0.12						0.34	0.14	1.49	0.52	0.14	0.86	216
1966	0.00						0.00	0.11	0.10	0.19	0.05	0.00	28
1967								0.08	0.34	0.46	1.39	1.30	216
1968								1.16	0.53	0.64	0.35	0.11	170
1969								0.32	0.92	0.40	1.50	1.13	258
1970								0.02	0.28	0.11	0.00	0.07	28
1971								0.06	0.16	0.19	0.13	0.22	46
1972								0.12	0.08	0.13	0.06	0.26	39
1973								0.12	0.21	0.10	0.03	0.42	53
1974								0.18	0.29	0.19	0.15	0.15	59
1975								0.23	0.28	0.85	0.19	0.15	104
1976								0.48	0.24	0.24	0.12	0.19	78
1977								0.14	0.32	0.47	0.22	0.14	78
1978							0.01	0.17	0.21	0.19	0.26	0.05	54
1979							0.09	0.54	1.20	0.45	0.51	1.00	228
1980								1.17	0.55	0.28	0.79	0.53	202
1981								0.41	0.45	1.10	0.86	1.81	280
1982								0.98	1.48	1.39	1.88	0.43	375
1983								1.14	2.14				197
1985								0.32	0.89	1.19	0.65	1.42	271
1986									1.66	2.36	0.88	1.93	413
1987									0.90	1.03	4.55	4.99	693
1988									0.55	0.81	0.81	0.58	167
1989									3.58	2.95	2.42	3.43	747
1990										0.64	0.56	0.41	98
1991									2.37	0.82	0.56	0.54	258

Table B-22. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08257500 Cordillera Ditch at Garcia, 1964-1991.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	161	0	0	0	0	7	325	755	778	795	775	749	4345
Avg Day	0.51					0.00	0.20	0.67	0.85	0.77	0.76	0.89	0.73
Max Day	9.9					0	3.8	7.1	6.3	5.9	7.3	5.8	9.9
Min Day	0					0	0	0	0	0	0	0	0
# Months	2	0	0	0	0	0	4	20	25	25	25	25	0
SDev Month	0.08						0.16	0.39	0.86	0.70	1.00	1.16	
Skew Month							1.61	1.22	1.72	2.00	2.58	2.39	
Min Month	0.00						0.00	0.02	0.08	0.10	0.00	0.00	
Max Month	0.12						0.34	1.17	3.58	2.95	4.55	4.99	
Exceedences													
1%	9.72					0.00	3.38	5.59	5.72	5.60	6.50	5.40	5.60
5%	2.70					0.00	1.47	3.50	3.11	3.00	3.90	4.80	3.48
10%	0.63					0.00	0.45	2.00	2.30	2.00	2.10	3.30	2.10
20%	0.29					0.00	0.16	0.94	1.40	1.20	1.20	1.30	1.10
50%	0.09					0.00	0.00	0.19	0.43	0.36	0.20	0.28	0.22
80%	0.00					0.00	0.00	0.00	0.07	0.07	0.03	0.05	0.01
90%	0.00					0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
95%	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99%	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure B-31. Station 8257500 Cordillera Ditch at Garcia
Mean Annual Discharge 1965-1991

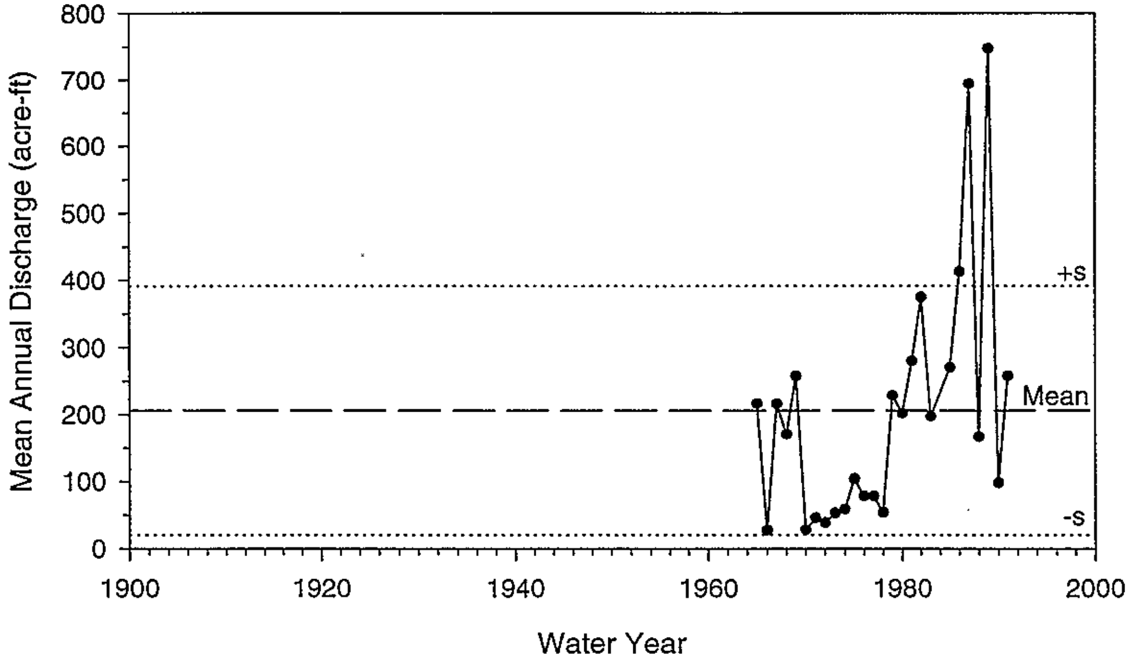


Figure B-32. Station 8257500 Cordillera Ditch at Garcia
Mean Monthly Discharge 1965-1991

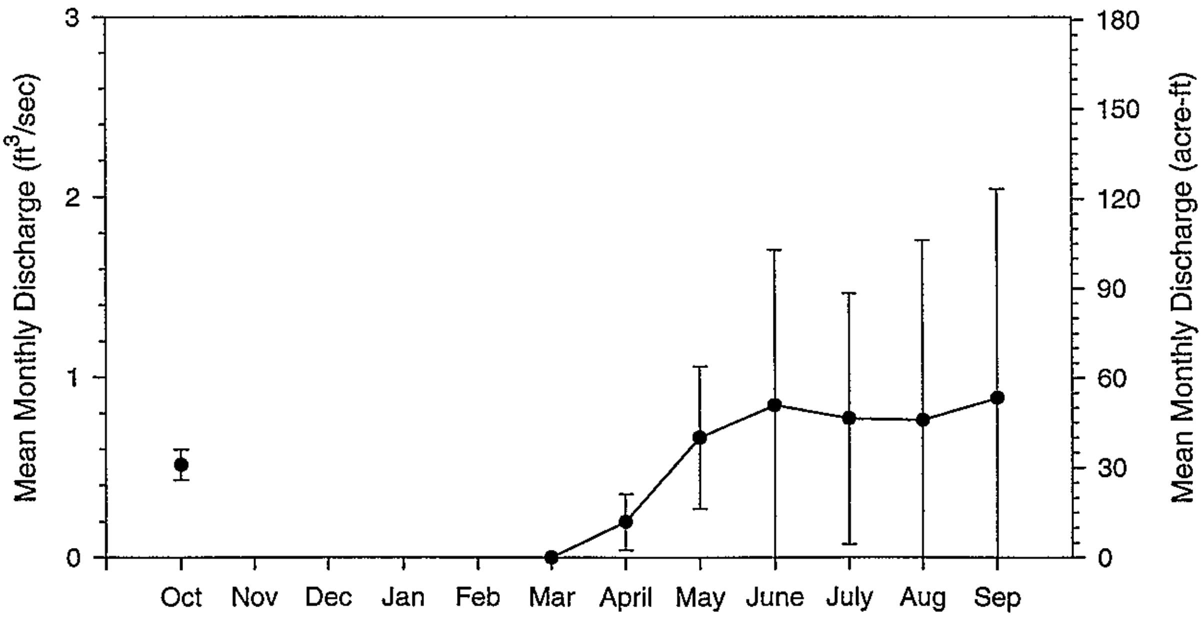
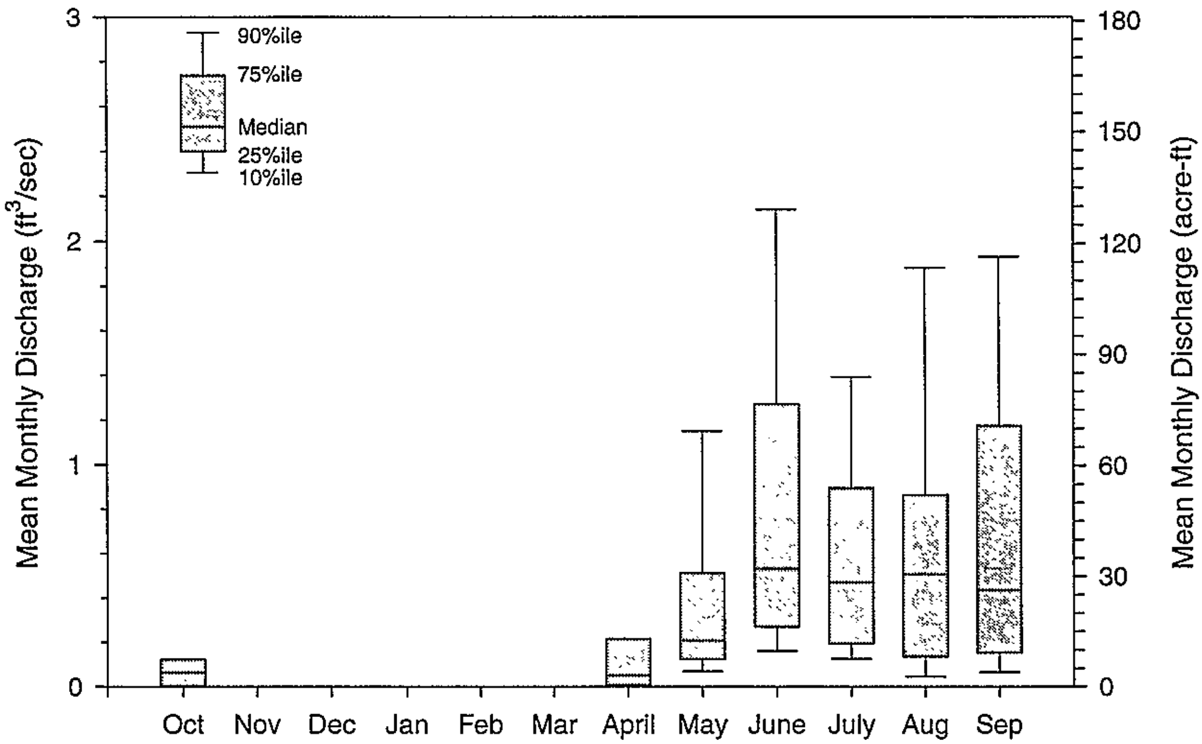


Figure B-33. Station 8257500 Cordillera Ditch at Garcia
Monthly Discharge 1965-1991



08258000 CERRO CANAL AT COSTILLA, NM

LOCATION.--Lat 36 57'56", long 105 31'07", Taos County, Hydrologic Unit 13020101, on right bank 1,350 ft downstream from new diversion dam, and 1.2 mi southeast of the intersection of State Highways 3 and 196 at Costilla.

PERIOD OF RECORD.—October 1964 to June 1992.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,870 ft above National Geodetic Vertical Datum of 1929, from topographic map. Canal diverts from left bank of Costilla Creek.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 164 ft3/s, June 9, 1985; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 164 ft3/s, June 9; minimum daily, 11 ft3/s, Sept. 7.

MONTHLY DIVERSIONS, IN ACRE-FEET,
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

October	-
November	-
December	-
January	-
February	-
March	-
April	-
May	3910
June	8260
July	6270
August	4040
September	2530

Table B-23. Mean daily streamflow (cfs), station 08258000 Cerro Canal at Costilla, 1965-1991.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1965	1.53						21.87	65.13	64.97	54.13	59.23	25.66	17763
1966	1.80					6.60	28.40	57.32	64.43	47.84	44.55	23.20	16626
1967							15.57	24.81	36.90	34.03	35.29	32.10	10820
1968								46.35	71.83	67.97	44.68	31.25	15910
1969								55.45	70.67	76.06	70.23	28.07	18280
1970	12.63							60.00	79.00	86.48	65.87	27.66	20180
1971								34.72	64.13	31.74	28.94	11.71	10379
1972								31.41	44.17	17.66	15.33	6.51	6975
1973								53.95	96.40	94.06	106.3	18.91	22498
1974								58.30	60.70	43.61	15.20	4.46	11078
1975								60.58	73.30	72.26	51.74	11.85	16416
1976								42.77	58.23	31.29	24.21	6.26	9880
1977								30.03	38.96	19.22	8.15	4.91	6140
1978							23.03	36.45	57.70	42.23	51.55	13.25	13600
1979							31.37	45.94	76.03	77.90	72.03	32.93	20394
1980								47.52	111.5	98.45	64.03	23.23	20929
1981							19.56	44.58	49.57	45.52	41.74	15.41	13137
1982								46.61	68.97	61.58	47.65	19.99	14876
1983								50.42	103.5	90.19	89.74	49.00	23238
1984								62.87	106.4	78.35	76.74	33.43	21722
1985								63.65	138.8	101.9	65.65	42.50	25004
1986								73.42	99.00	72.45	87.29	38.57	22522
1987								74.58	118.6	120.7	73.26	32.53	25505

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1988								35.42	60.73	50.16	53.32	26.73	13745
1989									54.93	43.02	35.50	7.74	8557
1990							36.20	59.97	62.87	44.26	44.39	28.44	16726
1991	6.05						41.77	72.71	92.80	67.97	53.97	40.27	22744

Table B-24. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08258000 Cerro Canal at Costilla, 1965-1991.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	300	10	0	0	0	47	463	863	840	837	837	810	5007
Avg Day	6.42	10.47				8.17	24.90	52.76	76.15	61.89	52.84	23.58	47.65
Max Day	23	19				38	67	137	164	154	147	98	164
Min Day	0	0				0	0	0	0	0	2.8	0	0
# Months	5	0	0	0	0	1	8	27	28	27	27	27	0
SDev Month	4.53						8.88	15.51	25.64	26.54	23.82	12.44	
Skew Month	1.41						0.44	0.25	0.64	0.28	0.12	0.05	
Min Month	1.53					6.60	15.57	24.81	36.90	17.66	8.15	4.46	
Max Month	12.63					6.60	41.77	89.90	138.8	120.7	106.3	49.00	
Exceedences													
1%	22.00	19.00				38.00	66.00	127.0	152.6	146.6	140.6	79.00	139.0
5%	19.00	19.00				30.50	52.85	103.0	130.0	127.0	124.0	65.00	119.0
10%	14.00	19.00				21.30	43.00	89.00	123.0	117.0	110.0	56.00	100.0
20%	11.00	18.00				17.60	35.00	72.00	107.0	96.60	80.60	38.00	77.00
50%	5.00	15.00				1.50	23.00	51.00	73.00	58.00	46.00	19.00	41.00
80%	2.00	0.00				0.00	15.00	30.00	47.00	26.00	22.00	7.10	15.00
90%	0.00	0.00				0.00	12.00	21.00	34.00	18.00	13.00	4.20	7.90
95%	0.00	0.00				0.00	8.42	16.00	25.00	12.00	8.49	2.80	4.00
99%	0.00	0.00				0.00	0.00	7.74	15.40	7.40	5.44	0.95	0.00

Figure B-34. Station 8258000 Cerro Canal at Costilla
Mean Annual Discharge 1965-1991

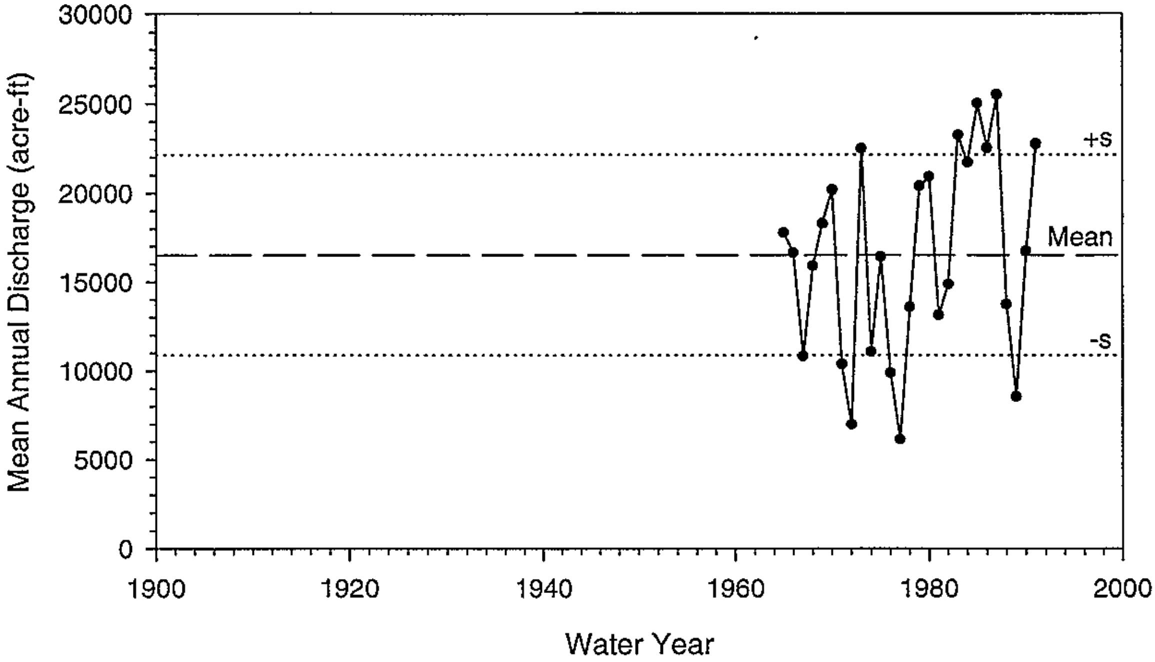


Figure B-35. Station 8258000 Cerro Canal at Costilla
Mean Monthly Discharge 1965-1991

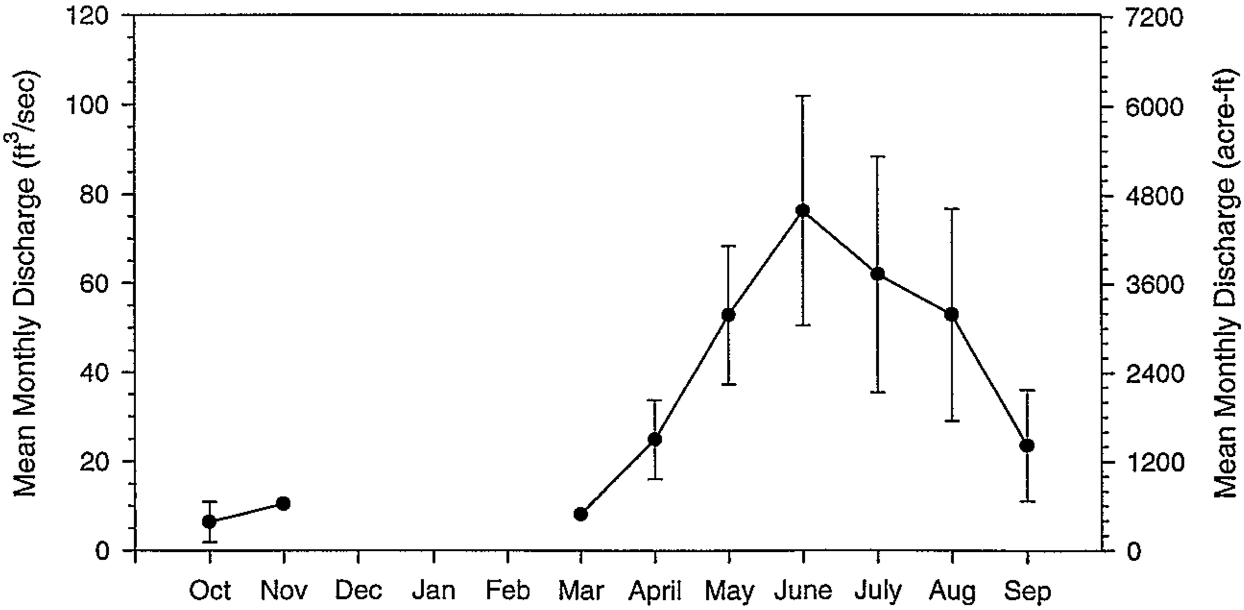
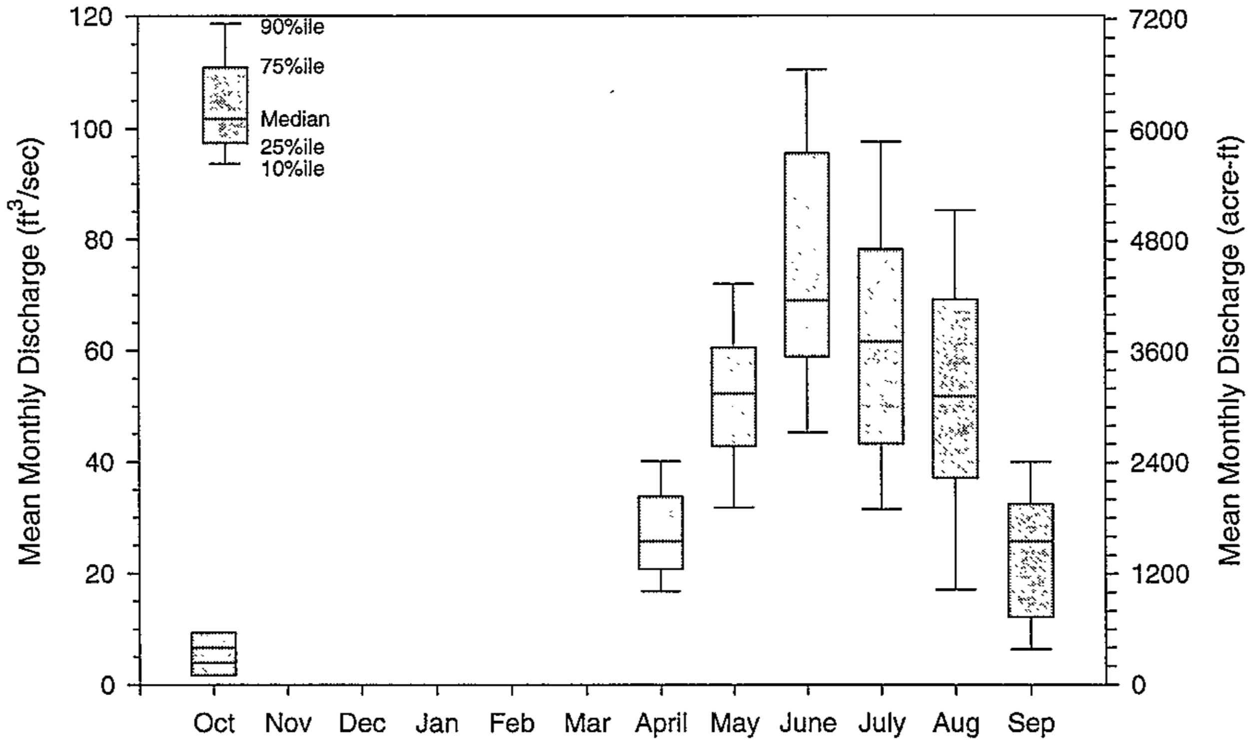


Figure B-36. Station 8258000 Cerro Canal at Costilla
Monthly Discharge 1965-1991



08258600 CERRO CANAL BELOW ASSOCIATION DITCH AT COSTILLA, NM

LOCATION.--Lat 36 57'41", long 105 32'05", Taos County, Hydrologic Unit 13020101, on left bank 220 ft downstream from Association ditch, and 1.2 mi south of the intersection of State Highway 3 and 196 at Costilla.

PERIOD OF RECORD.--May 1972 to June 1992.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,820 ft above National Geodetic Vertical Datum of 1929, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 83 ft3/s, June 9, 1985; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 83 ft3/s, June 9; minimum daily, 3.3 ft3/s, Sept. 30.

MONTHLY DIVERSIONS, IN ACRE-FEET,
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

October	-
November	-
December	-
January	-
February	-
March	-
April	-
May	2410
June	3920
July	3260
August	2480
September	1400

Table B-25. Mean daily streamflow (cfs), station 08258600 Cerro Canal below Association Ditch at Costilla, 1972-1992.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1972								10.96	14.61	8.51	9.82	3.96	2906
1973								37.65	53.23	52.74	44.87	7.40	11924
1974								31.13	19.81	18.05	8.50	1.74	4829
1975								29.65	28.70	32.61	22.43	5.29	7230
1976								18.32	18.33	16.95	10.98	3.57	4147
1977								17.14	13.09	12.65	3.46	2.86	2994
1978							20.04	14.45	19.14	16.33	19.88	9.47	6010
1979							28.53	32.68	30.93	37.27	33.24	25.70	11412
1980								30.19	57.07	53.13	33.75	12.18	11319
1981								24.95	20.13	22.15	15.64	6.60	5448
1982								26.09	26.64	24.55	22.51	15.19	6987
1983								30.00	43.20	47.23	44.71	36.30	12228
1984								34.81	46.10	34.52	35.45	25.49	10702
1985								39.13	65.93	53.00	40.30	23.52	13465
1986								34.29	50.37	54.03	41.97	23.54	12409
1987								30.98	59.23	57.91	38.08	21.39	12604
1988								21.81	22.74	24.75	21.05	16.67	6502
1989									22.52	17.84	13.71	3.90	3512
1990							25.47	26.71	18.81	20.89	16.98	13.30	7397
1991	1.47						31.20	32.01	37.00	40.96	23.26	23.87	11486
1992	3.62							37.90	56.33				5905

Table B-26. **Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08258600 Cerro Canal below Association Ditch at Costilla, 1972-1992.**

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	188	0	0	0	0	16	347	646	630	620	620	600	3667
Avg Day	3.56					9.85	21.18	27.80	34.47	32.30	25.03	14.10	25.05
Max Day	16					19	60	72	83	85	80	69	85
Min Day	0					0	0	0.58	0.86	0.01	0.73	0	0
# Months	2	0	0	0	0	0	4	20	21	20	20	20	0
SDev Month	1.51						4.79	7.97	17.05	16.13	13.04	9.98	
Skew Month							-0.72	-0.69	0.47	0.27	0.12	0.52	
Min Month	1.47						20.04	10.96	13.09	8.51	3.46	1.74	
Max Month	3.62						31.20	39.13	65.93	57.91	44.87	36.30	
Exceedences													
1%	15.12					19.00	51.53	66.08	76.40	79.00	72.80	60.00	74.00
5%	12.20					19.00	41.00	54.00	67.00	70.00	61.00	46.00	61.00
10%	8.22					18.40	36.00	47.00	63.00	63.00	53.00	36.00	53.00
20%	5.60					16.80	30.00	38.00	53.00	52.00	41.00	26.00	41.00
50%	2.50					12.00	20.00	26.00	32.00	29.00	22.00	8.60	22.00
80%	1.10					2.46	12.00	16.00	17.00	11.00	7.70	2.10	7.50
90%	0.89					0.00	8.77	11.60	11.00	5.80	4.10	1.10	3.00
95%	0.57					0.00	5.81	8.30	8.10	3.20	2.90	0.80	1.30
99%	0.11					0.00	0.13	2.18	3.30	0.57	1.30	0.25	0.46

Figure B-37. Station 8258600 Cerro Canal below Association Ditch at Costilla
Mean Annual Discharge 1972-1992

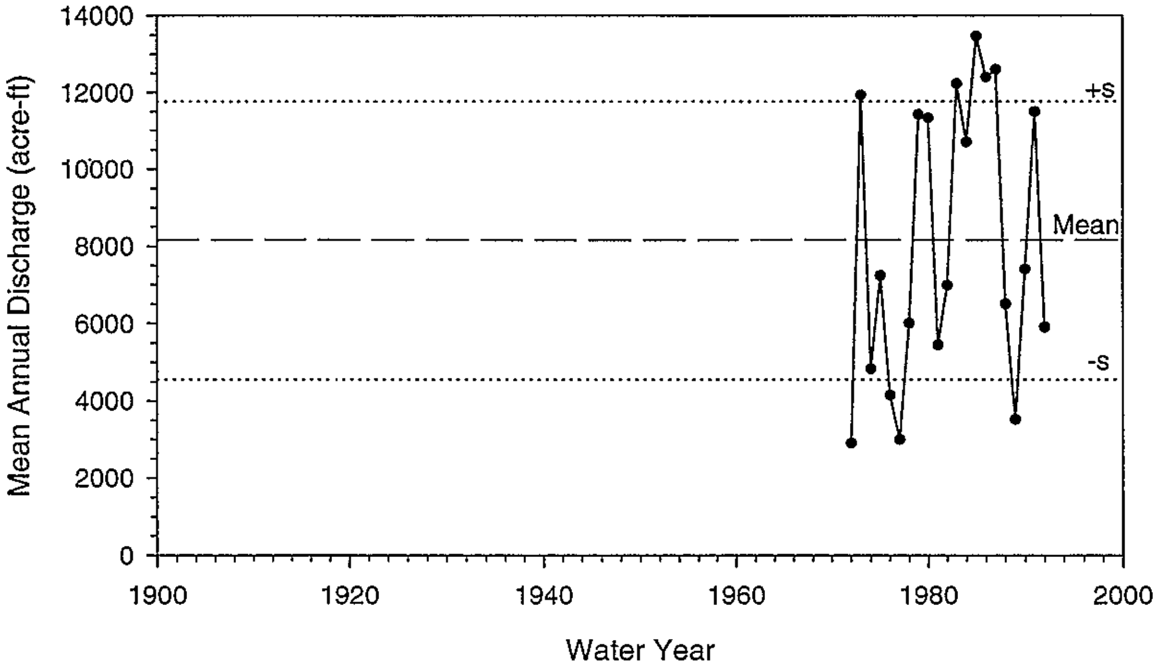


Figure B-38. Station 8258600 Cerro Canal below Association Ditch at Costilla
Mean Monthly Discharge 1972-1992

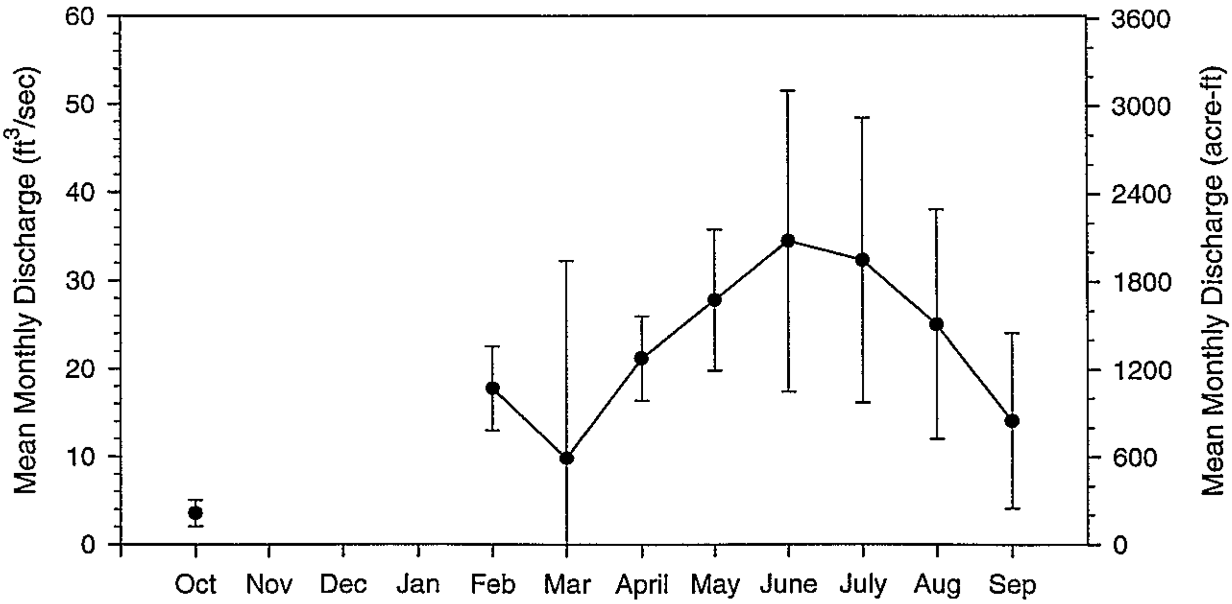
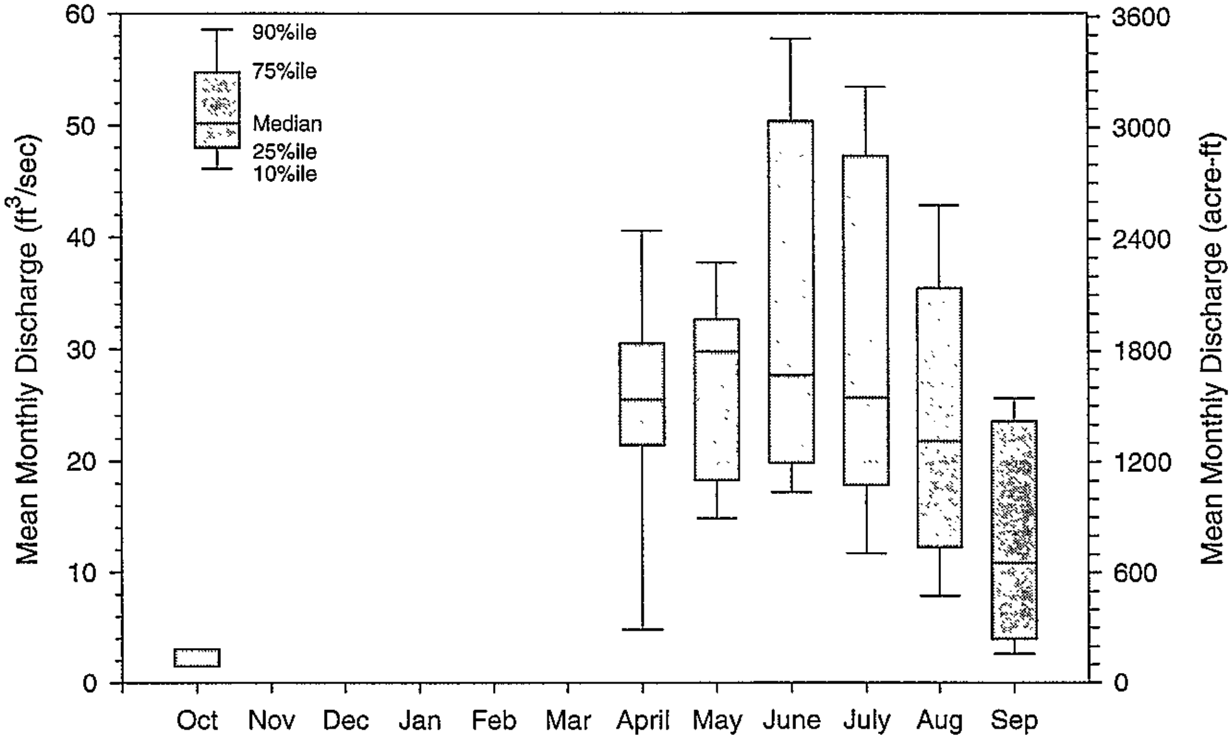


Figure B-39. Station 8258600 Cerro Canal below Association Ditch at Costilla
Monthly Discharge 1972-1992



08259000 CERRO CANAL NEAR JAROSO, CO

No Remarks Available for this Station.

Station Name	CERRO CANAL NEAR JAROSO, CO
Station ID	08259000
State	NEW MEXICO
County	TAOS
Latitude	36:59:41
Longitude	105:34:36
Elevation	

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1965	1972	8	1256	0	18.58	70.00	0.00		

Table B-27. Mean daily streamflow (cfs), station 08259000 Cerro Canal near Jaroso, 1966-1972.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1966	0.59						5.07	27.52	28.23	21.98	17.37	8.21	6618
1967							11.60	12.31	13.93	14.51	15.59	9.88	4715
1968								31.32	30.70	32.73	22.41	14.20	7988
1969								24.65	25.89	30.45	28.18	15.35	7575
1970	5.19							40.93	37.84	46.19	29.62	13.11	10529
1971								17.85	23.77	12.39	14.72	6.46	4563
1972								9.83	14.37	8.48	8.88	3.62	2742

Table B-28. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08259000 Cerro Canal near Jaroso, 1966-1972.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	81	5	0	0	0	0	99	217	210	217	217	210	1256
Avg Day	3.44	8.38					11.57	23.48	24.96	23.82	19.54	10.12	18.58
Max Day	10	9.7					39	68	65	69	70	41	70
Min Day	0	6.7					0	0.03	0	1.1	0	0.2	0
# Months	2	0	0	0	0	0	2	7	7	7	7	7	0
SDev Month	3.25						4.62	11.01	8.62	13.42	7.55	4.33	
Skew Month								0.30	-0.06	0.61	0.16	-0.27	
Min Month	0.59						5.07	9.83	13.93	8.48	8.88	3.62	
Max Month	5.19						11.60	40.93	37.84	46.19	29.62	15.35	
Exceedences													
1%	10.00	9.70					39.00	64.98	64.00	66.49	69.00	29.00	63.00
5%	8.80	9.70					33.10	49.30	52.00	59.15	57.30	24.00	50.20
10%	8.57	9.70					20.10	39.00	44.00	52.30	40.00	21.00	38.40
20%	7.50	9.70					17.00	33.00	35.00	39.00	27.00	15.00	30.00
50%	2.60	9.20					11.00	23.00	24.00	20.00	17.00	7.50	15.00
80%	0.00	7.10					4.24	11.40	13.00	7.48	7.84	4.80	5.92
90%	0.00	6.90					0.00	6.68	6.70	5.00	3.50	4.00	3.10
95%	0.00	6.80					0.00	2.78	3.75	3.68	1.80	2.80	0.44
99%	0.00	6.72					0.00	0.59	2.40	2.32	0.00	0.47	0.00

08259500 NEW MEXICO BRANCH CERRO CANAL NEAR JAROSO, CO

No Remarks Available for this Station.

Station Name	NEW MEXICO BRANCH CERRO CANAL NEAR JAROSO, CO
Station ID	08259500
State	NEW MEXICO
County	TAOS
Latitude	36:59:43
Longitude	105:34:47
Elevation	

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1969	1991	22	3597	0	2.95	17.00	0.00		
STREAM STAGE FEET	E.Mean	1976	1977	2	179	0	1.13	1.81	0.83		
STREAM STAGE FEET	Mean	1974	1983	10	1611	0	1.32	2.18	0.72		

Table B-29. Mean daily streamflow (cfs), station 08259500 New Mexico Branch Cerro Canal near Jaroso, 1969-1991.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1969								5.53	3.29	5.26	4.56	3.33	1338
1970								7.40	7.06	6.07	5.86	2.98	1786
1971								2.43	6.39	1.03	3.22	0.674	831
1972								2.87	2.40	0.36	0.05	0.05	347
1973								4.01	5.16	3.33	5.81	0.07	1119
1974								2.85	2.08	1.97	0.18	0.26	447
1975								2.12	4.05	3.12	2.94	0.01	744
1976								2.40	1.42	1.23	1.01	0.00	370
1977								1.05	1.92	0.53	0.00	0.00	211
1978							0.30	1.60	2.40	1.36	1.53	0.02	438
1979							0.07	1.78	4.86	5.26	4.19	2.57	1137
1980								4.63	5.08	5.75	3.64	1.52	1255
1981								2.62	3.47	2.52	2.89	0.70	742
1982								5.69	3.59	3.84	2.46	0.90	1004
1983								3.38	8.44				710
1985								3.25	9.46	6.30	2.86	3.75	1549
1986								6.05	7.12	4.97	5.89	3.72	1685
1987									10.54	10.52	5.85	2.05	1756
1988									2.27	3.85	1.84	2.31	622
1989									1.98		0.49	0.01	148
1990								3.84	1.84	2.61	2.63	1.89	780
1991											2.58	4.21	409

Table B-30. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08259500 New Mexico Branch Cerro Canal near Jaroso, 1969-1991.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	93	0	0	0	0	8	277	627	648	663	651	630	3597
Avg Day	1.22					0	0.27	3.54	4.54	3.72	2.88	1.48	2.95
Max Day	15					0	6	15	16	17	13	13	17
Min Day	0					0	0	0	0	0	0	0	0
# Months	0	0	0	0	0	0	2	18	21	19	21	21	0
SDev Month							0.16	1.73	2.71	2.53	1.96	1.48	
Skew Month								0.76	0.86	0.95	0.17	0.53	
Min Month							0.07	1.05	1.42	0.36	0.00	0.00	

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Max Month							0.30	7.40	10.54	10.52	5.89	4.21	
Exceedences													
1%	15.00					0.00	4.85	13.00	13.00	13.74	12.00	9.97	13.00
5%	14.00					0.00	1.40	8.70	11.00	10.00	9.40	6.25	9.60
10%	0.98					0.00	0.51	7.33	9.70	8.70	7.78	5.00	7.83
20%	0.56					0.00	0.27	6.10	7.90	6.70	5.40	3.30	5.70
50%	0.02					0.00	0.03	3.60	4.00	3.35	1.75	0.19	1.90
80%	0.00					0.00	0.00	0.05	0.54	0.05	0.01	0.00	0.00
90%	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95%	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99%	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure B-40. Station 8259500 New Mexico Branch Cerro Canal near Jaroso, CO
Mean Annual Discharge 1969-1991

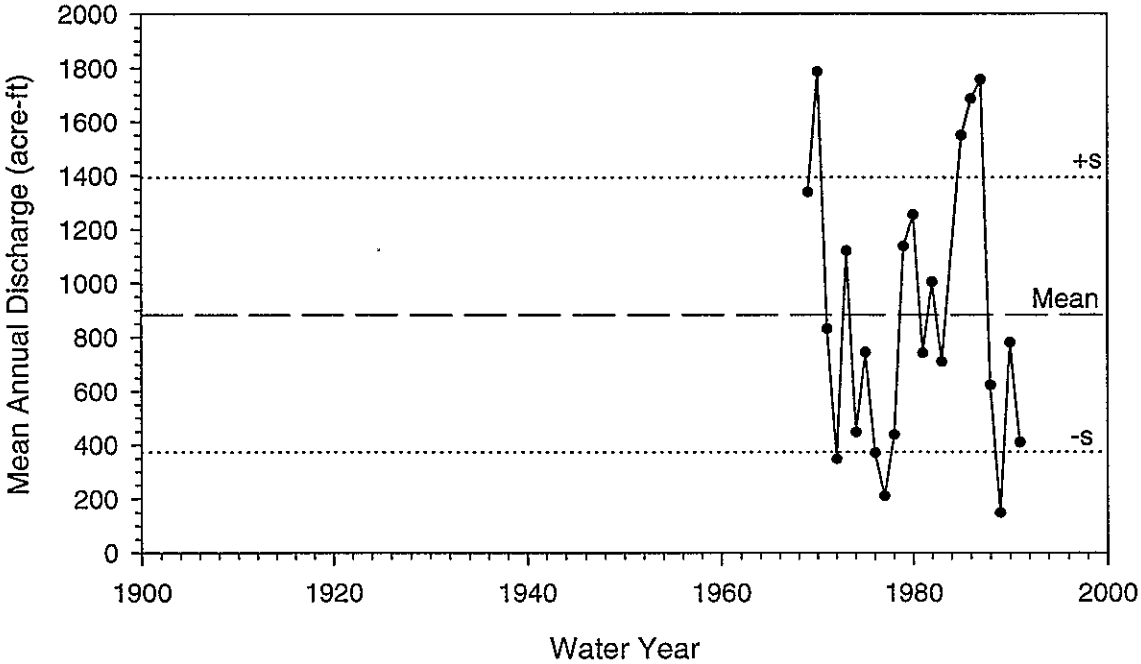


Figure B-41. Station 8259500 New Mexico Branch Cerro Canal near Jaroso, CO
Mean Monthly Discharge 1969-1991

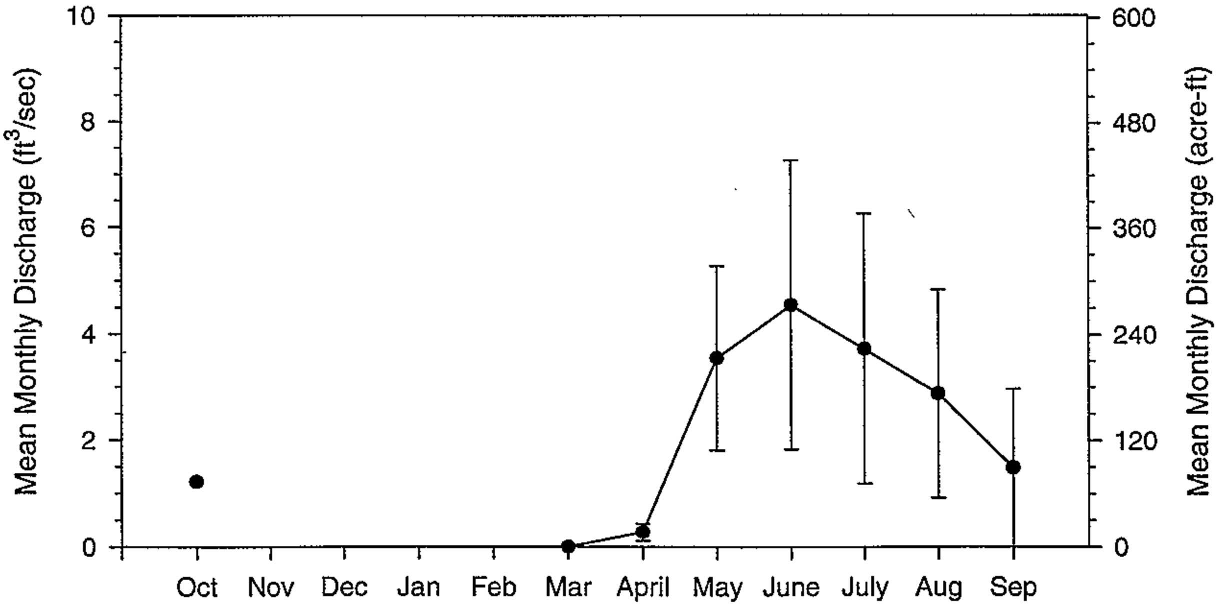
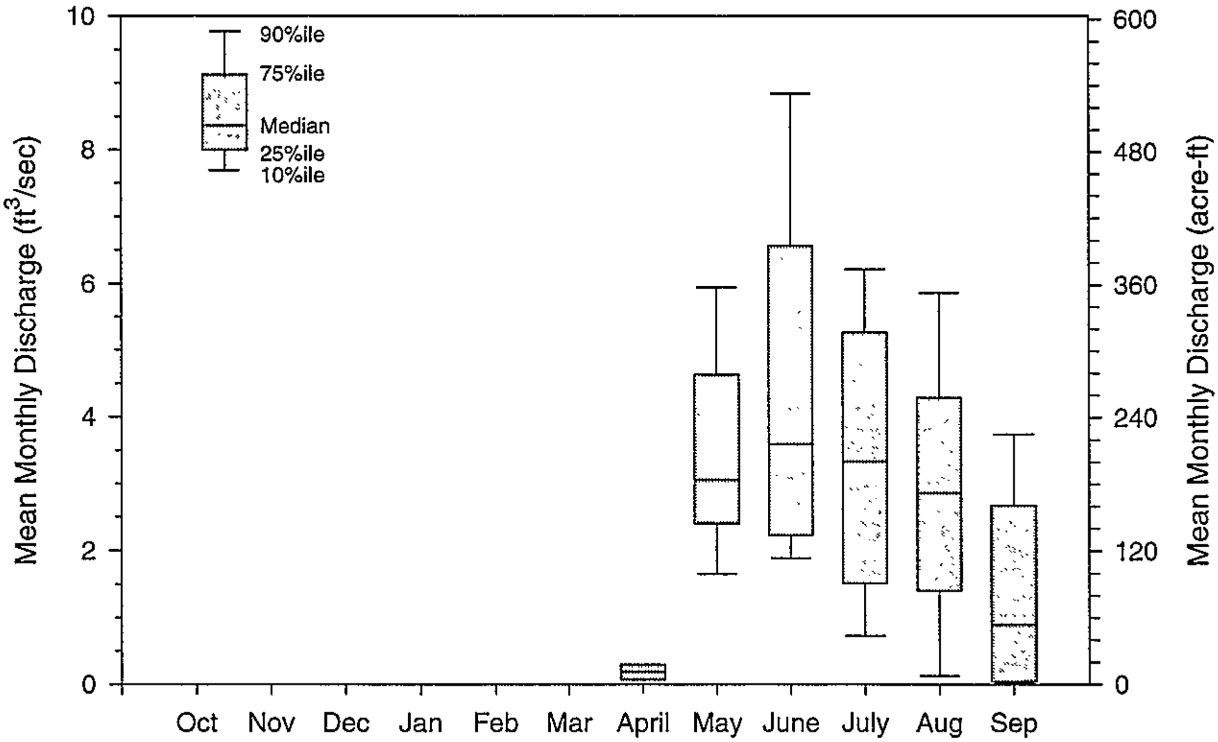


Figure B-42. Station 8259500 New Mexico Branch Cerro Canal near Jaroso, CO
Monthly Discharge 1969-1991



08259600 CERRO CANAL AT STATE LINE NEAR JAROSO, CO

LOCATION.--Lat 36 59'41", long 105 34'36", Taos County, Hydrologic Unit 13020101, on right bank 780 ft downstream from head of N. Mex. branch Cerro Canal, and 2.7 mi east of Jaroso.

PERIOD OF RECORD.--April 1973 to June 1992.

GAGE.--Water-stage recorder and Parshall flume. Elevation of gage is 7,680 ft above National Geodetic Vertical Datum of 1929, from topographic map. Flow measured is delivered to Colorado.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 71 ft3/s, July 23, 25, 1985; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 71 ft3/s, July 23, 25; minimum daily, 1.7 ft3/s, Sept. 30.

MONTHLY DIVERSIONS, IN ACRE-FEET,
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

October	-
November	-
December	-
January	-
February	-
March	-
April	-
May	2030
June	2140
July	2820
August	2210
September	1040

Table B-31. Mean daily streamflow (cfs), station 08259600 Cerro Canal at State Line near Jaroso, 1973-1992.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1973								32.76	45.50	45.00	34.65	7.23	10049
1974								26.69	17.12	15.38	7.36	0.88	4110
1975								27.62	24.71	29.70	18.65	4.31	6398
1976								15.82	16.52	14.94	9.83	2.98	3656
1977								12.29	9.06	9.82	2.89	2.53	2227
1978							18.28	11.91	16.00	14.73	18.08	9.41	5349
1979							25.30	27.26	23.80	30.54	27.02	21.69	9428
1980								21.71	47.73	43.33	28.71	9.86	9191
1981								19.92	15.14	18.86	12.66	5.66	4401
1982								19.84	22.53	19.49	19.28	13.69	5759
1983								24.71	28.93	34.10	31.95	24.95	8787
1984								26.77	36.63	26.07	26.34	18.12	8126
1985								33.00	52.73	45.90	35.89	17.48	11236
1986								26.30	42.80	49.19	35.49	18.75	10486
1987								24.19	47.87	45.36	30.28	17.21	10011
1988								18.91	18.04	19.10	17.26	14.88	5357
1989									18.57	14.32	11.59	2.70	2859
1990							22.06	21.42	15.71	16.85	12.49	9.46	5931
1991	0.54						27.23	27.40	31.87	33.80	18.00	17.55	9464
1992	2.38							27.92	46.2				4612

Table B-32. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08259600 Cerro Canal at State Line near Jaroso, 1973-1992.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	172	4	0	0	0	14	337	615	600	589	589	570	3490
Avg Day	2.37	0.52				7.91	19.03	23.23	28.87	27.71	20.97	11.54	21.14
Max Day	13	1.9				16	59	59	66	72	68	62	72
Min Day	0	0				0	0	0	0.56	0	0.07	0	0
# Months	2	0	0	0	0	0	4	19	20	19	19	19	0
SDev Month	1.31						3.92	5.99	13.85	13.04	10.16	7.31	
Skew Month							-0.53	-0.46	0.42	0.38	0.0	0.13	
Min Month	0.535						18.28	11.91	9.06	9.82	2.89	0.88	
Max Month	2.38						27.23	33.00	52.73	49.19	35.9	24.95	
Exceedences													
1%	12.28	1.90				16.00	50.63	55.00	62.00	68.22	61.11	48.00	61.00
5%	10.40	1.90				16.00	38.30	48.25	56.00	60.00	52.00	39.00	52.00
10%	6.16	1.90				15.20	34.00	40.00	52.00	54.00	44.10	30.00	45.00
20%	3.76	1.90				14.00	28.00	32.00	45.00	45.00	34.00	21.00	35.00
50%	1.20	0.11				11.00	17.00	22.00	27.00	26.00	19.00	7.40	19.00
80%	0.35	0.04				0.00	9.90	13.00	14.00	10.00	6.50	1.30	6.30
90%	0.12	0.02				0.00	7.47	9.90	9.50	5.00	3.59	0.35	2.30
95%	0.00	0.01				0.00	4.47	7.13	6.40	2.54	2.40	0.14	0.60
99%	0.00	0.00				0.00	0.00	1.78	2.40	0.11	0.47	0.00	0.00

Figure B-43. Station 8259600 Cerro Canal at State Line near Jaroso, CO
Mean Annual Discharge 1973-1992

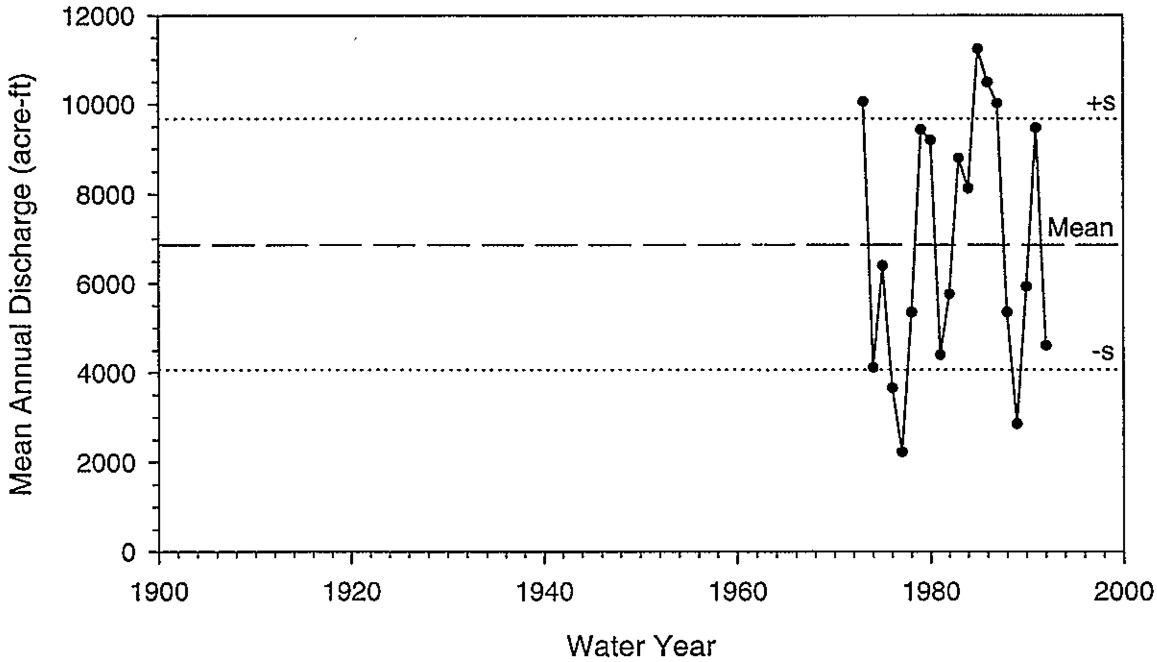


Figure B-44. Station 8259600 Cerro Canal at State Line near Jaroso, CO
Mean Monthly Discharge 1973-1992

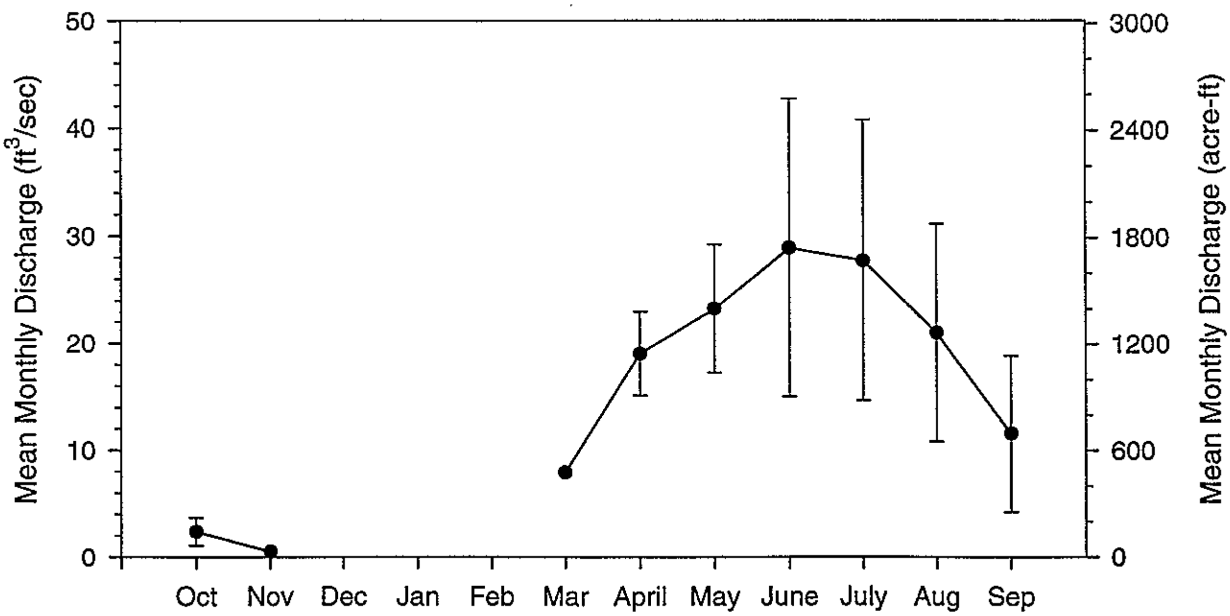
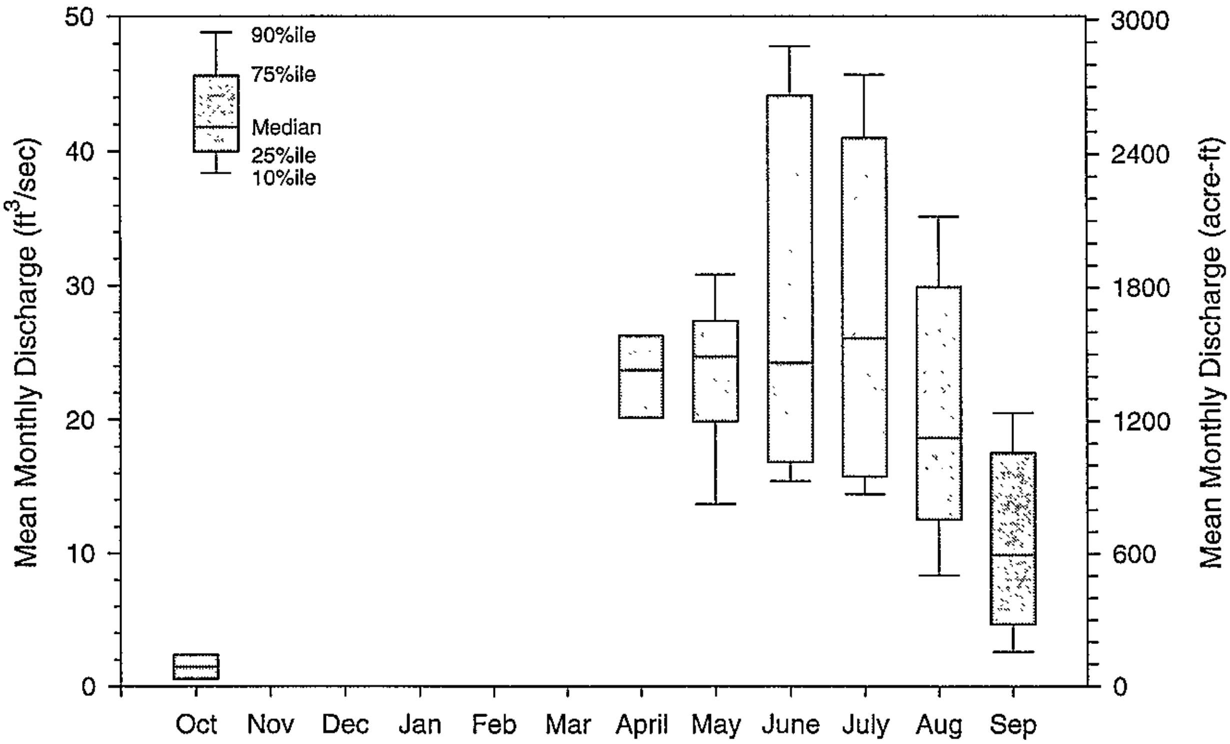


Figure B-45. Station 8259600 Cerro Canal at State Line near Jaroso, CO
Monthly Discharge 1973-1992



08260500 COSTILLA CREEK BELOW DIVERSION DAM, AT COSTILLA, NM

LOCATION.--Lat 36 58'03", long 105 31'00", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on right bank 600 ft downstream from diversion dam, 1.1 mi southeast of Costilla, and at mile 15.3.

DRAINAGE AREA.--197 mi2.

PERIOD OF RECORD.—October 1964 to October 1986 (no winter records).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 7,861 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: June 25 to July 15 and July 24 to Aug. 1. Records poor. Flow partly regulated by Costilla Reservoir (station 08253900) 20 mi upstream, and by canal headgates or sluice gates at diverison dam. Diversions upstream from station for irrigation of about 5,000 acres, 3,000 acres of which are downstream from station. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 540 ft^3/s, June 9, 1979, gage height, 4.66 ft, from rating curve extended above 220 ft^3/s; maximum gage height, 6.77 ft, May 30, 1983 (backwater from debris); no flow Oct. 14, 1963, Aug. 6, 1983.

EXTREMES OUTSIDE PERIOD RECORD.--A major flood occurred in 1886, from information by local residents. Flood of May 11, 1942, probably exceeded 1,000 ft^3/s, based on records for upstream station (station 08255500).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 535 ft^3/s, May 10, gage height, ft; no flow at times.

Table B-33. Mean daily streamflow (cfs), station 08260500 Costilla Creek below Diversion Dam, at Costilla, 1965-1986.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1965	0.35						8.47	35.32	9.33	9.62	4.19	2.22	4234
1966										5.89	7.30	8.28	1304
1967										0.49	0.33	1.22	123
1968										24.47	17.19	10.80	3204
1969										12.50	24.55	5.65	2614
1970										37.40	19.29	9.72	4064
1971										3.30	2.48	2.00	474
1972										1.44	1.54	0.82	232
1973										107.9	48.60	25.21	11123
1974										3.16	1.82	2.00	425
1975										23.80	14.53	13.18	3141
1976								11.95	9.84	3.32	4.20	0.90	1836
1977								5.23	3.27	2.31	1.03	2.81	889
1978							1.02	9.87	13.11	1.53	0.64	0.94	1637
1979							42.89	163.6	182.2	47.85	12.10	6.25	27511
1980								104.9	26.54	12.75	4.90	2.14	9242
1981								2.77	4.24	3.45	4.37	3.87	1134
1982								17.45	12.92	7.24	13.97	9.54	3714
1983								182.1	216.3	27.47	14.01	7.37	27057
1984								118.6	27.70	6.45	2.84	3.10	9696
1985								188.4	56.88	9.42	6.43	2.03	16064
1986								15.02	20.79	26.48	12.21	5.43	4863

Table B-34. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08260500 Costilla Creek below Diversion Dam, at Costilla, 1965-1986.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	184	0	0	0	0	6	356	682	660	682	682	660	3912
Avg Day	2.41					17.78	24.86	48.89	32.76	10.76	6.31	2.90	19.92
Max Day	20					24	200	442	460	197	102	33	460
Min Day	0					0.71	0	0.03	0.11	0.03	0	0	0
# Months	1	0	0	0	0	0	3	22	22	22	22	22	0
SDev Month							22.34	63.39	56.04	11.54	4.73	2.37	
Skew Month							1.52	1.31	2.77	1.94	0.51	1.43	
Min Month	0.35						1.02	0.49	0.33	0.82	0.64	0.13	
Max Month	0.35						42.9	188	216	47.9	14.0	9.5	
Exceedences													
1%	18.32					24.00	166.6	314.6	334.0	89.00	38.18	20.40	225.9
5%	7.96					24.00	133.2	203.6	168.0	37.00	24.00	13.00	115.4
10%	6.02					24.00	92.20	160.0	89.00	23.80	16.00	6.80	52.00
20%	4.00					23.80	55.60	90.60	33.00	16.00	10.00	4.20	19.00
50%	1.60					21.00	2.70	15.00	11.00	4.80	3.10	1.30	4.00
80%	0.07					18.40	0.33	2.20	2.00	1.50	0.72	0.34	0.71
90%	0.00					11.08	0.15	0.38	0.68	0.43	0.30	0.10	0.25
95%	0.00					5.90	0.07	0.24	0.36	0.19	0.12	0.06	0.10
99%	0.00					1.75	0.00	0.10	0.16	0.05	0.06	0.02	0.00

Figure B-46. Station 8260500 Costilla Creek below Diversion at Costilla
Mean Annual Discharge 1965-1986

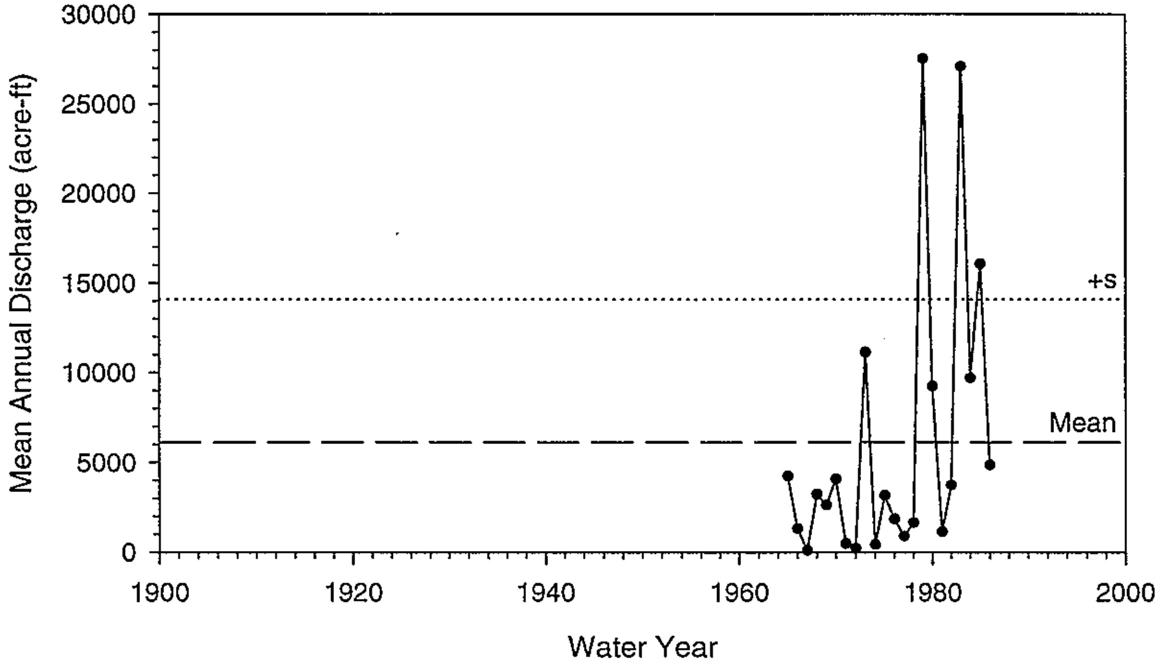


Figure B-47. Station 8260500 Costilla Creek below Diversion at Costilla
Mean Monthly Discharge 1965-1986

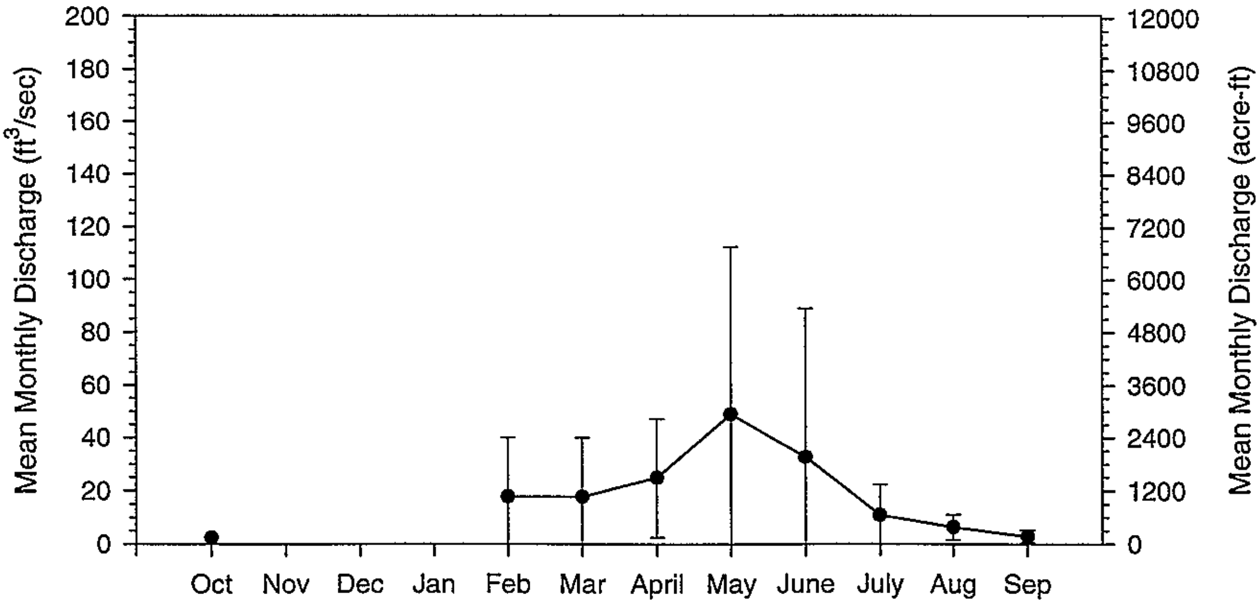
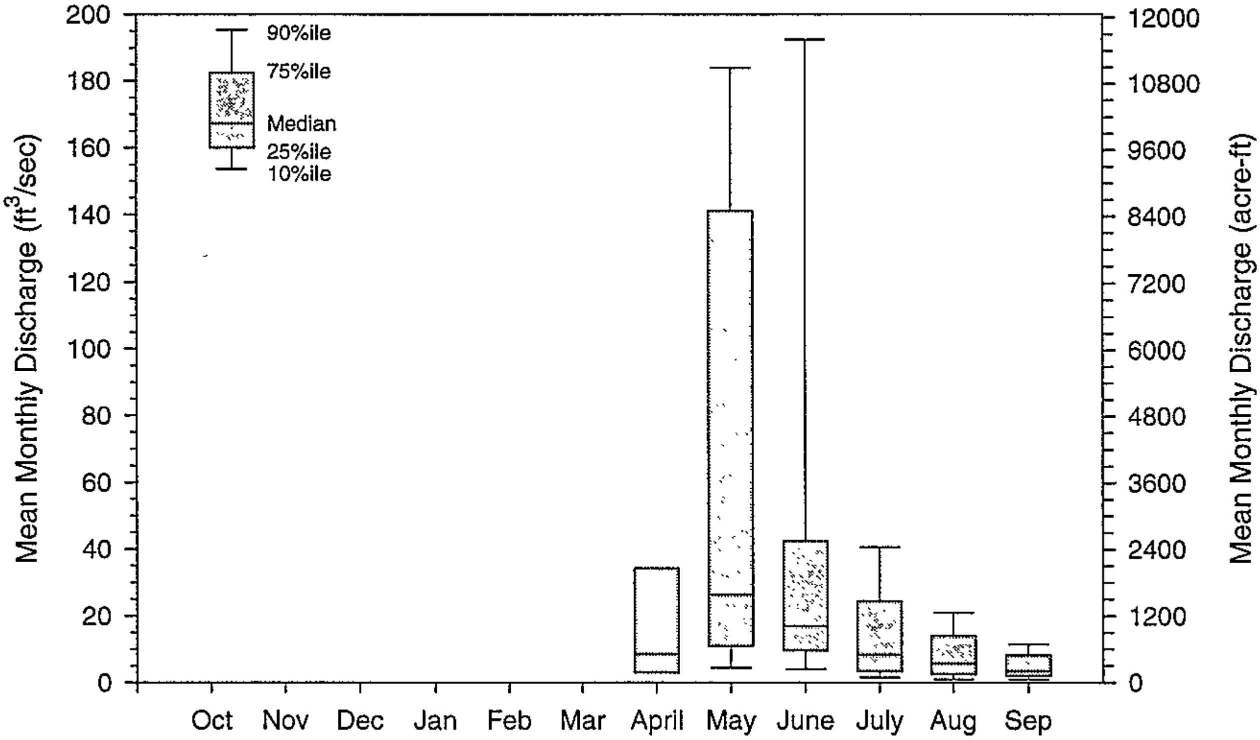


Figure B-48. Station 8260500 Costilla Creek below Diversion at Costilla
Monthly Discharge 1965-1986



08261000 COSTILLA CREEK AT GARCIA, CO

LOCATION.--Lat 36 59'21", long 105 31'54", Taos County, Hydrologic Unit 13020101, in Sangre de Cristo Grant, on left bank 0.4 mi downstream from Old State Highway 3, 0.5 mi upstream from New Mexico-Colorado State Line, 0.9 mi south of Garcia, and at mile 13.3.

DRAINAGE AREA.--200 mi2, approximately.

PERIOD OF RECORD.—October 1965 to current year (no winter records).

GAGE.--Water-stage recorder. Concrete control since Oct. 9, 1956. Elevation of gage is 7,758 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Apr. 20, 1950, at site 0.4 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Aug. 21, 22, Aug. 24 to Sept. 17, Sept. 19, 20, and Sept. 24-30. Records fair. Flow partly regulated by Costilla Reservoir (station 08253900) 22 mi upstream. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 500 ft3/s, June 1, 1983, gage height, 4.91 ft; no flow for many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--A major flood occurred in 1886, from information by local residents. Flood of May 11, 1942, probably reached a discharge of 1,000 ft3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 294 ft3/s, May 10, gage height, ft; no flow several days.

Table B-35. Mean daily streamflow (cfs), station 08261000 Costilla Creek at Garcia, 1966-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1966	5.84							2.69	4.39	4.35	8.56	0.69	1621
1967	0						0	0.02	0	0.41	2.57	0.04	187
1968	0.24							17.96	14.19	7.81	2.55	0.33	2620
1969	0.03							7.95	16.24	2.26	7.99	1.38	2169
1970	2.84							36.16	19.38	9.72	5.84	1.65	4606
1971								1.66	1.66	1.11	0.77	0.44	343
1972								0.60	0.45	0.05	0.56	0.06	104
1973								108.7	45.29	24.21	9.64	2.15	11588
1974								1.29	0.51	0.38	0.10	0.00	139
1975								24.03	11.17	8.98	0.52	0.09	2732
1976								5.61	5.25	0.25	0.39	0.00	697
1977								0.55	0.80	0.01	0.02	1.26	158
1978							0.03	5.35	8.20	0.34	0.03	0.00	841
1979							38.73	143.9	161.3	39.34	8.25	2.53	23827
1980								100.0	20.81	7.32	2.01	0.66	8000
1981								0.23	0.49	0.60	1.48	0.80	219
1982								13.23	4.09	0.76	8.37	6.07	1979
1983								167.8	204.4	24.76	13.45	6.83	25236
1984								113.1	27.35	4.23	2.51	3.89	9228
1985								176.6	62.64	10.49	5.30	1.21	15629
1986								5.79	13.92	16.79	5.28	2.54	2692
1987								189.3	29.22	2.00	1.69	0.26	13621
1988								1.50	0.72	1.37	2.20	6.73	755
1989								1.89	5.86	1.50	3.19	0.29	771
1990							6.33	2.10	2.92	1.56	0.39	2.20	930
1991	4.41						20.47	44.71	5.69	4.91	4.15	5.03	5433
1992	1.55							26.92	27.92	5.16	2.97	0.80	3959
1993							41.54	37.83	7.25	4.12	9.62	6.95	6488
1994							46.62	144.9	61.12	7.04	5.99	3.94	16356

Table B-36. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08261000 Costilla Creek at Garcia, 1944-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	373	24	0	0	0	22	486	899	870	899	899	870	5342
Avg Day	1.85	2				4.96	28.73	47.67	26.32	6.61	4.01	2.03	17.2
Max Day	38	12				22	278	382	444	167	82	70	444
Min Day	0	0				0	0	0	0	0	0	0	0
# Months	7	0	0	0	0	0	7	29	29	29	29	29	0
SDev Month	2.32						20.34	63.33	46.93	9.13	3.64	2.29	
Skew Month	0.70						0.06	1.18	2.97	2.26	0.85	1.17	
Min Month	0.00						0.00	0.02	0.00	0.01	0.02	0.00	
Max Month	5.84						46.62	189.3	204.4	39.34	13.45	6.95	
Exceedences													
1%	21.0	12.0				22.0	246.0	278.1	295.4	62.1	34.0	21.6	225.7
5%	6.6	12.0				21.8	136.5	208.0	138.0	25.1	18.0	11.0	111.9
10%	5.1	10.2				19.2	95.4	169.2	75.0	16.0	12.0	6.5	48.0
20%	3.3	5.8				11.6	63.4	97.0	27.0	9.6	6.6	2.7	14.0
50%	0.1	0.0				0.0	2.2	9.1	7.3	1.7	1.0	0.0	1.7
80%	0.0	0.0				0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
90%	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95%	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
99%	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure B-49. Station 8261000 Costilla Creek near Garcia, CO
Mean Annual Discharge 1966-1994

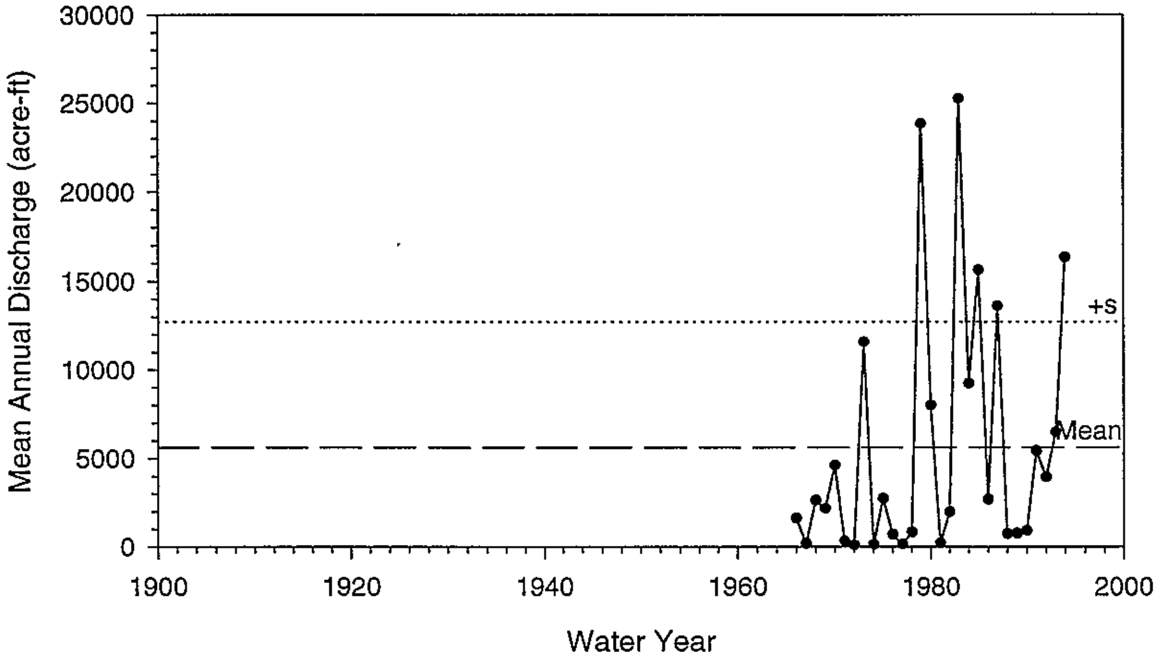


Figure B-50. Station 8261000 Costilla Creek near Garcia, CO
Mean Monthly Discharge 1966-1994

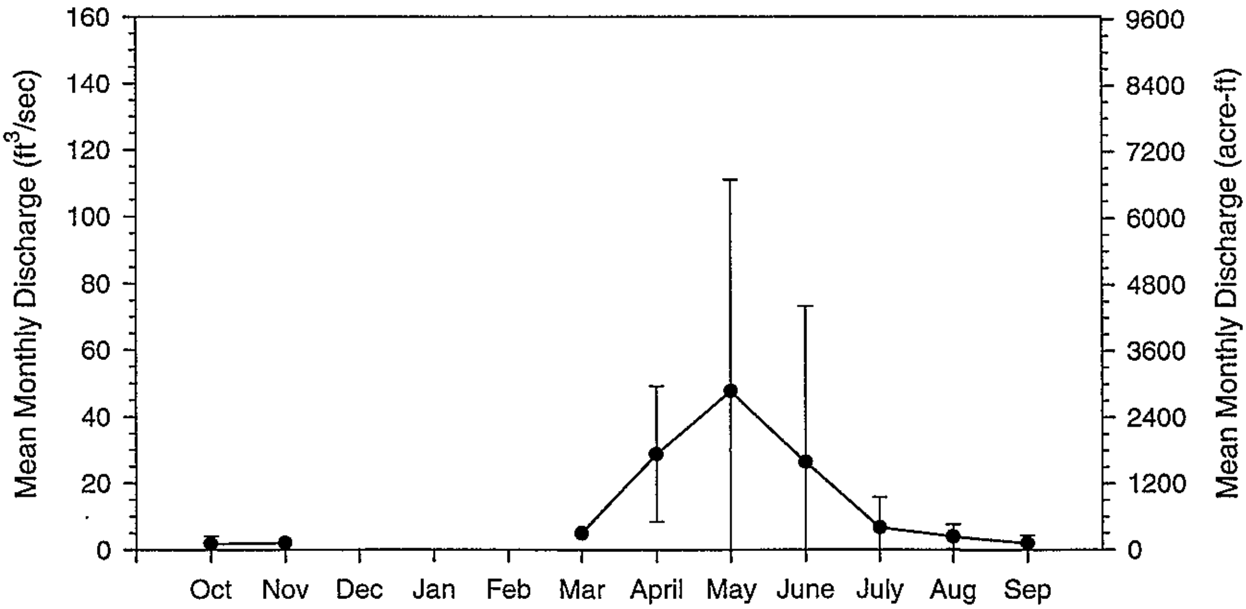
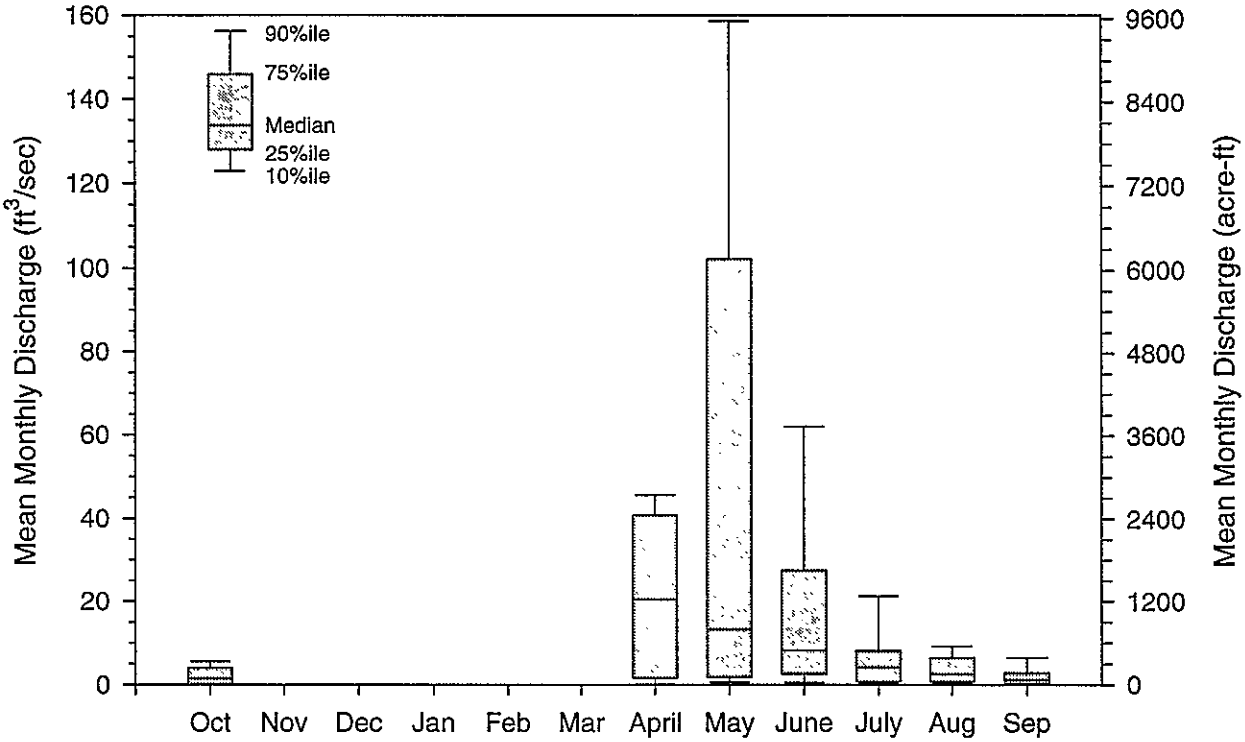


Figure B-51. Station 8261000 Costilla Creek near Garcia, CO
Monthly Discharge 1966-1994



08263000 LATIR CREEK NEAR CERRO, NM

No Remarks Available for this Station. In S ½ of SW ¼ of section 15, T30N, R13E, on right bank at mouth of canyon, 100 ft upstream from heading of Cerro community ditch and 6 miles northeast of Cerro. Drainage area of approximately 10 mi^2. No diversion above station (Reiland and Haynes, 1963)

Station Name LATIR CREEK NEAR CERRO, NM
Station ID 08263000
State NEW MEXICO
County TAOS
Latitude 36:49:45
Longitude 105:32:50
Elevation 8280.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1945	1970	26	9131	0	5.39	76.00	0.20		

Table B-37. Mean daily streamflow (cfs), station 08263000 Latir Creek near Cerro, 1946-1970.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1946	3.76	2.91	2.37	2.49	2.45	2.74	5.67	6.81	5.53	4.55	5.22	5.80	3039
1947	6.42	3.88	2.92	2.51	2.67	2.89	5.13	20.13	20.30	9.39	7.87	7.63	5552
1948	4.72	3.80	3.00	2.94	3.09	3.11	5.76	16.48	27.10	8.51	5.30	3.75	5285
1949	3.32	2.99	2.72	2.26	2.55	2.90	5.38	14.25	34.00	16.44	6.36	4.13	5875
1950	3.48	2.68	2.14	1.96	2.20	2.08	2.46	4.07	7.87	5.95	4.03	2.92	2528
1951	2.54	2.15	2.06	1.62	1.88	1.84	3.15	9.83	7.76	3.72	3.84	2.46	2593
1952	2.12	2.21	1.84	2.00	1.77	2.29	5.16	13.68	33.83	9.55	6.79	4.59	5176
1953	3.40	2.50	2.52	2.60	2.48	2.47	4.21	9.33	21.37	8.32	4.93	3.24	4066
1954	2.91	2.80	2.49	2.58	2.50	2.52	7.24	14.74	15.80	5.60	4.24	3.53	4043
1955	3.66	2.81	2.25	1.88	2.46	2.38	4.07	9.76	21.00	7.84	8.96	5.24	4366
1956	3.66	3.04	2.39	2.25	2.39	2.42	3.03	4.80	3.38	2.25	3.00	2.07	2095
1957	2.26	2.14	1.79	1.81	1.89	1.90	3.56	8.71	41.50	20.48	13.25	6.41	6382
1958	4.46	4.48	2.82	2.78	2.82	2.60	3.89	28.88	22.30	7.81	5.00	5.18	5632
1959	4.18	3.51	2.69	2.01	2.16	2.32	3.13	9.82	12.47	4.97	5.84	3.33	3412
1960	2.67	2.18	1.98	2.02	1.98	2.85	5.63	7.48	21.77	8.15	4.79	4.16	3959
1961	3.09	2.48	2.08	0.58	2.07	2.14	4.18	11.30	13.78	5.44	4.97	5.77	3494
1962	3.44	2.39	2.07	1.65	2.37	2.25	6.63	11.97	10.31	5.04	3.43	4.09	3361
1963	3.09	3.15	2.25	1.83	2.19	2.24	3.88	5.13	3.55	2.50	3.19	3.41	2198
1964	2.52	1.86	1.46	1.42	1.58	1.62	2.76	7.39	4.40	3.51	3.72	3.13	2141
1965	2.27	2.01	1.75	1.80	1.95	1.84	4.20	14.58	31.57	14.99	8.47	7.61	5619
1966	4.77	3.01	2.87	2.70	2.04	2.55	3.76	7.81	8.72	5.86	6.68	3.22	3270
1967	2.61	2.49	2.04	2.09	1.72	2.26	2.74	3.95	4.23	4.28	6.54	4.18	2369
1968	2.58	2.25	1.66	1.56	1.51	1.51	1.77	7.83	12.99	5.24	6.81	3.86	2998
1969	2.76	2.26	1.87	1.60	1.60	2.02	3.94	10.02	14.25	7.83	6.56	5.60	3647
1970	4.00	3.09	2.45	2.15	2.05	1.92	3.56	14.21	16.60	9.94	8.33	6.11	4505

Table B-38. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08263000 Latir Creek near Cerro, 1946-1970.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	775	750	775	775	706	775	750	775	750	775	775	750	9131
Avg Day	3.4	2.8	2.3	2.0	2.2	2.3	4.2	10.9	16.7	7.5	5.9	4.5	5.4
Max Day	12	5.5	3.8	4.1	3.4	4.9	14	50	76	37	31	15	76
Min Day	1.7	1.2	0.5	0.2	1	1.4	1.2	1.5	2.5	1.8	1.9	1.8	0.2
# Months	25	25	25	25	25	25	25	25	25	25	25	25	25

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
SDev Month	0.99	0.65	0.42	0.52	0.40	0.41	1.34	5.54	10.68	4.35	2.28	1.50	1.80
Skew Month	1.26	0.97	0.11	-0.61	0.28	0.01	0.49	1.50	0.69	1.55	1.39	0.63	0.32
Min Month	2.12	1.86	1.46	0.58	1.51	1.51	1.77	3.95	3.38	2.25	3.00	2.07	2.89
Max Month	6.42	4.48	3.00	2.94	3.09	3.11	7.24	28.88	41.50	20.48	13.25	7.63	8.82
Exceedences													
1%	7.55	5.10	3.60	3.00	3.30	4.00	11.00	38.00	55.50	26.25	16.00	12.00	34.69
5%	5.10	4.35	3.10	2.90	2.87	3.22	9.10	22.25	41.00	17.00	12.00	8.20	17.00
10%	4.70	3.80	3.00	2.80	2.80	3.00	8.00	20.00	36.00	14.00	9.55	6.80	12.00
20%	4.10	3.30	2.70	2.50	2.50	2.80	5.90	16.00	24.00	10.00	7.60	5.70	6.80
50%	3.30	2.60	2.20	2.00	2.10	2.20	3.30	9.05	14.00	6.25	5.10	4.00	3.10
80%	2.50	2.20	1.80	1.60	1.80	1.90	2.40	5.00	6.10	4.00	3.80	3.00	2.20
90%	2.20	2.00	1.60	1.50	1.60	1.70	2.00	4.15	4.00	3.10	3.30	2.60	1.90
95%	2.10	1.80	1.50	1.20	1.50	1.60	1.90	3.60	3.30	2.50	3.00	2.40	1.60
99%	1.87	1.50	1.10	0.30	1.40	1.40	1.50	2.60	2.60	1.90	2.50	1.95	1.40

Figure B-52. Station 8263000 Latir Creek near Cerro
Mean Annual Discharge 1946-1970

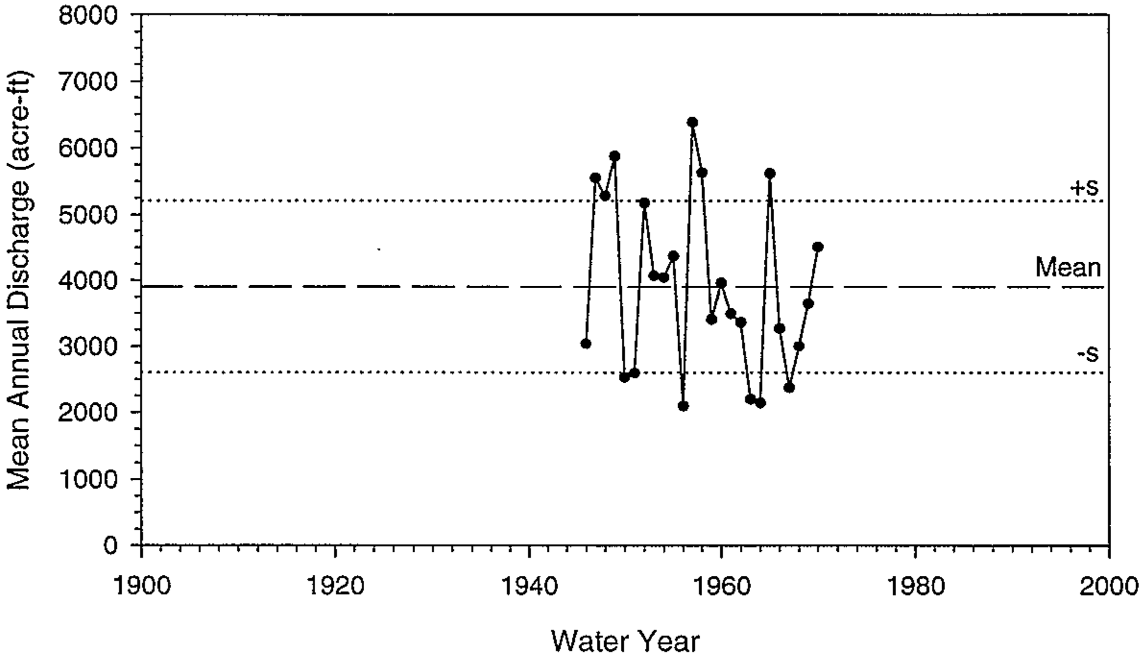


Figure B-53. Station 8263000 Latir Creek near Cerro
Mean Monthly Discharge, 1946-1970

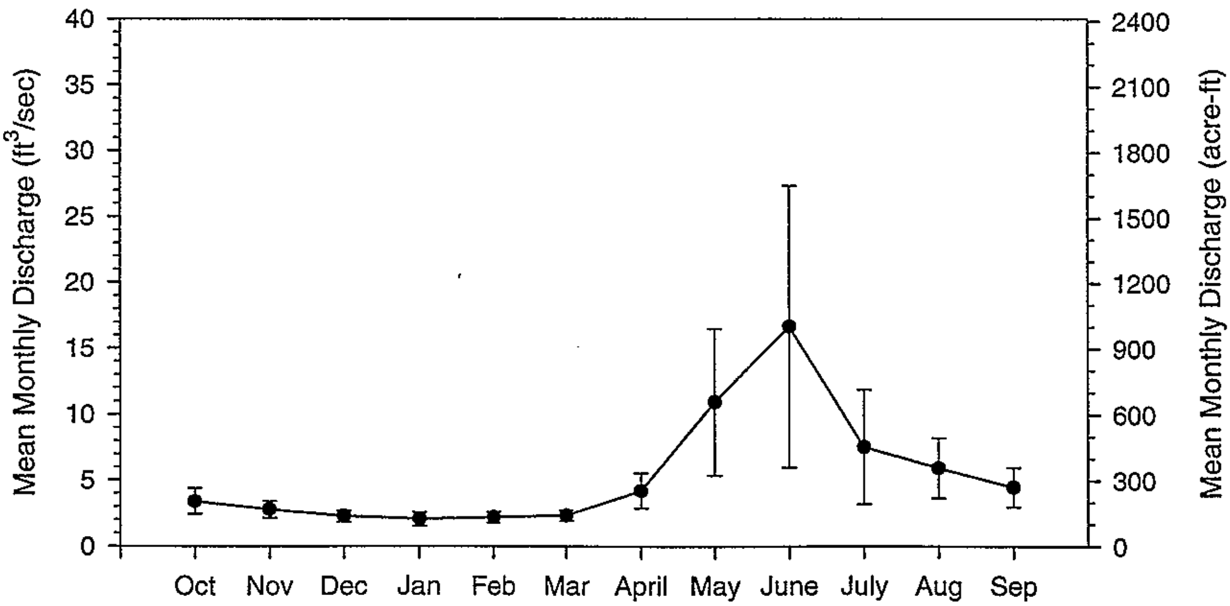
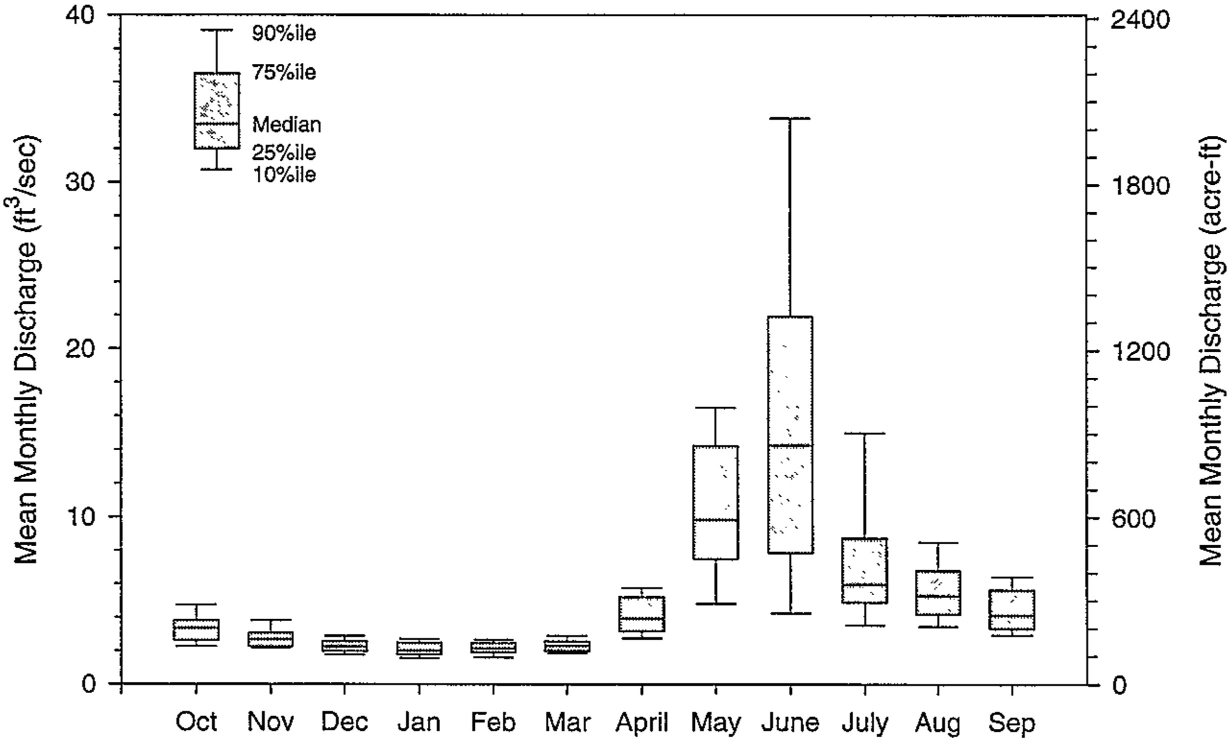


Figure B-54. Station 8263000 Latir Creek near Cerro
Monthly Discharge, 1946-1970



08263500 RIO GRANDE NEAR CERRO, NM

LOCATION.--Lat 36 44'05", long 105 41'05", in NW1/4NE1/4 sec.20, T.29N., R.12E., Taos County, Hydrologic Unit 13020101, on left bank 4 mi southwest of Cerro, 5.5 mi northwest of Questa, 7.4 mi upstream from Red River, and at mile 1,693.1.

DRAINAGE AREA.--8,440 mi2, approximately, including 2,940 mi2 in closed basin in San Luis Valley, CO.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1948 to current year.

REVISED RECORDS.--WDR NM-80-1: 1978(M).

GAGE.--Water-stage recorder. Elevation of gage is 7,110 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: July 21-23, 29, 30 and Aug. 12 to Sept 18. Water-discharge records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 620,000 acres in Colorado and 7,000 acres in New Mexico.

AVERAGE DISCHARGE.--37 years, 429 ft3/s, 310,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,740 ft3/s, June 22, 1949, gage height, 15.78 ft; minimum, about 40 ft3/s, Sept. 10, 11, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft3/s and maximum (*).

Date	Time	Discharge (ft3/s)	Gage height (ft)
Mar. 13	1230	1,260	6.82
May 13	0845	5,640	12.72
Apr. 20	2200	3,850	10.95
June 14	0400	*6,280	*13.27

Minimum daily discharge, 111 ft3/s, Oct. 1.

Table B-39. Mean daily streamflow (cfs), station 08263500 Rio Grande near Cerro, 1949-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1949	121.5	244.8	326.4	302.6	300.0	415.4	369.5	1438	4400	1555	234.5	156.9	594505
1950	172.7	323.3	377.8	372.6	501.7	321.6	227.4	259.6	388.3	85.2	74.7	88.0	191293
1951	112.5	160.2	256.4	256.9	322.8	226.0	147.9	97.6	84.0	51.5	54.0	75.4	110602
1952	85.9	101.7	183.0	248.2	253.8	317.0	543.0	2460	2340	503.2	633.1	215.1	476908
1953	166.2	231.3	351.7	378.1	424.6	352.3	259.8	224.6	263.7	100.6	82.6	73.4	174686
1954	99.7	143.4	240.7	219.9	300.9	164.7	114.4	97.3	64.7	58.3	59.3	78.4	98358
1955	89.6	96.4	145.8	195.2	207.0	210.2	106.9	144.6	111.7	57.4	69.5	65.0	90203
1956	69.7	103.7	163.9	220.5	219.8	186.6	109.1	179.0	294.5	59.1	48.1	44.8	102058
1957	52.7	88.1	104.6	115.8	140.0	109.8	108.9	706.5	2184	2161	957.0	417.7	433008
1958	180.0	681.2	451.4	331.4	399.2	425.0	747.2	2917	1426	114.3	82.2	79.1	473493
1959	91.5	157.3	240.4	230.6	282.1	255.8	156.9	103.2	76.2	57.4	66.8	57.0	106585
1960	130.2	267.4	268.7	262.1	286.2	503.8	906.2	306.3	761.7	143.3	88.4	66.6	239717
1961	101.2	216.8	181.3	177.3	246.5	245.8	379.9	643.0	309.2	118.0	100.5	120.8	171139
1962	121.7	494.7	304.4	260.6	495.4	396.6	1108	1304	744.6	272.6	125.8	114.0	345255
1963	117.1	370.1	237.6	174.8	321.4	339.7	200.0	84.1	65.3	52.4	67.0	65.4	125500
1964	66.0	116.7	100.5	152.8	172.5	246.3	127.6	109.5	74.6	52.9	63.4	60.2	80801
1965	71.8	194.8	128.9	216.3	251.3	351.5	374.7	1272	2309	1229	550.5	341.6	440448
1966	580.6	644.0	439.0	400.9	379.3	692.0	674.2	695.8	420.0	142.8	143.6	89.6	320109
1967	113.8	575.1	299.3	230.0	300.3	288.0	111.8	142.9	393.9	148.6	386.4	159.9	189437
1968	116.0	377.8	257.8	250.0	295.8	523.1	319.5	789.2	1416	401.5	736.2	143.4	339709
1969	130.0	377.7	263.7	342.2	375.9	441.4	498.4	886.8	1190	450.4	324.5	259.3	333809
1970	720.0	866.7	522.5	379.4	516.3	540.5	498.5	891.9	501.0	232.9	122.7	658.1	388544

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1971	452.2	734.0	436.2	379.0	516.9	721.1	370.4	149.3	167.5	170.3	126.5	137.4	262262
1972	387.0	427.0	334.7	312.3	371.7	561.0	188.0	113.4	141.7	83.6	137.4	180.1	195016
1973	216.9	501.0	329.3	306.4	323.3	577.6	548.7	1775	2387	1156	390.5	329.4	534221
1974	445.5	384.9	327.1	302.2	302.6	601.9	333.5	213.7	122.3	59.4	59.6	52.4	193500
1975	83.0	132.4	197.1	198.8	272.0	429.5	481.4	1186	1741	1199	508.4	424.1	414225
1976	305.5	861.4	342.2	253.3	382.7	557.8	552.1	764.6	878.2	334.0	195.4	82.7	331802
1977	127.3	170.1	160.3	152.3	216.6	337.5	170.8	92.8	58.1	67.5	57.1	52.2	100039
1978	56.0	114.9	121.0	188.0	244.1	263.3	125.5	447.7	562.4	433.5	167.7	95.2	170117
1979	265.2	283.9	189.6	199.6	228.7	503.9	894.7	2094	3664	2034	738.9	120.2	678479
1980	85.7	144.9	222.1	315.5	378.2	418.5	735.5	2157	2259	724.4	212.5	84.5	467135
1981	66.7	141.4	313.3	263.3	287.1	299.6	112.6	123.5	128.6	129.8	141.6	139.6	129277
1982	272.3	492.7	217.4	247.3	327.9	467.1	443.6	1221	1525	823.8	573.7	803.7	447531
1983	536.9	534.1	332.2	344.2	472.6	589.1	621.4	957.3	2126	887.6	215.8	72.5	463352
1984	90.4	131.2	301.5	301.2	320.0	619.2	1024	1945	1352	414.1	219.1	153.3	415294
1985	182.5	509.9	385.8	377.8	364.8	719.5	2329	3740	4285	800.3	360.9	191.8	859346
1986	313.4	744.9	621.5	551.3	632.2	741.2	1032	1485	3946	2181	197.6	269.7	766211
1987	673.1	1073	774.1	565.8	657.1	1010	2335	4577	2915	464.2	116.9	124.2	923159
1988	127.7	399.4	423.1	362.9	455.2	713.5	555.7	174.7	177.7	155.7	114.2	105.9	226377
1989	116.8	405.2	423.9	387.8	395.0	912.8	1149	466.7	289.5	114.8	100.7	85.1	291873
1990	110.3	127.2	182.8	215.0	269.9	385.3	143.4	639.1	345.9	253.7	191.7	111.6	179929
1991	276.1	402.7	326.0	337.6	392.3	561.3	1068	1136	859.4	404.1	307.5	282.1	383119
1992	143.3	339.6	347.8	349.8	391.0	771.0	1179	435.3	497.3	188.7	236.9	158.6	303151
1993	139.1	216.0	270.0	333.2	409.4	727.1	780.7	1717	1596	416.9	221.5	469.5	440125
1994	169.5	298.2	403.5	366.5	414.6	594.6	546.7	1331	1167	154.0	78.6	96.9	338975

Table B-40. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08263500 Rio Grande near Cerro, 1949-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1426	1380	1426	1426	1299	1426	1380	1426	1380	1426	1426	1380	16801
Avg Day	199	357	301	290	348	470	561	972	1152	472	234	175	461
Max Day	1320	1330	1000	640	776	1660	4800	6370	9440	4250	3940	1980	9440
Min Day	44	58	75	96	112	59	67	58	49	46	41	40	40
# Months	46	46	46	46	46	46	46	46	46	46	46	46	46
SDev Month	166.3	239.6	133.4	94.3	110.8	204.3	502.5	1001	1212	573.2	215.0	160.2	280.8
Skew Month	1.8	1.1	1.2	0.8	0.7	0.5	2.0	1.7	1.3	1.9	1.7	2.3	1.0
Min Month	52.7	88.1	100.5	115.8	140.0	109.8	106.9	84.1	58.1	51.5	48.1	44.8	111.8
Max Month	720	1073	774	566	657	1010	2335	4577	4400	2181	957	804	1275
Exceedences													
1%	1047	1160	828.4	578	708	1207	3364	5130	5802	2932	1217	1180	3570
5%	584	957	555	465	599	942	1600	3194	3870	1880	757	527	1630
10%	444	742	463	399	528	767	1210	2490	3020	1420	548	367	981
20%	273	549	391	360	432	638	830	1660	2070	720	310	200	560
50%	128	287	287	285	326	438	395	563	590	188	139	114	273
80%	83	121	183	204	251	273	143	128	142	71	74	70	115
90%	70	98	130	179	216	202	111	95	75	55	57	59	81
95%	56	88	107	153	191	146	93	80	64	52	50	52	64
99%	52	72	87	110	142	104	74	66	53	49	47	44	50

Figure B-55. Station 8263500 Rio Grande near Cerro
Mean Annual Discharge 1949-1994

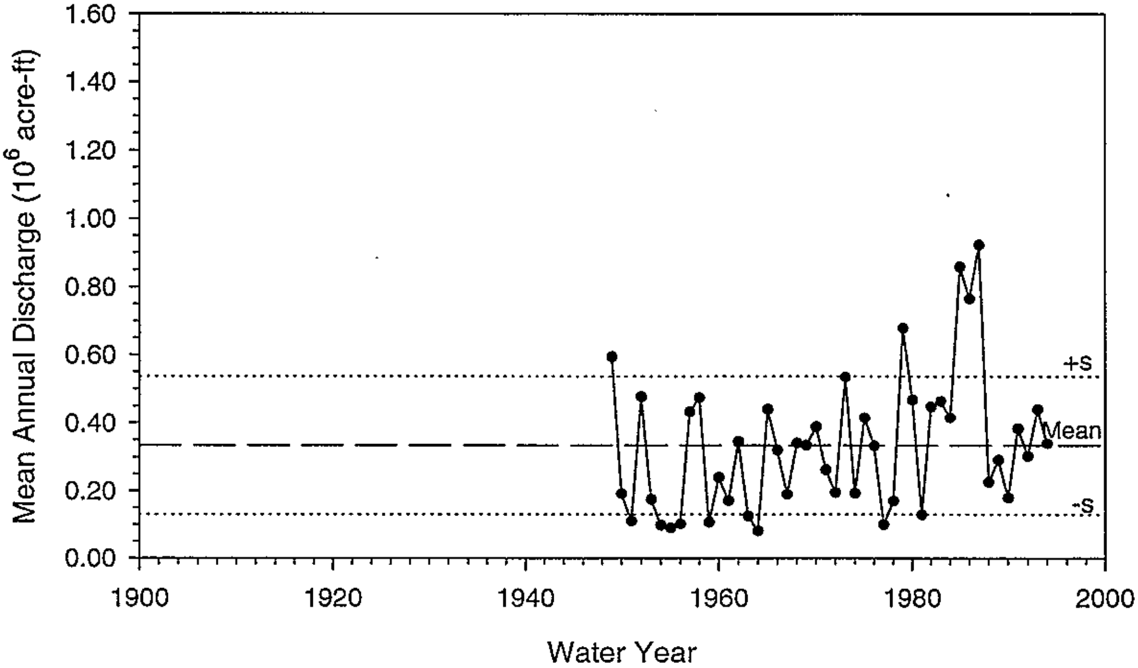


Figure B-56. Station 8263500 Rio Grande near Cerro
Mean Monthly Discharge, 1949-1994

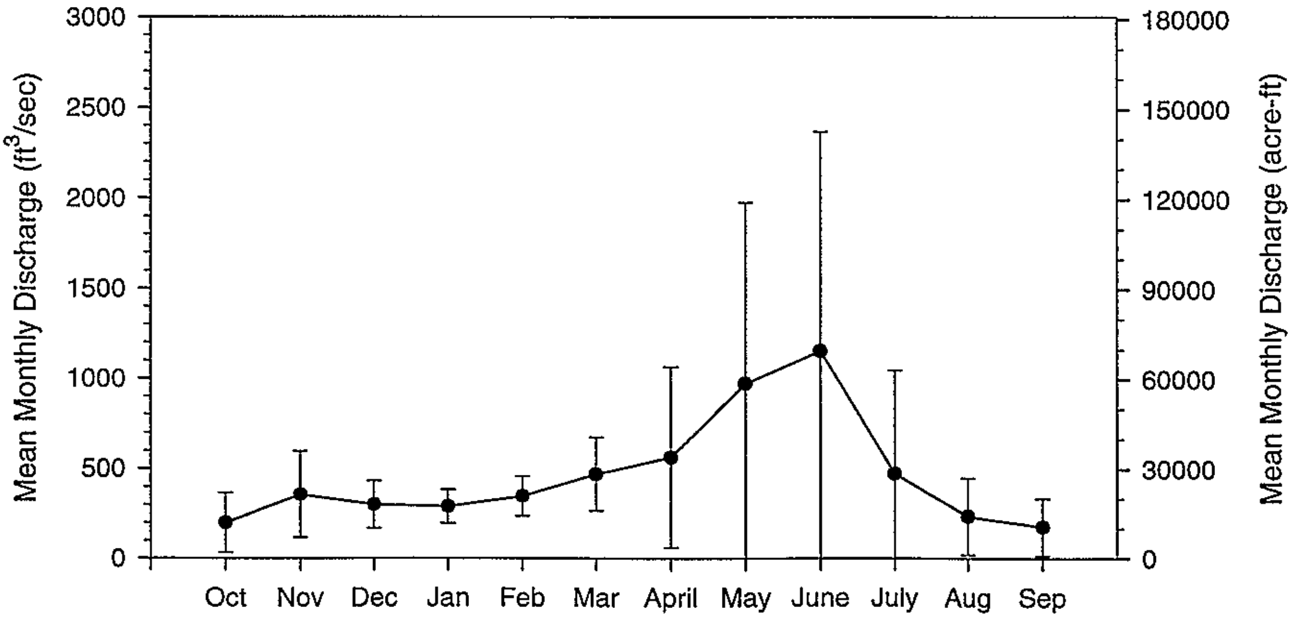
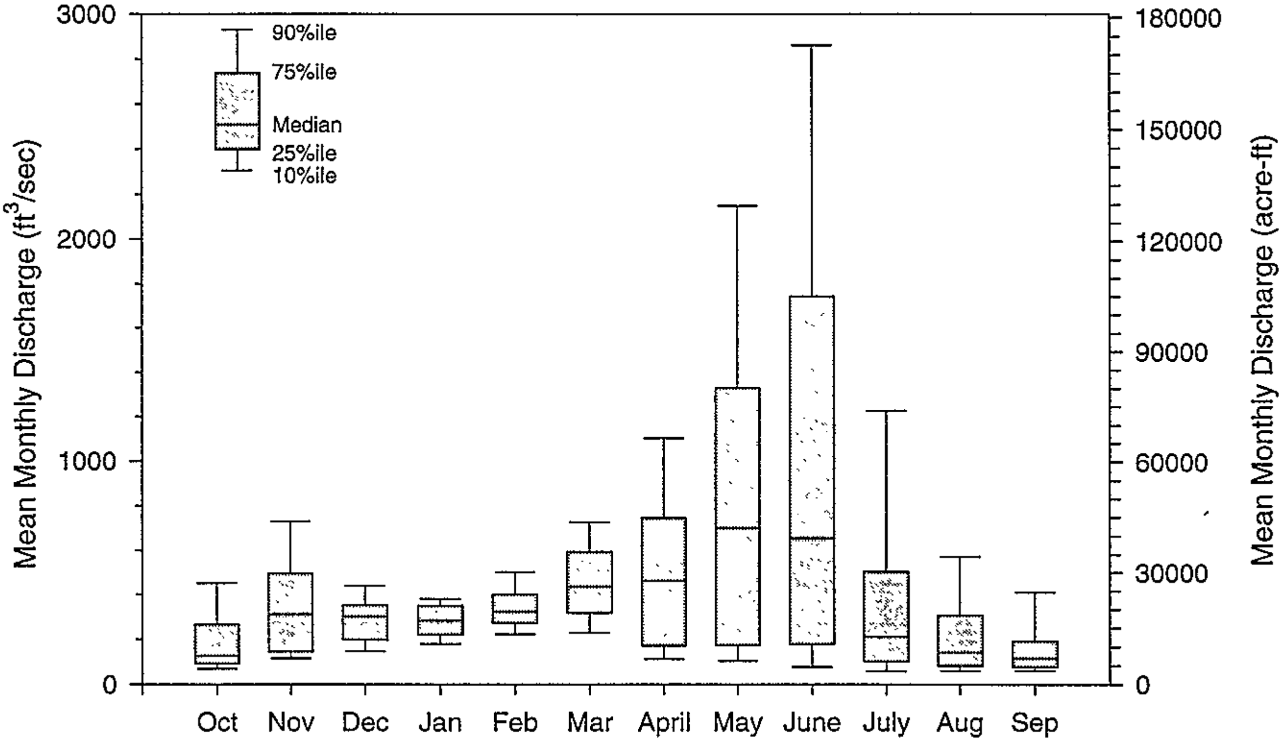


Figure B-57. Station 8263500 Rio Grande near Cerro
Monthly Discharge, 1949-1994



08264000 RED RIVER NEAR RED RIVER, NM

No Remarks Available for this Station. In NE ¼ of section 26, T28N, R14E (projected), on right bank 100 ft downstream from confluence of Middle and East Forks, and 6 miles south of Red River. Drainage area of 19.1 mi^2. No diversion above station (Reiland and Haynes, 1963).

Station Name	RED RIVER NEAR RED RIVER, NM
Station ID	08264000
State	NEW MEXICO
County	TAOS
Latitude	36:37:20
Longitude	105:23:20
Elevation	9394.20

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1943	1964	22	6337	0	17.04	224.00	2.00		

Table B-41. Mean daily streamflow (cfs), station 08264000 Red River near Red River, 1944-1964.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1944	8.18	5.81	4.86	4.67	4.43	4.59	7.11	48.32	110.0	42.77	14.13	7.89	15871
1945	7.74	5.59	5.14	4.39	4.31	4.53	8.69	64.48	96.60	46.35	20.23	10.81	16879
1946	7.84	5.99	4.37	4.02	3.97	4.51	13.91	20.71	16.03	9.53	14.25	14.08	7207
1947	11.58	8.59	6.65	5.05	4.57	5.35	11.01	63.94	67.07	21.32	12.68	8.58	13704
1948	7.03	5.56	4.90	4.30	4.55	5.23	12.90	43.97	62.57	24.90	15.30	8.47	12073
1949	7.35	6.57	6.00	4.48	5.00	4.90	13.05	48.90	73.53	31.55	16.68	10.88	13838
1950	9.02	6.53	4.84	4.45	4.67	6.00	13.36	25.84	30.97	14.65	7.67	7.15	8167
1951	5.37	4.13	3.62	3.36	3.09	3.19	6.50	29.75	30.77	10.02	8.52	4.92	6853
1952	4.48	4.27	4.07	3.50	3.47	3.75	15.29	71.65	136.4	37.16	18.52	10.87	18920
1953	7.48	6.47	5.08	4.65	4.26	4.70	8.20	20.73	69.10	18.42	9.78	5.77	9920
1954	5.05	4.31	3.32	3.10	2.36	2.82	15.63	35.71	35.73	15.90	10.14	6.05	8479
1955	6.23	4.18	3.24	2.80	2.59	2.28	4.94	25.87	73.43	25.84	27.58	17.83	11887
1963	7.00	5.81	3.61	3.32	3.79	4.79	9.51	22.10	11.53	6.43	8.00	6.04	5565
1964	5.15	4.30	3.32	3.34	3.29	2.64	4.70	29.28	28.50	13.71	19.25	8.18	7616

Table B-42. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08264000 Red River near Red River, 1944-1964.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	620	510	465	434	396	434	420	496	630	651	651	630	6337
Avg Day	7.02	5.52	4.51	3.96	3.88	4.23	10.34	39.58	62.48	22.78	14.57	9.48	17.04
Max Day	18	10	7.5	6	5.5	8.7	39	171	224	134	53	42	224
Min Day	3.2	3	2	2	2	2	2.6	5.2	6.7	4.5	4.7	4.1	2
# Months	20	17	15	14	14	14	14	16	21	21	21	21	14
SDev Month	1.90	1.19	1.01	0.70	0.81	1.12	3.75	16.99	35.72	13.42	6.55	4.15	5.75
Skew Month	0.64	0.84	0.55	-0.16	-0.61	-0.45	-0.11	0.62	0.56	1.20	1.48	1.19	0.43
Min Month	4.44	4.13	3.24	2.80	2.36	2.28	4.70	20.71	11.53	6.43	7.67	4.82	7.69
Max Month	11.58	8.59	6.65	5.05	5.00	6.00	15.63	71.65	136.4	57.45	33.16	19.37	26.07

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	14.80	10.00	7.24	5.50	5.10	7.76	27.80	151.1	188.5	87.45	44.00	33.00	125.6
5%	10.00	8.10	6.40	5.13	5.00	6.50	23.00	90.00	141.5	55.45	33.00	19.00	70.00
10%	9.60	7.00	6.00	5.00	5.00	6.00	20.00	76.00	114.0	41.00	24.00	15.00	42.00
20%	8.70	6.40	5.40	4.70	4.60	5.00	15.00	62.00	92.00	31.00	19.00	12.00	22.00
50%	7.00	5.40	4.30	4.00	4.00	4.20	8.90	33.00	55.00	17.00	13.00	8.30	7.60
80%	5.00	4.20	3.60	3.10	3.10	3.00	5.70	18.00	29.00	11.00	8.70	5.70	4.40
90%	4.40	4.00	3.00	3.00	2.40	2.50	3.90	8.60	18.00	9.00	7.50	5.10	3.60
95%	4.20	3.90	3.00	2.60	2.30	2.30	3.40	7.30	12.50	7.82	6.40	4.70	3.10
99%	3.90	3.50	2.50	2.50	2.10	2.10	2.80	6.08	8.82	5.45	5.15	4.30	2.30

Figure B-58. Station 8264000 Red River near Red River
Mean Annual Discharge 1944-1955, 1963-1964

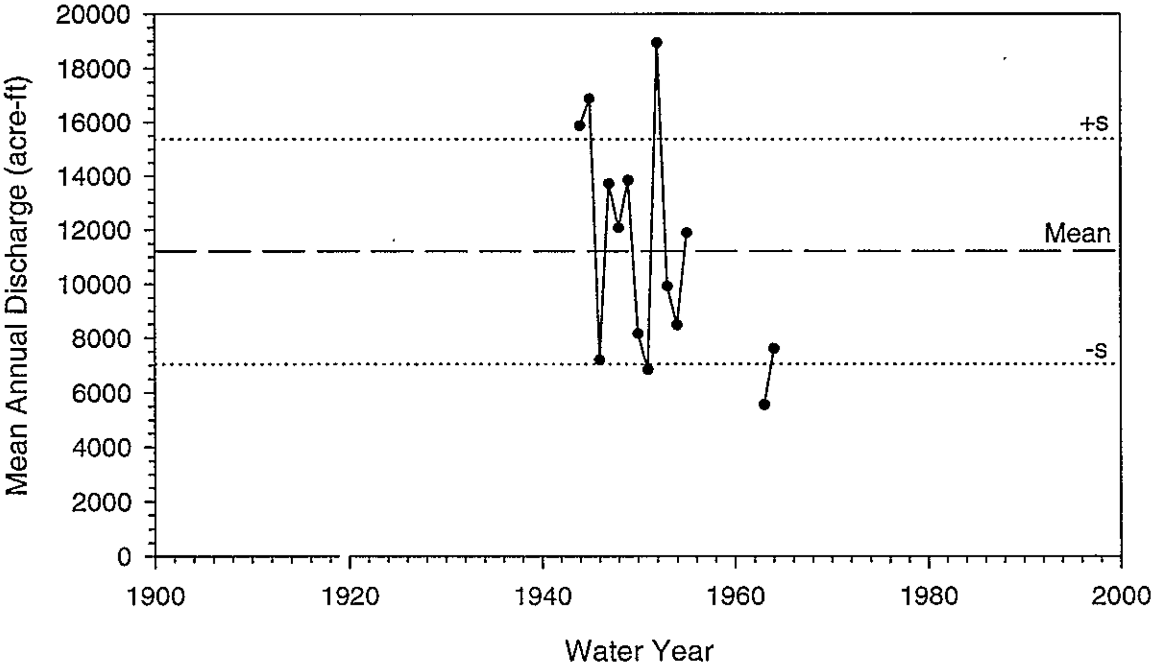


Figure B-59. Station 8264000 Red River near Red River
Mean Monthly Discharge 1944-1955, 1963-1964

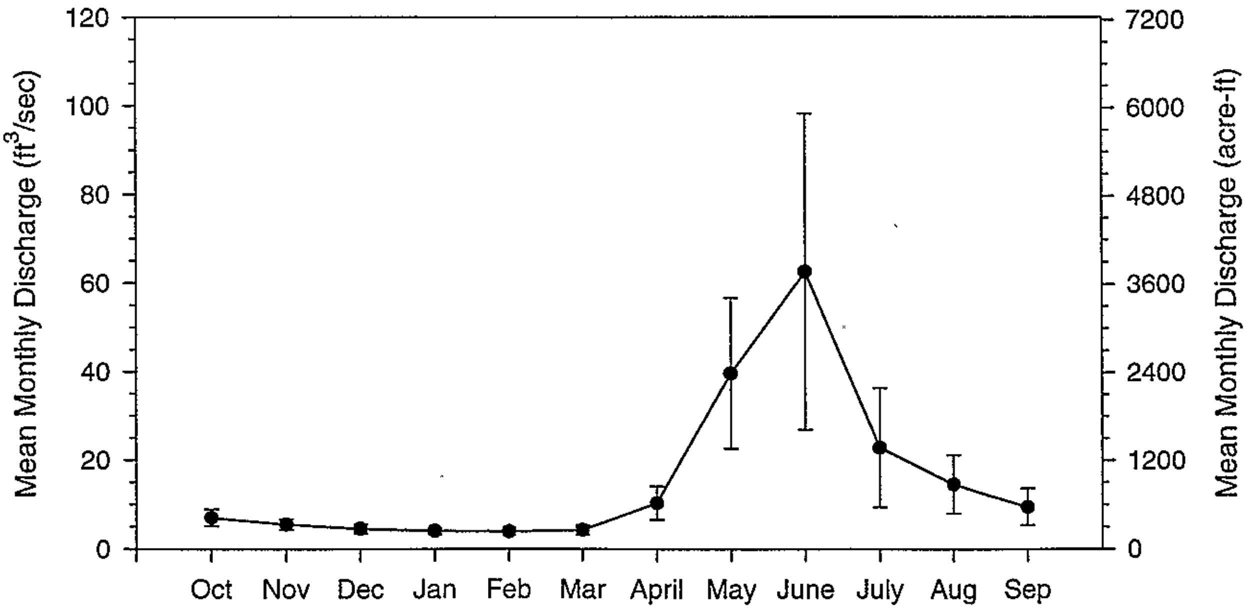
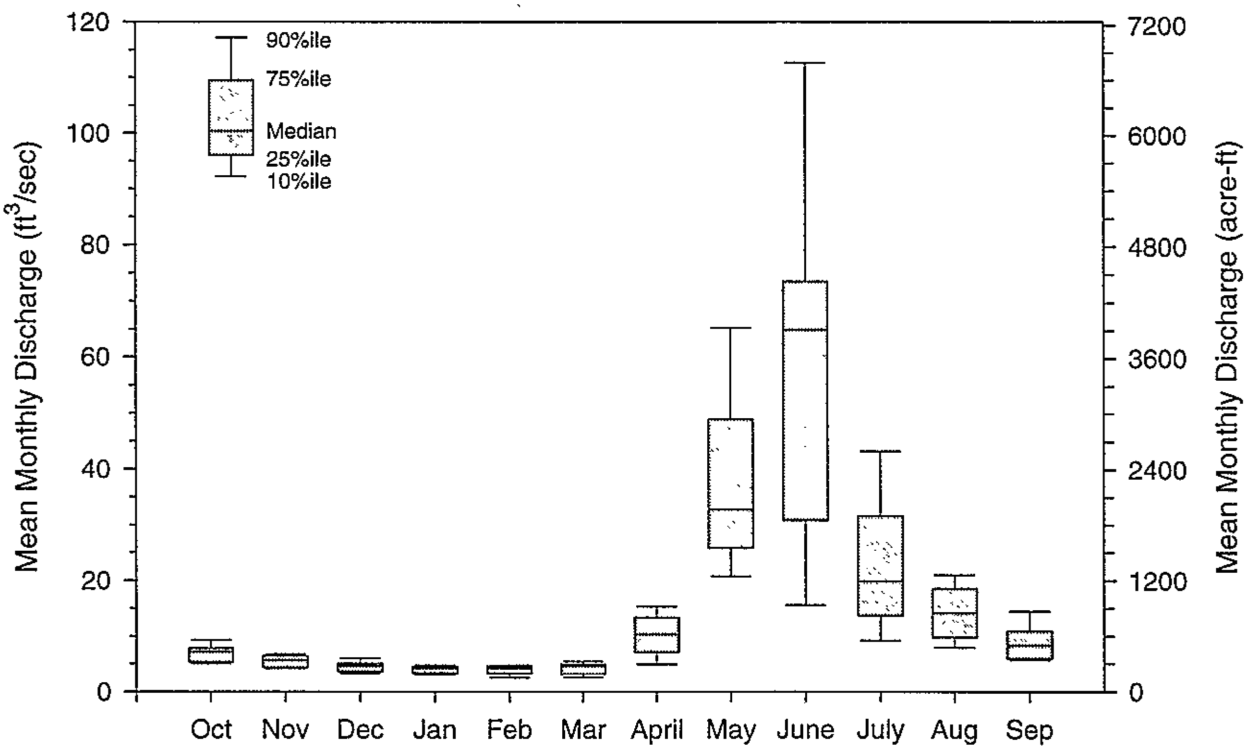


Figure B-60. Station 8264000 Red River near Red River
Monthly Discharge 1944-1955, 1963-1964



08264500 RED RIVER BELOW ZWERGLE DAMSITE NR RED RIVER, NM

No Remarks Available for this Station.

Station Name	RED RIVER BELOW ZWERGLE DAMSITE NR RED RIVER, NM
Station ID	08264500
State	NEW MEXICO
County	TAOS
Latitude	36:40:25
Longitude	105:22:50
Elevation	8871.88

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1963	1973	11	3898	0	17.27	198.00	2.50		

Table B-43. Mean daily streamflow (cfs), station 08264500 Red River below Zwergle Damsite near Red River, 1964-1973.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1964	5.46	4.73	3.87	4.32	3.74	3.77	7.68	32.44	33.43	15.55	19.00	10.51	8751
1965	7.43	6.01	5.02	6.00	4.54	4.24	15.94	57.94	112.9	56.84	30.00	21.07	19827
1966	14.74	10.79	9.91	7.10	5.35	6.61	14.87	42.74	42.30	22.87	36.68	17.50	14030
1967	10.78	9.05	8.12	6.54	6.83	7.86	13.77	27.03	35.57	19.61	22.55	17.07	11171
1968	10.62	7.73	4.37	4.10	5.24	5.17	9.07	31.00	65.30	24.61	21.48	13.10	12188
1969	9.35	7.38	5.14	5.79	5.78	5.51	14.59	51.48	74.80	42.77	21.87	18.40	15900
1970	14.16	10.38	8.06	6.38	5.88	5.69	9.14	55.61	60.80	28.39	13.94	11.83	13940
1971	8.89	7.95	7.31	5.64	5.31	6.47	9.49	13.38	19.63	11.46	10.75	9.20	6977
1972	12.00	7.87	6.11	5.65	5.34	7.45	10.03	16.71	18.17	9.75	7.63	7.17	6885
1973	6.60	6.04	4.59	4.40	4.31	4.47	7.98	57.52	120.5	59.74	18.52	11.44	18507

Table B-44. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08264500 Red River below Zwergle Damsite near Red River, 1964-1973.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	341	330	341	310	283	310	300	341	330	341	341	330	3898
Avg Day	9.9	7.7	6.2	5.6	5.2	5.7	11.3	37.6	54.3	27.2	19.2	13.2	17.3
Max Day	24	14	12	9.3	8.2	10	39	115	198	117	105	30	198
Min Day	4.8	3.0	2.5	3.0	3.0	3.0	4.5	8.9	8.7	6.5	6.4	6.0	2.5
# Months	11	11	11	10	10	10	10	11	11	11	11	11	10
SDev Month	2.94	1.84	1.90	1.02	0.87	1.37	3.16	16.32	36.68	18.26	8.82	4.66	6.23
Skew Month	0.30	0.28	0.66	-0.30	0.02	0.17	0.42	-0.02	0.82	0.91	0.59	0.36	0.12
Min Month	5.46	4.73	3.87	4.10	3.74	3.77	7.68	13.38	14.21	7.64	7.63	7.17	9.50
Max Month	14.74	10.79	9.91	7.10	6.83	7.86	15.94	57.94	120.5	59.74	36.68	21.07	27.39
Exceedences													
1%	19.59	13.00	12.00	8.57	8.00	10.00	36.00	109.8	180.2	105.1	63.77	26.40	110.0
5%	16.00	12.00	9.99	7.40	6.60	9.25	21.00	90.00	131.0	73.80	39.95	22.00	64.00
10%	14.00	10.00	9.18	7.00	6.20	8.30	17.00	80.00	110.0	55.00	29.00	20.00	40.00
20%	13.00	9.20	8.00	6.60	6.00	7.00	14.00	57.80	83.00	40.00	26.00	18.00	21.40
50%	9.20	7.70	6.00	5.60	5.40	5.50	10.00	29.50	45.00	21.00	17.50	12.00	9.30
80%	7.20	6.00	4.50	4.50	4.40	4.40	7.50	15.00	20.00	11.20	10.00	8.60	5.60
90%	6.02	5.30	4.00	4.00	3.93	3.90	6.30	13.00	16.00	8.21	8.33	7.40	4.70
95%	5.41	4.80	3.50	3.50	3.61	3.50	5.10	11.00	12.50	7.51	7.30	6.95	4.20
99%	4.92	3.50	3.00	3.01	3.18	3.41	4.50	10.00	9.40	6.80	6.44	6.20	3.50

Figure B-61. Station 8264500 Red River below Zwergle
Mean Annual Discharge 1964-1973

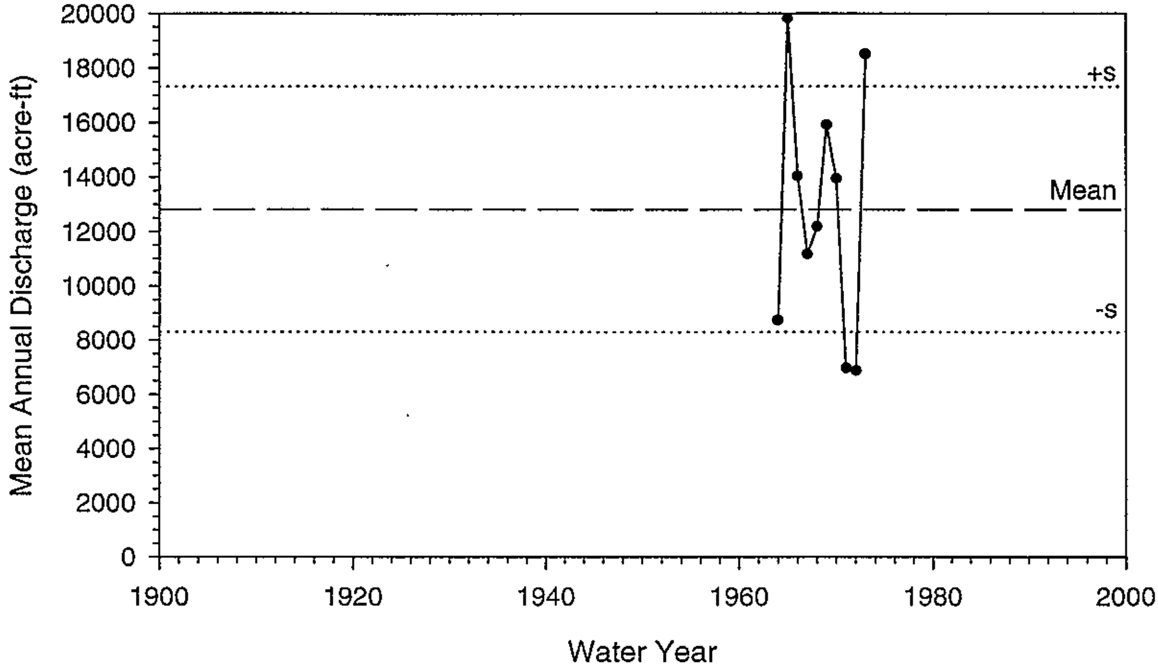


Figure B-62. Station 8264500 Red River below Zwergle
Mean Monthly Discharge 1964-1973

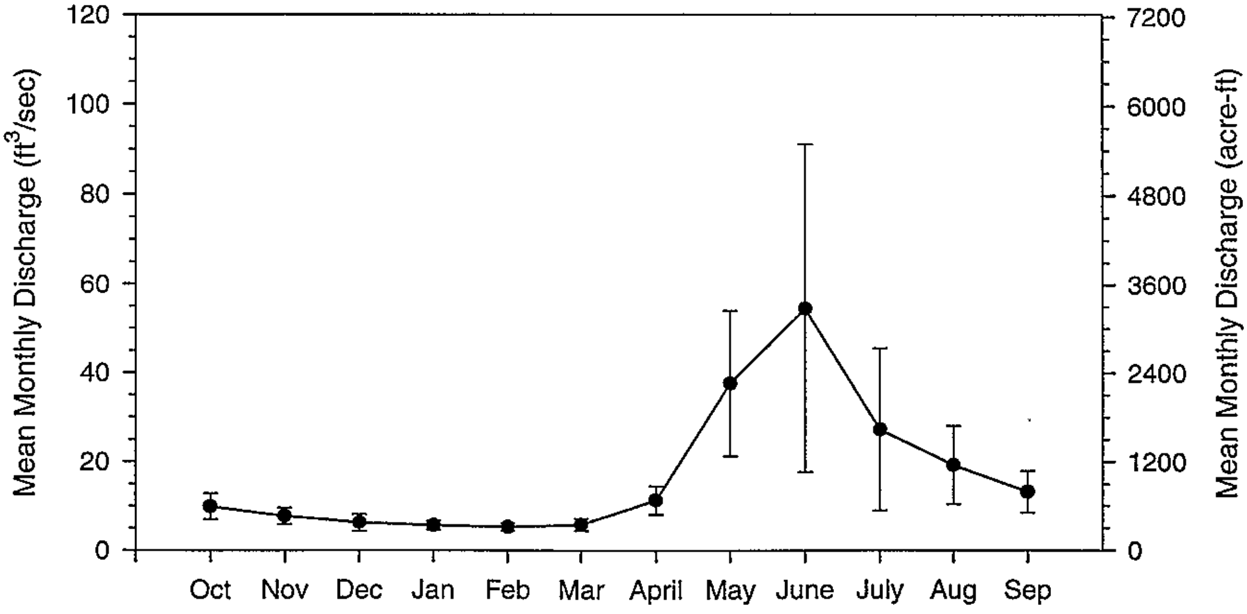
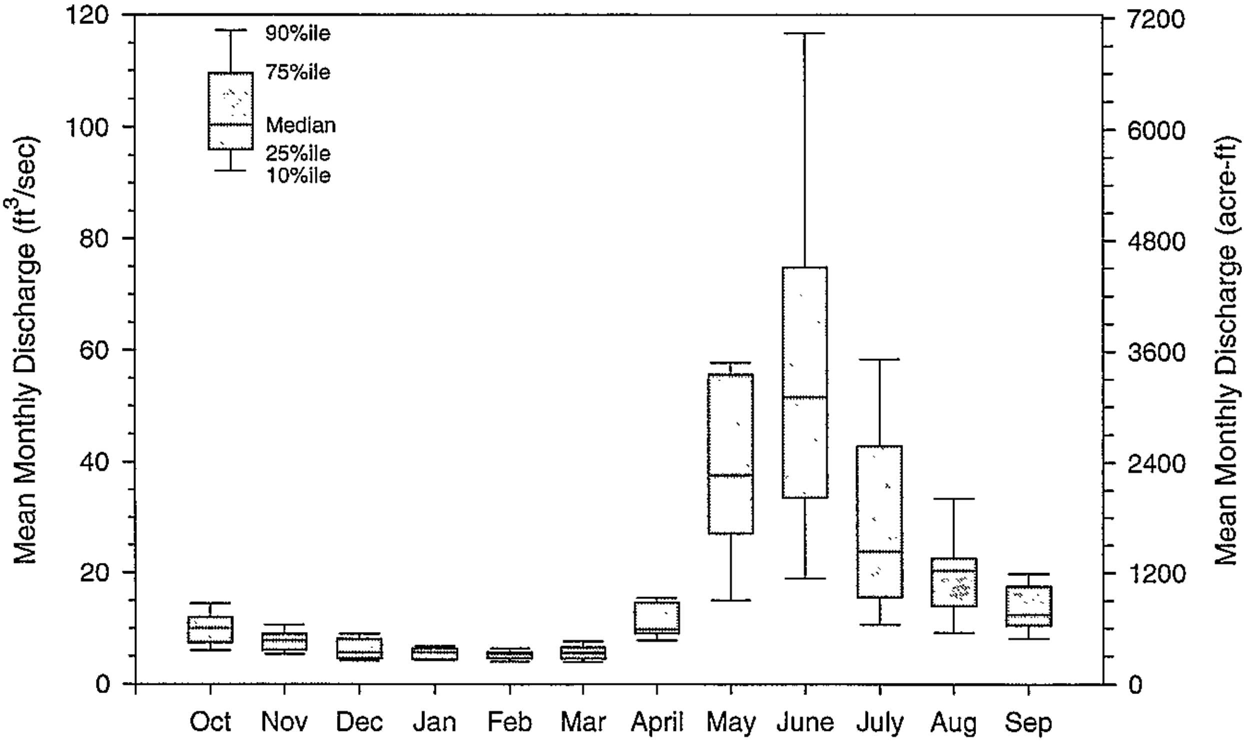


Figure B-63. Station 8264500 Red River below Zwergle
Monthly Discharge 1964-1973



08265000 RED RIVER NEAR QUESTA, NM

LOCATION.--Lat 36 42'12", long 105 34'04", in NE1/4SE1/4 sec.32, T.29 N., R.13 E. (projected), Taos County, Hydrologic Unit 13020101, in Carson National Forest, on left bank 1.3 mi upstream from Cabresto Creek, 1.5 mi east of Questa, and at mile 9.0.

DRAINAGE AREA.--113 mi2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to October 1910 and January to September 1911 (gage heights and discharge measurements only),October 1912 to March 1924, May 1924 to September 1925, January to March 1926, September 1926 to current year. Monthly discharge only for some periods, published in WSP 1312. Published as Rio Colorado above Questa 1910-11, 1926-30, and as Rio Colorado near Questa 1912-25, 1930-48.

REVISED RECORDS.--WSP 808: 1935. WSP 1392: 1913, 1932, 1941, 1947-48. WSP 1712: Drainage area.

GAGE.--Water-stage recorder. Wood or concrete control since Mar. 20, 1936. Datum of gage is 7,451.92 ft above National Geodetic Vertical Datum of 1929. See WSP 1923 for history of changes prior to Oct. 4, 1938.

REMARKS.--Estimated daily discharges: Apr. 3-18. Water-discharge records good except for estimated daily discharges and those for May and June, which are fair. Diversions for irrigation of a few hundred acres upstream from station. Figures of discharge do not include flow in South ditch which diverts from left bank 1,500 ft upstream and bypasses gage for irrigation and stock water downstream. Since January 1966 surface and ground-water diversions by Molybuenum Corp. of America (Molycorp) refinery 5.5 mi upstream bypass gage in tailings pipelines on left bank and discharge into settling pond 3 mi downstream. Effluent from this pond enters Red River as surface water and is included in discharge at Red River below Fish Hatchery, near Questa (station 08266820). See tabulation below for bypass flow of water.

AVERAGE DISCHARGE.--52 years (water years 1913-25, 1927-65), 55.9 ft^3/s, 40,500 acre-ft/yr, prior to extensive upstream diversions by Molycorp. 20 years (water years 1966-85), 38.1 ft^3/s, 27,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (SINCE 1929).--Maximum discharge, 886 ft^3/s, May 25, 1942, from rating curve extended above 450 ft^3/s; maximum gage height, 5.80 ft, June 8, 1979; minimum discharge, 0.60 ft^3/s, Jan. 21, 1981, result of freezeup. The maximum discharge of May 25, 1942, may have been equalled or exceeded by the peak of June 15, 1921.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
May 10	2000	*337	4.38
June 10	2145	*337	*4.39
May 30	0345	305	4.24
July 18	1930	215	3.82

Minimum discharge, 6.4 ft3/s, Jan. 2.

Table B-45. Mean daily streamflow (cfs), station 08265000 Red River near Questa, 1925-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1925	31.71	28.7	24.32	19.58	24.39	29.87	51.00	82.52	54.87	41.06	34.06	26.73	27131
1931	37.77	24.6	23.52	22.90	22.11	19.29	35.77	96.94	89.43	41.13	21.48	41.90	28808
1932	50.13	24.00	18.61	22.45	24.34	29.39	143.0	288.9	210.1	92.65	48.94	33.87	59690
1933	29.26	22.03	17.03	20.52	19.79	20.00	24.60	65.94	137.2	68.58	31.29	24.83	29048
1934	21.90	18.87	16.52	15.97	17.64	19.23	34.67	61.00	38.40	28.52	26.90	29.00	19861
1935	21.32	15.47	14.01	17.29	17.79	17.29	37.60	114.5	319.4	80.35	47.61	34.77	44427
1936	30.35	19.80	18.32	20.03	16.79	18.06	69.50	145.8	83.03	38.52	41.97	31.80	32328
1937	37.29	28.37	20.32	20.61	23.64	28.29	116.5	339.5	291.7	99.87	45.97	32.17	65596

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1938	28.90	21.67	19.97	13.87	16.79	19.74	85.73	221.0	239.1	91.90	49.35	50.07	51875
1939	39.94	27.70	22.52	23.16	20.14	35.42	80.03	153.3	78.10	33.81	24.84	22.77	34006
1940	21.16	19.37	16.48	14.48	15.66	20.90	41.17	102.7	90.00	38.23	26.94	22.07	25952
1941	26.00	20.67	18.42	15.94	18.43	20.65	40.87	369.2	364.8	170.3	66.42	43.67	71228
1943	30.68	24.00	21.84	20.23	19.89	22.10	59.53	94.42	72.00	39.90	33.16	26.67	28076
1944	22.10	20.37	18.45	17.23	19.52	21.71	34.10	216.6	248.5	99.97	43.74	24.27	47598
1945	27.55	23.93	20.19	18.32	19.43	20.42	49.67	326.7	245.3	100.3	52.23	32.43	56768
1946	23.10	17.77	16.32	18.19	16.82	16.65	40.37	44.03	27.00	19.19	26.26	29.80	17841
1947	32.03	28.33	21.71	16.71	19.93	21.55	51.33	231.2	129.7	49.71	34.10	23.00	39959
1948	21.87	18.43	17.55	19.03	17.38	19.10	61.63	185.3	235.4	66.42	36.42	21.30	43489
1949	18.16	19.33	20.48	18.71	16.36	18.52	55.03	215.3	241.9	100.5	48.97	31.67	48705
1950	28.39	22.30	18.87	19.97	20.61	17.13	42.23	57.55	69.93	35.87	19.45	19.03	22405
1951	14.68	12.49	11.71	11.06	13.57	14.39	27.27	88.42	75.53	25.87	21.00	16.50	20102
1952	14.06	12.47	14.81	17.84	15.93	15.13	74.13	243.5	290.9	82.52	43.45	30.43	51678
1953	23.65	18.77	18.29	19.74	17.75	19.58	30.17	82.65	132.6	43.06	23.19	16.23	26906
1954	14.58	15.70	14.08	15.42	15.21	16.32	57.50	99.9	68.07	37.58	21.90	17.03	23778
1955	17.74	14.10	13.03	12.84	11.43	14.32	19.73	104.9	142.1	55.68	63.71	41.20	30908
1956	24.65	19.67	17.81	17.81	15.28	18.29	24.47	51.00	47.40	19.68	19.71	13.50	17487
1957	12.03	13.97	13.13	14.42	16.64	15.32	36.10	107.8	252.9	117.5	91.35	50.47	44801
1958	35.00	29.16	26.16	21.00	20.25	19.42	52.80	265.4	182.1	59.48	35.94	30.13	47062
1959	24.10	20.07	17.45	16.19	16.64	16.29	20.67	55.06	54.30	25.35	25.84	21.00	18914
1960	19.16	17.33	13.52	14.61	16.76	20.48	69.67	83.42	114.1	50.97	26.39	18.93	28076
1961	17.90	17.13	15.32	13.65	14.57	17.13	48.43	142.3	135.6	46.26	32.81	35.50	32438
1962	28.52	20.80	17.35	16.77	18.50	17.94	86.37	168.0	108.2	49.32	20.71	19.17	34574
1963	20.90	16.93	14.74	12.65	14.82	19.94	31.40	39.03	24.57	11.82	13.95	16.00	14293
1964	11.26	12.26	8.90	9.64	10.93	11.82	26.77	69.77	54.03	25.87	30.74	20.37	17686
1965	18.23	14.60	13.87	16.39	15.32	14.42	41.30	159.4	210.1	116.0	60.52	44.70	43862
1966	34.58	23.90	19.48	17.29	14.46	17.88	30.80	95.52	77.03	40.26	70.61	31.17	28673
1967	17.74	14.27	10.63	10.12	11.68	11.43	16.17	34.48	56.07	33.00	44.26	28.60	17438
1968	17.94	11.97	7.15	7.02	7.88	7.56	13.13	82.97	111.8	41.10	46.39	23.50	22902
1969	15.55	13.97	11.29	10.58	11.43	11.48	29.77	106.1	121.8	74.29	43.03	34.57	29286
1970	28.71	18.73	10.52	8.66	10.55	8.59	21.12	127.3	96.20	44.45	22.52	19.77	25276
1971	14.19	9.77	4.54	4.95	5.38	8.00	9.73	17.46	24.70	14.57	15.19	13.02	8555
1972	23.06	11.61	5.74	6.61	7.39	13.38	19.60	31.29	30.30	15.48	11.83	10.01	11269
1973	7.93	8.13	3.99	3.91	5.78	6.72	18.19	160.4	230.9	114.8	36.58	20.90	37427
1974	18.13	11.91	6.31	8.21	7.48	9.54	13.59	38.06	54.60	24.10	24.45	12.17	13825
1975	11.74	9.22	3.88	4.65	6.19	7.96	25.20	118.4	154.9	87.74	36.39	31.93	30157
1976	19.03	11.86	8.44	9.97	10.22	11.64	34.27	96.39	108.5	41.71	24.29	14.93	23660
1977	12.14	8.09	4.85	4.41	4.81	5.11	10.02	21.94	22.67	26.84	21.42	17.77	9697
1978	13.81	10.90	8.71	9.04	9.49	9.63	27.77	71.65	88.63	33.10	16.71	8.81	18627
1979	9.04	10.52	4.83	5.95	6.65	10.16	62.94	266.5	404.6	171.7	65.45	30.47	63440
1980	23.06	15.63	13.52	12.63	12.26	12.84	25.76	130.0	199.5	67.77	28.87	21.87	34067
1981	15.48	9.67	9.69	5.62	5.20	5.62	12.94	24.16	31.60	15.68	16.84	15.10	10137
1982	13.77	13.17	10.05	11.63	12.57	14.71	23.17	85.35	119.4	61.45	54.48	52.53	28551
1983	37.97	27.23	18.10	17.03	18.21	20.35	37.90	162.1	268.7	141.3	64.55	36.67	51428
1984	22.94	13.85	12.03	9.84	10.78	11.50	34.63	206.6	139.9	54.10	40.68	24.20	35241
1985	25.52	16.33	17.81	13.35	13.71	16.77	84.13	237.7	248.1	105.4	50.52	35.83	52353
1986	38.06	24.80	16.26	16.81	14.62	23.06	55.13	134.6	215.1	100.8	46.03	50.77	44484
1987	37.35	32.80	24.10	21.39	19.89	23.74	66.87	168.1	190.5	67.90	42.81	26.27	43631
1988	24.42	22.00	14.97	19.89	22.79	22.39	26.90	51.61	75.10	48.74	38.97	54.43	25471
1989	36.97	23.73	15.84	14.44	15.32	40.03	82.80	102.1	74.53	32.42	31.23	22.87	29773
1990	30.39	14.59	8.35	6.55	10.82	14.58	40.27	85.16	97.13	39.42	29.35	22.57	24134

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1991	20.55	18.29	12.30	15.97	13.36	15.69	67.90	179.0	144.9	71.48	68.35	62.23	41766
1992	35.65	23.53	13.23	13.03	20.45	25.58	78.50	144.9	142.7	70.42	47.42	29.87	39010
1993	26.00	21.77	17.84	23.39	21.36	25.97	53.63	183.1	225.3	98.55	65.16	46.60	48907
1994	31.13	26.70	25.29	25.23	22.54	29.90	68.43	243.9	246.4	70.94	44.10	37.83	52754

Table B-46. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08265000 Red River near Questa, 1925-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	2015	1950	2015	2015	1836	2046	1980	2046	1980	2046	2046	1980	23955
Avg Day	24.4	18.8	15.2	14.8	15.3	17.8	46.9	137.9	145.9	62.1	39.6	29.2	47.6
Max Day	79	48	40	30	65	64	260	750	745	335	302	138	750
Min Day	4.9	3	2.5	2.5	3.5	4	4	9.3	13	7.8	8.5	5.8	2.5
# Months	65	65	65	65	65	66	66	66	66	66	66	66	64
SDev Month	9.19	6.47	5.99	5.43	5.12	6.83	27.54	88.44	94.17	36.48	19.36	12.13	20.41
Skew Month	0.47	0.60	0.11	-0.34	-0.36	0.64	1.12	1.04	0.77	0.99	1.48	0.66	0.46
Min Month	7.93	8.09	3.88	3.91	4.81	5.11	9.73	17.46	22.67	11.82	11.83	8.81	11.82
Max Month	50.13	39.60	32.74	25.23	24.39	40.03	143.0	407.3	404.6	171.7	120.9	62.23	98.39
Exceedences													
1%	54.0	40.0	32.9	26.0	26.0	47.0	186.0	537.7	480.2	202.5	101.0	75.2	333.5
5%	43.0	32.0	26.0	23.0	23.0	30.0	130.0	349.4	350.0	149.0	78.0	57.0	175.0
10%	38.0	28.0	24.0	22.0	22.0	27.0	101.0	287.0	288.0	120.0	66.0	47.0	115.0
20%	32.0	25.0	21.0	20.0	20.0	22.0	71.0	200.0	230.0	89.0	53.0	39.0	60.0
50%	23.0	18.0	15.0	15.0	16.0	17.0	32.0	109.0	122.0	50.0	36.0	26.0	23.0
80%	16.0	13.0	9.1	9.5	10.0	12.0	19.0	52.2	58.0	29.0	22.0	18.0	15.0
90%	13.0	10.0	6.0	6.0	7.0	8.5	15.0	37.0	36.0	22.0	18.0	15.0	11.0
95%	11.0	8.0	4.5	5.0	5.7	6.7	11.0	26.3	26.0	16.3	14.3	12.0	8.0
99%	6.8	5.4	3.5	3.5	4.5	5.0	6.5	17.0	17.0	11.0	11.0	8.1	4.5

Figure B-64. Station 8265000 Red River near Questa
Mean Annual Discharge 1925, 1931-1994

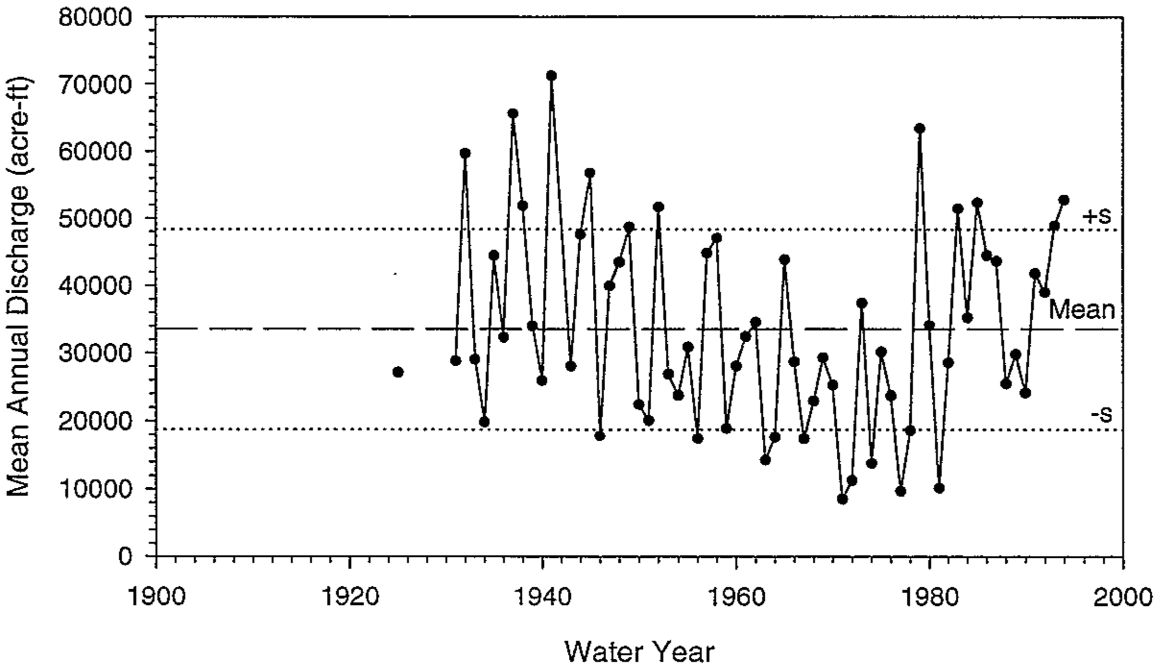


Figure B-65. Station 8265000 Red River near Questa
Mean Monthly Discharge 1925, 1931-1994

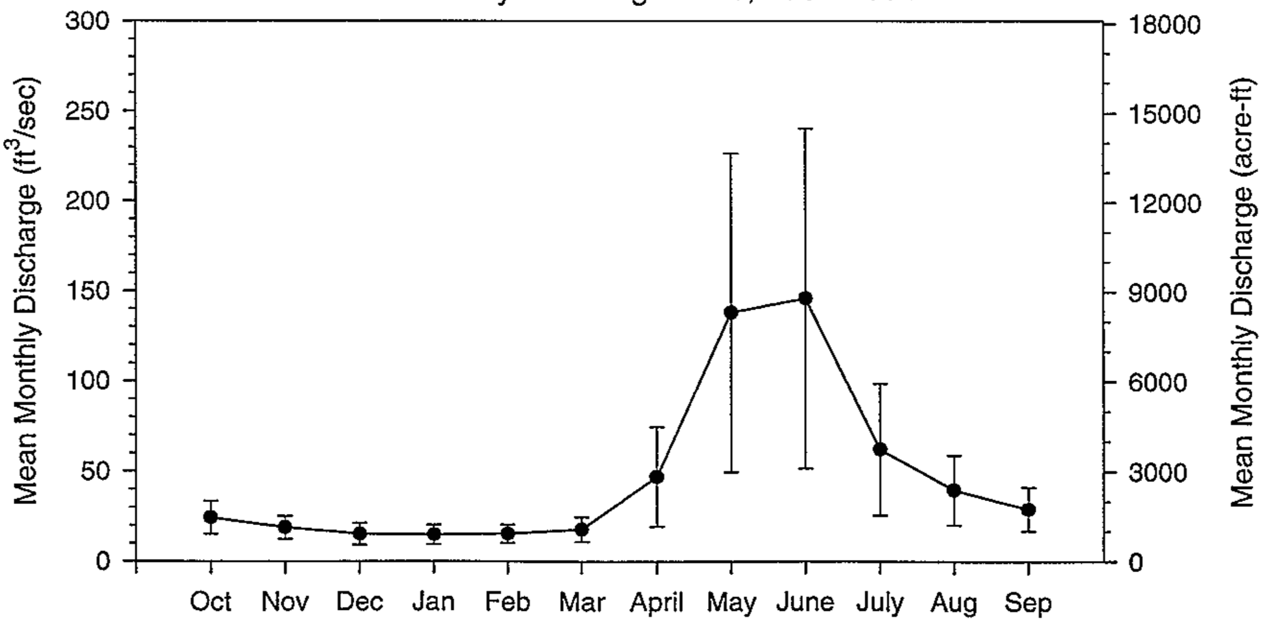
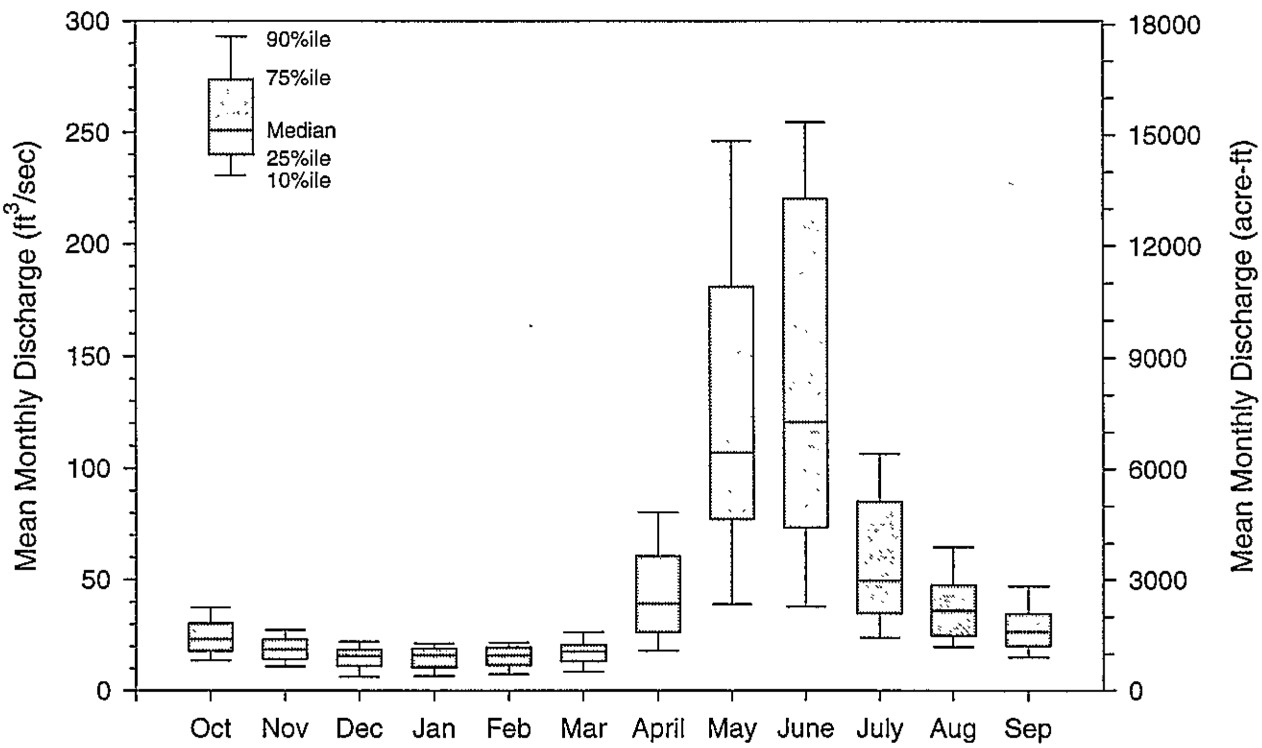


Figure B-66. Station 8265000 Red River near Questa
.Monthly Discharge 1925, 1931-1994



08265500 LLANO DITCH NEAR QUESTA, NM

No Remarks Available for this Station.

Station Name LLANO DITCH NEAR QUESTA, NM
Station ID 08265500
State NEW MEXICO
County TAOS
Latitude 36:43:51
Longitude 105:33:05
Elevation 7877.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1943	1994	48	9513	0	4.24	42.00	0.00		
STREAM STAGE FEET	Mean	1976	1984	9	1445	0	1.11	2.51	0.45		

Table B-47. Mean daily streamflow (cfs), station 08265500 Llano Ditch near Questa, 1944-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1944	0.01	0.09					0.00	5.26	22.00	13.51	0.24	0.12	2491
1945									28.63	12.01	2.44	0.15	2601
1946									0.05	0.00	0.04	0.00	6
1947	0.00							15.45	12.74	3.54	0.15	0.03	1937
1948	0.04						1.07	15.76	17.65	3.32	0.00	0.00	2289
1949	0.02						1.72	14.04	21.36	7.03	0.68	0.00	2712
1950	0.00						0.53	1.57	0.30	0.01	0.00	0.10	152
1951	0.00						0.45	12.29	2.29	0.00	0.12	0.00	926
1952	0.08	0.05					1.25	10.08	22.50	5.87	0.06	0.00	2406
1953	0.00	0.00						13.44	16.46	6.14	0.00	0.26	2199
1954							5.54	12.87	6.35	0.00	0.00	0.00	1499
1955	0.06							8.68	19.13	4.54	0.20	0.25	1982
1956	0.00							0.01	0.00	0.00	0.00	0.00	0
1957	0.00							18.04	26.40	22.32	9.57	1.84	4750
1958	0.22						0.00	10.16	27.80	1.73	0.00	0.00	2399
1959	0.00							7.67	0.90	0.01	0.00	0.00	526
1960	0.00	0.00					4.07	14.05	9.16	5.09	0.00	0.00	1964
1961							3.34	21.23	11.46	4.14	0.00	0.00	2441
1962	0.00						1.56	16.81	2.46	1.99	0.00	0.00	1395
1963									0.00	0.00	0.00	0.00	0
1964	0.00							0.03	0.00	0.34	0.00	0.00	23
1965							0.14	9.70	12.80	9.20	3.57	0.06	2155
1966	0.00						0.24	15.82	4.05	3.49	4.83	0.90	1793
1967	0.49						0.00	0.04	0.02	0.00	1.20	0.00	107
1968	0.00							5.14	13.05	4.94	0.00	0.00	1396
1973							0.00	2.65	18.73	10.57	4.59	0.02	2211
1974	0.00							1.24	0.15	1.02	0.00	0.00	148
1975	0.00							12.12	17.13	9.30	2.53	0.00	2492
1976	0.00							15.77	8.39	2.97	0.01	0.00	1652
1977	0.00							0.00	0.00	0.00	0.00	0.69	41
1978	0.00					0.00	2.27	9.34	10.99	4.15	0.00	0.00	1618
1979								0.68	7.22	10.05	5.57	0.00	1432
1980	0.00					0.00	0.00	3.01	11.21	9.19	1.32	0.00	1498
1981							0.00	0.91	0.42	0.01	0.00	0.00	81
1982	0.00						0.10	14.08	13.09	5.07	0.01	0.00	1963
1983	0.66						0.00	4.29	12.32	13.42	13.55	0.39	2719
1984	0.16								17.93	11.52	0.00	0.00	1785

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1985	0.00							5.21	17.77	10.68	7.63	0.18	2514
1986							1.84	20.71	11.13	11.18	6.36	0.00	3124
1987	0.67	0.14	0.00					13.77	19.00	9.92	0.71	0.00	2680
1988							0.11	4.30	3.84	1.02	0.00	0.10	568
1989	0.92						5.67	14.14	5.19	1.54	0.04	0.00	1669
1990	0.15						3.41	17.16	12.26	2.12	0.61	0.00	2164
1991								11.47	10.74	9.21	3.77	2.26	2277
1992									18.90	10.52	0.004	0	1772
1993	0.02						0.90	7.27	18.27	11.00	1.00	1.02	2387
1994							0.00	10.96	14.37	6.77	0.00	0.03	1947

Table B-48. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08265500 Llano Ditch near Questa, 1944-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1107	212	31	6	0	174	920	1329	1410	1457	1457	1410	9513
Avg Day	0.11	0.08	0.00	0.00		0.19	1.30	9.52	11.20	5.54	1.51	0.18	4.24
Max Day	3.4	3.5	0	0		5.2	19	33	42	35	18	10	42
Min Day	0	0	0	0		0	0	0	0	0	0	0	0
# Months	33	5	1	0	0	2	26	42	47	47	47	47	0
SDev Month	0.23	0.06				0.00	1.73	6.25	8.38	5.06	2.90	0.46	
Skew Month	2.48	0.44					1.43	-0.07	0.18	0.89	2.48	3.41	
Min Month	0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Max Month	0.92	0.14	0.00			0.00	5.67	21.23	28.63	22.32	13.55	2.26	
Exceedences													
1%	2.40	2.83	0.00	0.00		4.31	14.80	28.00	37.00	24.00	15.00	3.29	27.00
5%	0.80	0.26	0.00	0.00		1.70	8.30	23.00	27.00	16.00	9.81	1.60	20.00
10%	0.19	0.10	0.00	0.00		0.52	5.60	20.00	24.00	14.00	6.20	0.24	15.00
20%	0.00	0.10	0.00	0.00		0.00	1.50	18.00	19.00	11.00	1.80	0.00	9.80
50%	0.00	0.00	0.00	0.00		0.00	0.00	9.55	11.00	4.10	0.00	0.00	0.00
80%	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
90%	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95%	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99%	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure B-67. Station 8265500 Llano Ditch near Questa
Mean Annual Discharge 1944-1968, 1973-1994

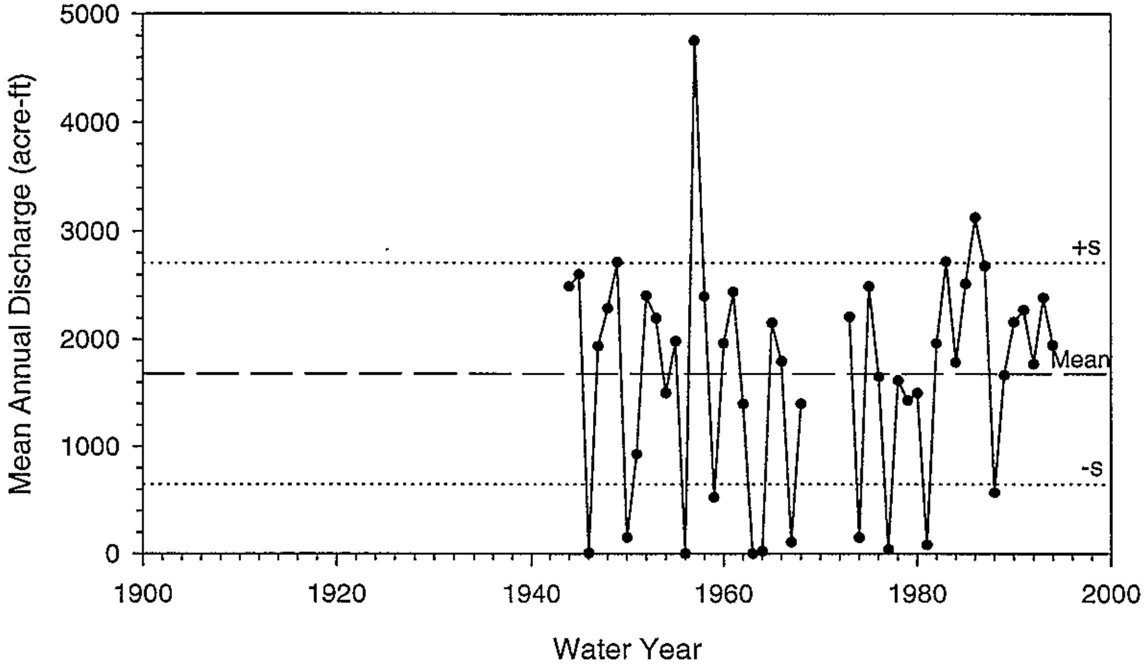


Figure B-68. Station 8265500 Llano Ditch near Questa
Mean Monthly Discharge 1944-1968, 1973-1994

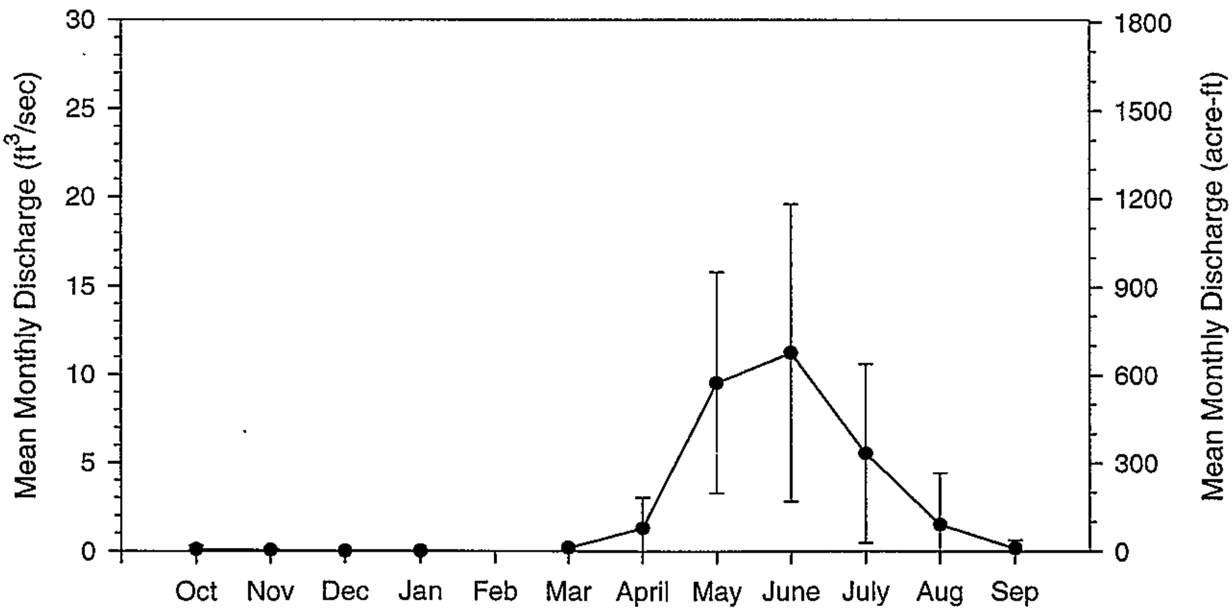
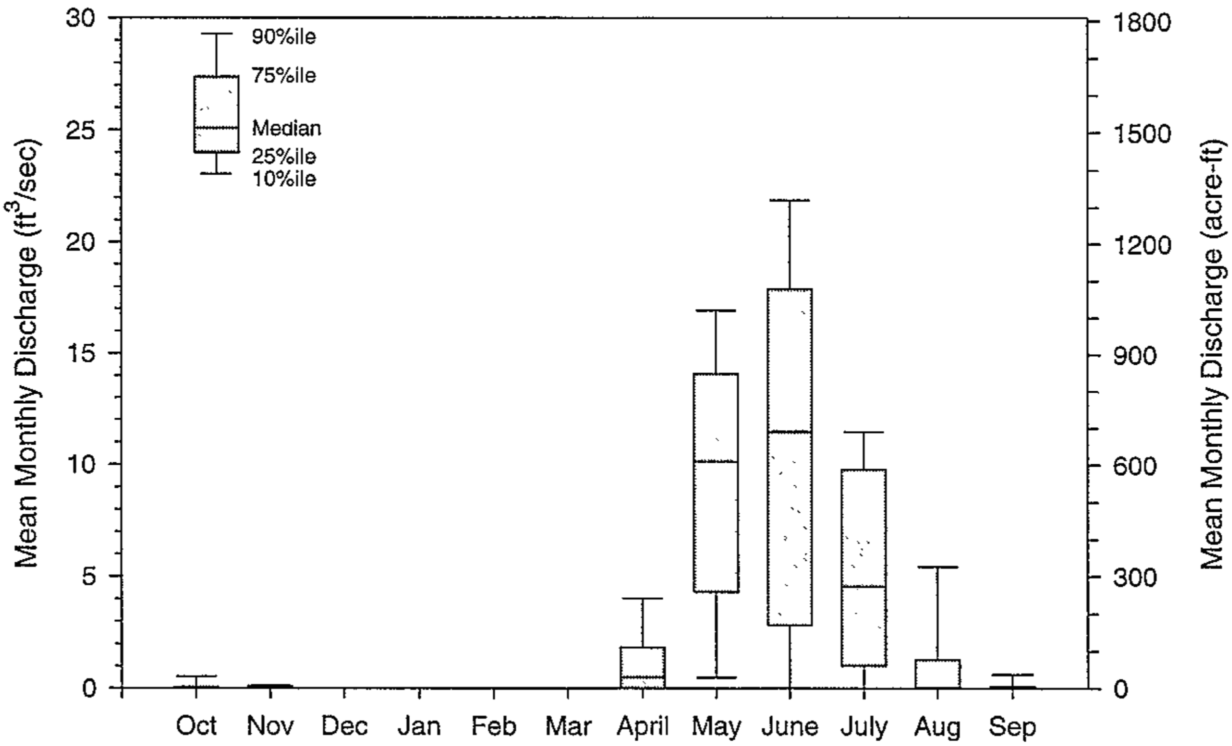


Figure B-69. Station 8265500 Llano Ditch near Questa
Monthly Discharge 1944-1968, 1973-1994



08266000 CABRESTO CREEK NEAR QUESTA, NM

LOCATION.--Lat 36 43'50", long 105 33'12", in SE1/4SE1/4 sec.21, T.29 N., R.13E., Taos County, Hydrologic Unit 13020101, in Carson National Forest, on right bank 900 ft downstream from Llano ditch heading, 2.6 mi downstream from Lake Fork, 3 mi northeast of Questa, and at mile 3.5.

DRAINAGE AREA.--36.7 mi2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1712: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 7,845 ft above National Geodetic Vertical Datum of 1929, from river-profile map.

REMARKS.--No estimated daily discharges. Water-discharge records good. Llano ditch (station 08265500), the only diversion upstream from station, diverts from right bank 900 ft upstream from gage for irrigation of about 800 acres downstream. See tabulation below for monthly diversion of Llano ditch (records of daily discharge available in district files). Flow regulated by Cabresto Reservoir (capacity, 732 acre-feet, after reconstruction in 1928) on Lake Fork 1 mi upstream from mouth. Present capacity of Cabresto Reservoir is 1,100 acre-feet after further rehabilitation between 1959 and 1961.

AVERAGE DISCHARGE.--42 years, 10.3 ft^3/s, 7,460 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 204 ft^3/s, June 2, 1983, gage height, 4.82 ft; minimum, 0.44 ft^3/s, Dec. 2, 1950, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 25, 1942, may have exceeded the maximum of record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 147 ft^3/s, May 10, gage height, ft; minimum, 2.3 ft^3/s, Jan. 2, result of freezeup.

Table B-49. Mean daily streamflow (cfs), station 08266000 Cabresto Creek near Questa, 1944-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1944	4.68	4.38	3.98	4.58	3.53	5.84	9.32	28.58	35.30	14.23	8.75	4.36	7715
1945	6.00	5.76	4.85	5.19	4.88	5.55	14.39	84.58	31.40	13.65	13.81	8.41	12055
1946	5.48	4.69	3.90	4.68	4.12	4.90	12.11	10.35	5.77	4.55	5.75	6.81	4413
1947	6.76	6.45	4.91	4.03	4.38	5.78	14.32	46.55	13.53	13.23	10.19	9.28	8459
1948	6.41	4.19	3.54	4.24	4.32	4.31	18.09	36.29	19.50	10.25	7.10	4.75	7444
1949	4.25	3.96	3.93	3.80	3.94	4.51	16.39	60.94	17.60	12.59	9.60	8.82	9127
1950	7.53	5.71	4.33	4.13	5.55	4.92	14.33	12.20	11.72	9.36	6.45	5.14	5512
1951	4.44	3.82	3.64	3.26	3.48	4.11	8.80	15.06	11.82	5.01	5.51	3.65	4388
1952	2.98	3.20	3.80	3.48	3.65	4.02	28.45	80.13	24.67	11.74	12.10	8.33	11320
1953	5.91	5.16	5.46	4.63	4.57	5.55	9.82	17.26	18.33	14.87	7.24	4.58	6254
1954	4.85	5.48	4.78	4.47	4.83	4.64	16.41	14.26	12.80	9.84	6.08	3.79	5566
1955	3.09	3.62	2.90	2.52	3.30	3.76	8.15	26.61	15.63	13.71	12.97	10.74	6484
1956	7.02	5.00	4.46	5.01	4.77	5.25	7.95	11.97	7.71	4.68	4.33	3.03	4301
1957	2.68	2.76	2.68	2.84	3.84	4.48	13.13	25.90	53.40	13.19	20.90	13.80	9626
1958	10.33	9.83	8.14	6.53	6.50	6.28	17.59	96.71	20.20	13.74	8.23	8.96	12948
1959	10.23	6.42	6.04	3.70	3.85	5.16	9.07	17.90	15.47	7.37	8.97	4.92	5999
1960	5.04	3.05	3.21	2.87	3.46	5.83	22.20	16.81	13.83	12.45	6.30	4.61	6021
1961	5.43	5.51	4.56	4.34	4.16	4.78	11.73	23.45	12.87	12.20	7.92	7.70	6335
1962	6.74	4.81	3.55	3.03	5.17	5.40	22.27	18.55	12.27	9.97	4.79	4.90	6119
1963	5.14	3.56	3.13	4.03	5.06	5.92	11.06	7.88	5.97	5.77	4.84	5.18	4072
1964	3.54	2.93	2.43	2.30	2.32	2.96	7.48	15.03	11.94	8.04	5.63	4.80	4200
1965	4.29	3.64	2.80	3.82	3.84	3.78	11.07	31.00	27.97	11.29	11.86	8.89	7515
1966	6.56	5.87	5.27	4.24	4.05	5.49	14.24	11.61	11.00	9.43	12.44	8.42	5961
1967	6.43	5.52	4.08	3.70	3.95	4.94	10.03	10.08	9.85	9.96	13.29	11.18	5623
1968	6.55	4.15	3.45	3.84	4.88	5.05	8.23	29.03	16.73	11.46	10.35	8.57	6801
1969	6.58	5.22	3.91	3.79	4.10	4.84	14.22	26.77	12.77	10.92	9.89	8.18	6732

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1970	6.18	6.16	5.16	4.03	4.44	4.16	7.05	31.53	11.99	11.44	7.49	6.55	6439
1971	5.18	4.83	4.13	3.54	3.68	4.77	7.14	8.76	7.11	7.54	5.89	4.36	4047
1972	6.96	5.34	2.98	3.50	3.48	7.65	12.00	11.55	8.77	7.29	4.82	2.94	4673
1973	3.84	3.41	3.53	3.72	3.45	3.95	6.70	64.06	68.83	16.29	11.65	8.89	11999
1974	5.30	5.70	4.61	4.56	4.42	5.38	8.22	11.36	9.99	8.82	7.06	3.66	4781
1975	3.28	3.71	3.05	2.70	3.31	3.98	8.93	31.84	21.00	11.55	10.78	8.10	6798
1976	3.85	4.45	4.47	4.56	4.41	5.34	11.84	13.84	11.47	10.58	8.05	5.09	5316
1977	4.26	4.29	3.75	3.00	3.49	3.96	6.78	9.04	6.38	7.59	6.36	4.71	3846
1978	5.15	2.73	2.99	3.26	3.19	4.26	11.84	19.55	11.45	10.59	5.99	3.58	5123
1979	3.35	3.55	3.31	3.74	4.36	4.65	18.37	87.19	94.70	27.42	13.65	10.32	16607
1980	7.21	5.97	6.52	6.01	5.73	6.29	10.44	49.77	47.00	13.39	11.72	6.96	10710
1981	5.87	7.15	5.04	4.48	3.89	4.68	9.75	12.29	11.39	10.29	10.75	5.44	5507
1982	4.35	3.36	2.94	3.41	3.88	4.38	9.29	16.81	13.97	12.13	12.61	13.57	6089
1983	10.25	3.43	2.67	5.14	5.35	6.57	10.15	62.52	86.83	18.24	14.61	10.35	14266
1984	8.98	7.12	6.49	6.21	5.67	5.96	11.55	82.85	21.83	12.87	12.05	7.79	11514
1985	7.58	7.56	6.77	6.38	5.85	6.89	29.46	95.39	47.27	12.39	12.90	11.43	15139
1986	13.10	7.44	6.20	6.34	5.96	7.15	16.17	16.84	30.30	12.26	10.56	13.60	8803
1987	11.91	7.14	6.79	6.19	6.01	6.75	16.12	47.61	24.03	10.42	11.45	8.49	9870
1988	6.94	7.81	6.16	6.17	6.70	6.37	10.94	11.39	11.17	12.51	10.36	13.74	6653
1989	12.37	6.51	5.90	5.85	5.90	12.78	20.47	11.23	10.53	10.39	8.21	6.47	7048
1990	7.48	5.23	4.62	4.64	4.73	6.17	11.48	20.16	12.27	12.10	12.26	9.87	6720
1991	9.13	9.02	7.13	8.11	7.19	6.85	21.85	47.35	24.40	10.97	11.48	10.37	10517
1992	10.76	9.40	7.43	6.26	6.22	7.20	22.38	46.74	22.13	12.03	12.16	9.53	10428
1993	7.64	6.02	5.98	6.10	6.01	6.85	13.41	53.74	34.23	13.29	13.39	12.60	10855
1994	12.03	10.07	7.53	7.50	5.83	8.48	24.00	99.48	44.20	11.64	10.93	11.07	15330

Table B-50. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08266000 Cabresto Creek near Questa, 1944-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1581	1530	1581	1581	1441	1581	1530	1581	1530	1581	1581	1530	18628
Avg Day	6.5	5.3	4.6	4.5	4.6	5.5	13.5	34.1	22.4	11.3	9.7	7.7	10.8
Max Day	30	18	12	9	7.8	17	64	253	170	55	28	23	253
Min Day	0.9	1.1	1	1	2	2	2.8	6	3.8	3.4	3.2	1.9	0.91
# Months	51	51	51	51	51	51	51	51	51	51	51	51	51
SDev Month	2.61	1.84	1.47	1.32	1.07	1.55	5.58	27.07	19.25	3.61	3.33	3.08	4.52
Skew Month	0.87	0.81	0.62	0.73	0.46	2.20	1.12	1.16	2.26	1.52	0.56	0.33	1.00
Min Month	2.68	2.73	2.43	2.30	2.32	2.96	6.70	7.88	5.77	4.55	4.33	2.94	5.31
Max Month	13.10	10.07	8.14	8.11	7.19	12.78	29.46	99.48	94.70	27.42	20.90	13.80	22.94
Exceedences													
1%	14.0	11.0	8.6	8.1	7.2	15.0	44.7	141.8	117.0	28.0	21.0	16.0	90.0
5%	12.0	9.5	7.8	7.1	6.6	8.5	34.0	109.0	71.5	16.0	15.0	14.0	31.0
10%	11.0	8.0	7.0	6.5	6.2	7.5	26.0	85.9	50.0	15.0	14.0	12.0	17.0
20%	8.4	6.7	5.9	5.8	5.8	6.6	18.0	52.0	30.0	13.0	13.0	10.0	12.0
50%	6.1	5.2	4.2	4.2	4.4	5.1	11.0	21.0	13.0	11.0	9.9	7.5	6.7
80%	4.1	3.6	3.2	3.4	3.6	4.1	6.7	12.0	10.0	8.6	6.0	4.5	4.2
90%	3.3	3.1	2.7	2.8	3.4	3.7	5.6	10.0	8.3	6.5	4.8	3.7	3.5
95%	2.9	2.7	2.4	2.5	3.0	3.5	4.9	9.1	6.5	4.9	4.1	3.1	3.0
99%	2.4	2.0	1.6	1.9	2.3	2.6	3.9	7.9	5.0	4.1	3.4	2.2	2.2

Figure B-70. Station 8266000 Cabresto Creek near Questa
Mean Annual Discharge 1944-1994

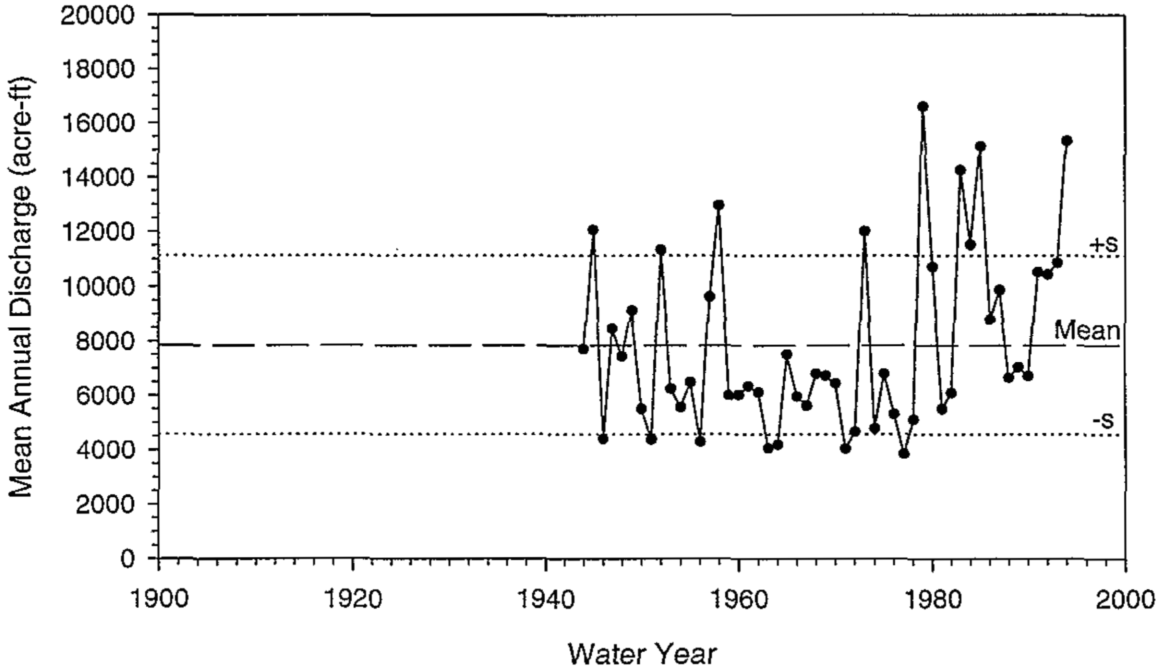


Figure B-71. Station 8266000 Cabresto Creek near Questa
Mean Monthly Discharge 1944-1994

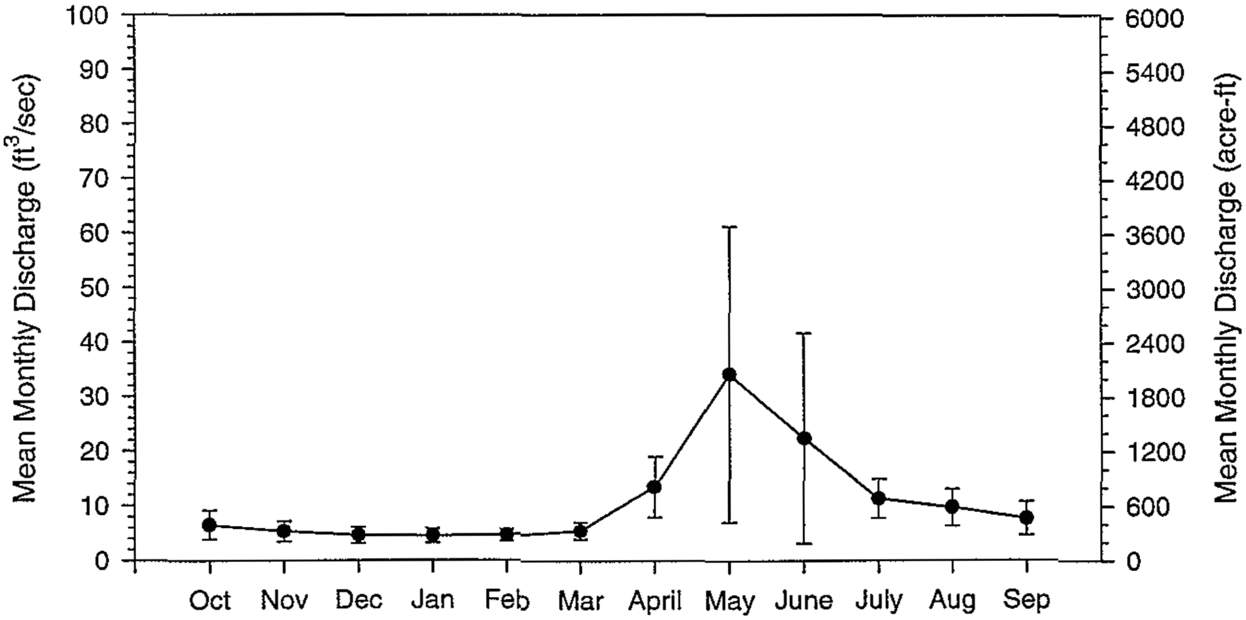
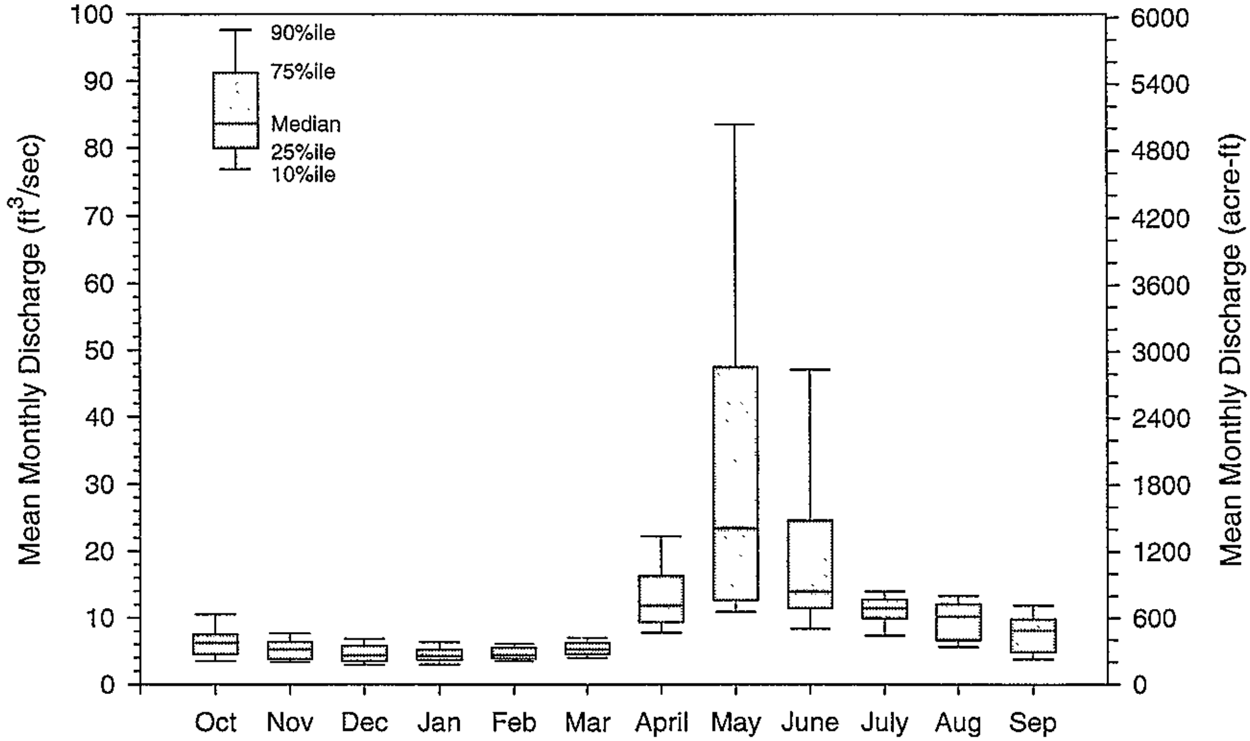


Figure B-72. Station 8266000 Cabresto Creek near Questa
Monthly Discharge 1944-1994



08266820 RED RIVER BELOW FISH HATCHERY, NEAR QUESTA, NM

LOCATION.--Lat 36 40'54", long 105 39'21", in NW1/4NW1/4 sec.10, T.28 N., R.12 E., Taos County, Hydrologic Unit 13020101, on right bank 0.3 mi downstream from State Fish Hatchery, 3.5 mi upstream from mouth, and 3.7 mi southwest of Questa.

DRAINAGE AREA.--185 mi2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1969 to July 1978 (discharge measurements only), August 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 7,070 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 16, 1979, at site about 250 ft upstream at datum 5.55 ft higher.

REMARKS.--Estimated daily discharges: May 19-22 and June 22-27. Water-discharge records good. Diversions for irrigation of about 3,000 acres upstream from station.

AVERAGE DISCHARGE.--7 years, 90.5 ft^3/s, 65,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 755 ft^3/s, June 8, 1979, gage height, 5.30 ft, site and datum then in use; minimum, 24 ft^3/s, Feb. 7, 1982 and Jan. 19, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 165 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 19	0215	253	3.24
June 11	0330	426	3.83
May 10	2245	*540	*4.18
July 18	2100	243	3.11
May 30	0730	435	3.86

Minimum discharge, 28 ft3/s, Feb. 2.

Table B-51. Mean daily streamflow (cfs), station 08266820 Red River below Fish Hatchery, near Questa, 1979-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1979	28.97	32.97	28.19	31.35	34.68	41.55	102.0	353.4	519.8	226.4	90.58	54.60	93353
1980	47.55	43.50	44.32	44.52	43.14	42.94	53.43	198.1	248.1	94.16	57.65	50.10	58449
1981	47.65	39.70	41.10	36.19	31.50	35.13	39.70	50.55	56.77	43.10	42.06	39.00	30359
1982	37.00	36.60	33.97	35.35	36.39	42.39	48.90	112.3	145.2	90.45	91.84	86.07	48127
1983	65.35	51.57	43.52	43.52	45.75	50.65	70.30	234.7	397.7	197.7	91.48	65.90	82075
1984	52.81	43.37	40.23	34.45	40.10	46.35	75.10	321.6	185.8	74.65	64.03	48.07	62183
1985	52.39	46.63	45.74	42.00	41.82	53.19	144.0	368.0	317.2	140.9	78.84	64.63	84411
1986	71.03	57.23	48.77	49.52	47.39	45.90	88.10	156.9	260.7	135.0	74.71	86.93	67740
1987	68.42	59.20	51.03	48.71	50.86	50.58	107.4	264.2	243.8	92.03	65.13	54.37	69838
1988	49.94	48.20	43.32	47.71	46.45	43.65	50.37	70.10	95.37	75.06	63.77	77.03	42902
1989	66.19	51.43	48.68	47.13	45.86	71.97	111.9	123.5	102.8	60.52	59.87	57.07	51161
1990	61.35	42.03	38.84	40.48	41.82	42.90	72.00	109.3	110.9	67.23	58.61	49.40	44392
1991	43.45	41.70	33.84	39.97	44.89	38.81	86.73	223.2	178.7	92.97	84.26	80.40	59770
1992	62.52	59.23	50.52	55.32	57.90	60.97	104.4	186.2	157.7	83.90	69.65	59.90	60891
1993	50.35	47.10	50.84	54.81	49.82	53.48	80.70	247.2	266.5	122.2	95.32	86.50	72831
1994	61.55	55.43	49.39	52.16	53.82	58.87	117.1	374.3	302.4	96.52	68.84	65.47	81975

Table B-52. Mean daily streamflow statistics, period statistics, and exceedances (cfs) for station 08266820 Red River below Fish Hatchery, near Questa, 1979-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	496	480	496	496	452	496	480	496	480	496	519	510	
Avg Day	54.16	47.24	43.27	43.95	44.53	48.71	84.51	212.1	224.3	105.8	70.79	62.15	86.79
Max Day	131	68	69	65	70	88	259	676	673	413	159	149	676
Min Day	26	29	26	26	28	32	31	40	40	35	32	28	26
# Months	16	16	16	16	16	16	16	16	16	16	16	17	16
SDev Month	11.84	7.97	6.88	7.34	6.92	9.40	28.82	105.1	121.9	49.00	15.25	16.80	
Skew Month	-0.49	0.03	-0.78	-0.08	-0.04	1.01	0.26	0.15	0.90	1.38	-0.04	0.04	
Min Month	28.97	32.97	28.19	31.35	31.50	35.13	39.70	50.55	56.77	43.10	42.06	31.17	
Max Month	71.03	59.23	51.03	55.32	57.90	71.97	144.0	374.3	519.8	226.4	95.32	86.93	
Exceedences													
1%	96.08	65.00	58.12	60.04	59.00	82.08	220.2	621.7	598.4	335.8	129.1	122.6	
5%	75.20	61.00	56.00	56.00	58.00	68.00	188.0	490.0	498.0	226.0	103.0	98.00	
10%	69.00	59.00	54.00	55.00	54.00	60.00	152.0	430.8	409.0	175.4	96.00	88.00	
20%	65.00	56.00	50.00	51.00	50.00	55.00	119.0	332.8	338.0	139.0	84.00	75.00	
50%	52.00	47.00	44.00	45.00	45.00	47.00	67.00	167.0	194.0	87.00	68.50	59.00	
80%	46.00	39.00	36.00	36.00	38.40	41.00	47.00	100.0	113.0	67.00	57.00	48.00	
90%	37.00	35.00	32.00	34.00	33.00	38.00	42.00	71.60	84.00	59.00	49.00	42.00	
95%	31.00	33.00	29.00	31.00	32.00	36.00	39.00	52.00	68.00	49.00	40.00	33.00	
99%	26.96	31.00	26.00	29.00	30.00	33.00	33.80	43.00	43.80	37.00	35.00	29.00	

Figure B-73. Station 8266820 Red River below Fish Hatchery near Questa
Mean Annual Discharge 1979-1994

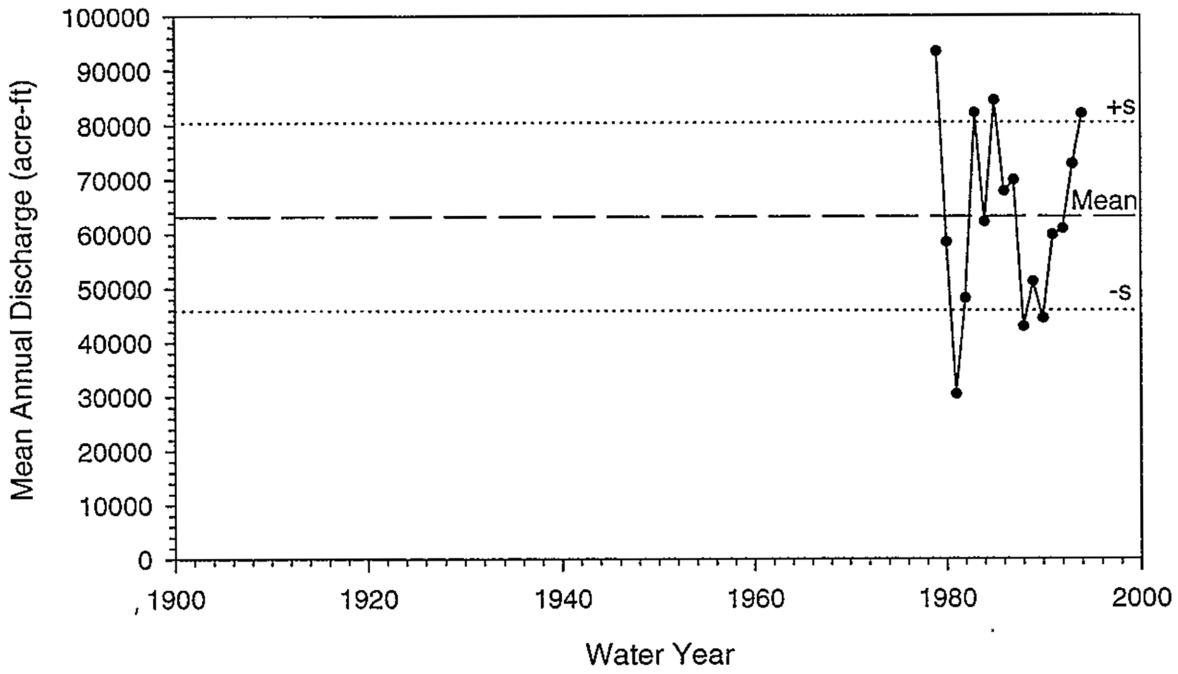


Figure B-74. Station 8266820 Red River below Fish Hatchery near Questa
Mean Monthly Discharge 1979-1994

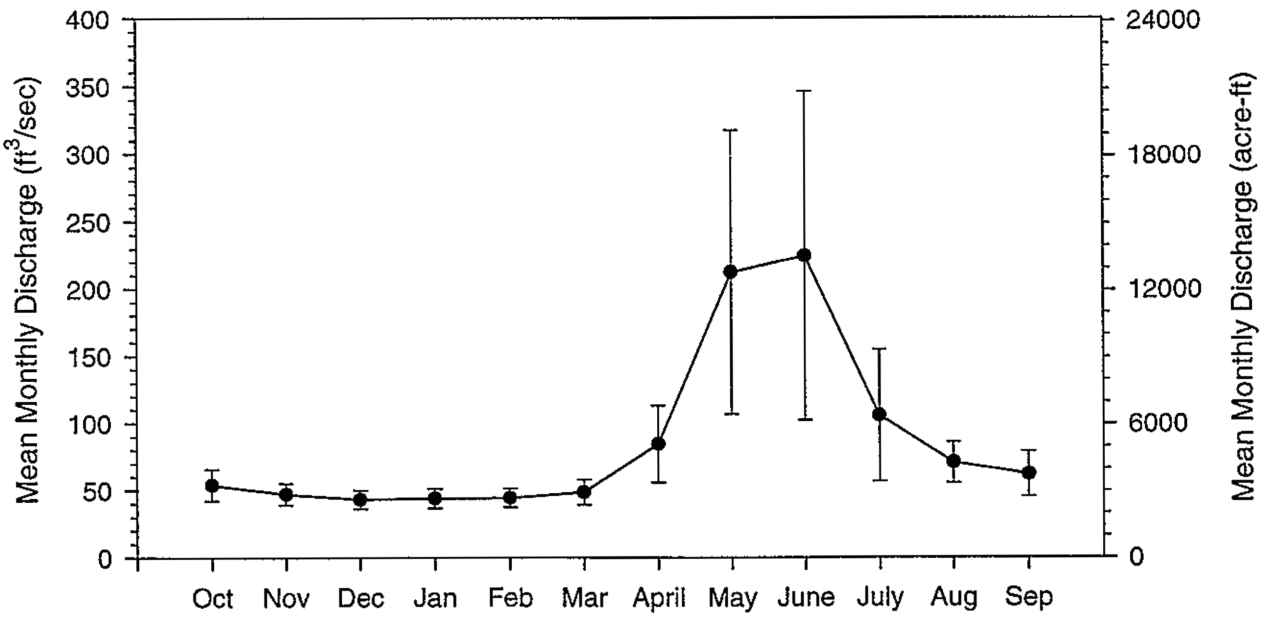
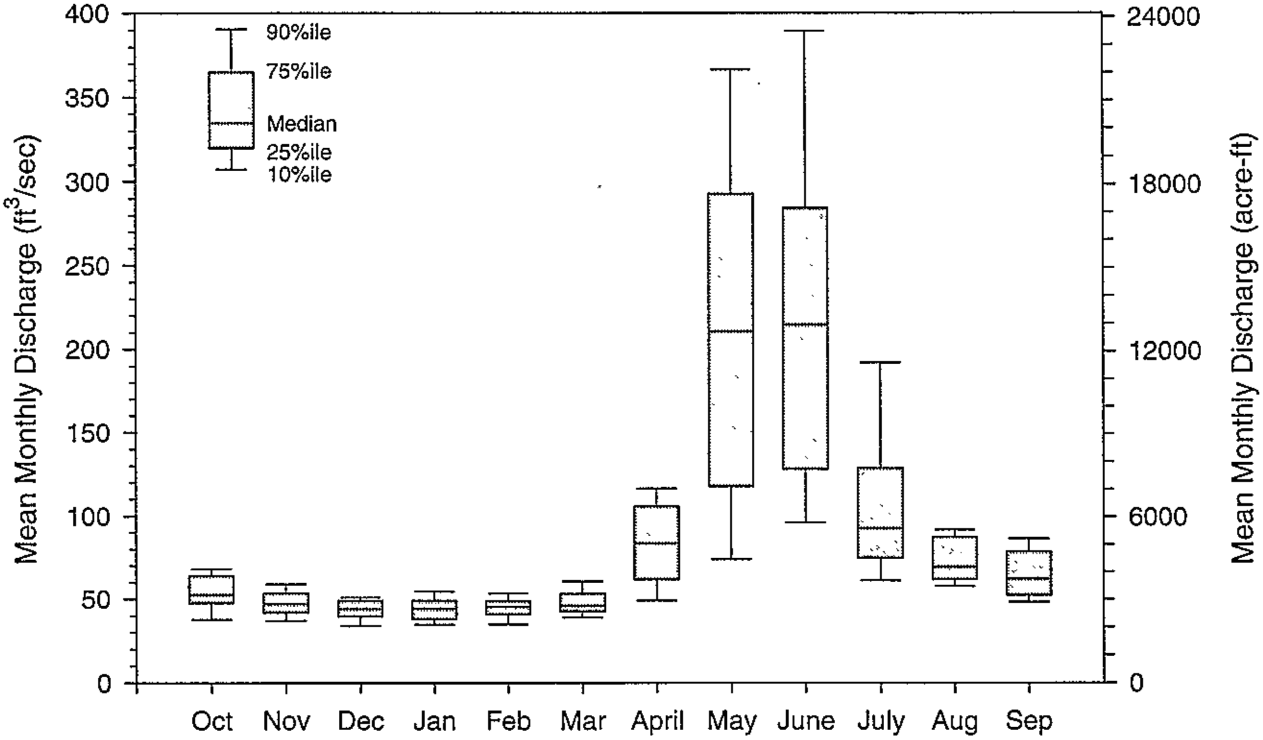


Figure B-75. Station 8266820 Red River below Fish Hatchery near Questa
Monthly Discharge 1979-1994



08267000 RED RIVER AT MOUTH, NEAR QUESTA, NM

No Remarks Available for this Station. In NW ¼ of section 20, T28N, R12E, on left bank 800 ft upstream from Rio Grande and 6.5 miles southwest of Questa. Drainage area 190 mi^2. Diversions for irrigation of about 3,000 acres above station (Reiland and Haynes, 1963).

Station Name RED RIVER AT MOUTH, NEAR QUESTA, NM
Station ID 08267000
State NEW MEXICO
County TAOS
Latitude 36:38:53
Longitude 105:41:34
Elevation 6600.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1950	1978	29	10166	0	75.13	541.00	35.00		

Table B-53. Mean daily streamflow (cfs), station 08267000 Red River at Mouth, near Questa, 1952-1978.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1952	46.94	47.57	49.06	59.68	49.93	48.87	129.1	335.9	369.9	129.5	86.90	71.27	86073
1953	63.68	59.60	58.81	60.32	55.61	55.16	62.13	121.3	177.3	79.55	63.87	55.87	55115
1954	52.10	55.50	50.87	52.19	55.11	55.39	94.43	141.5	107.1	80.84	62.45	54.37	52047
1955	54.29	52.37	45.55	44.42	45.89	51.19	54.80	150.4	176.2	91.84	99.10	70.77	56627
1956	59.87	56.27	50.74	52.61	52.14	54.19	54.87	81.74	75.63	45.94	53.19	43.63	41094
1957	43.55	46.60	45.13	46.52	48.39	46.45	66.43	151.2	346.4	158.5	135.5	91.20	73995
1958	77.29	73.40	68.84	59.58	55.36	54.26	98.20	387.7	228.3	89.55	74.61	66.00	80714
1959	60.23	59.83	57.23	54.16	55.43	51.48	53.93	92.42	91.63	57.97	76.26	54.00	46167
1960	58.68	54.93	50.42	50.94	54.66	60.35	120.0	137.9	160.1	86.48	61.45	56.03	57431
1961	56.26	53.77	49.65	47.45	50.54	49.68	88.43	195.9	180.0	89.23	81.97	78.40	61700
1962	67.13	59.40	54.39	52.19	57.00	54.06	140.6	211.6	148.0	88.58	58.48	58.77	63428
1963	58.45	55.20	52.32	48.55	50.93	61.61	71.83	74.19	59.27	50.23	53.65	50.93	41478
1964	46.06	47.77	44.97	47.26	48.83	46.10	52.33	98.19	85.57	58.00	75.06	54.67	42570
1965	48.97	49.57	48.74	54.48	45.04	47.68	81.33	205.2	258.9	152.8	99.94	92.17	71627
1966	78.84	66.30	62.29	60.10	63.11	58.90	72.87	128.7	124.5	84.35	121.6	70.70	59973
1967	56.65	54.40	48.87	49.71	49.29	47.58	48.90	70.32	92.67	71.97	80.35	71.00	44783
1968	58.13	50.67	44.52	51.55	49.48	49.61	55.63	129.4	148.7	85.55	88.52	56.63	52482
1969	49.77	51.23	50.23	45.94	46.75	47.71	66.53	148.6	161.0	112.5	94.32	79.77	57691
1970	76.06	66.20	51.39	45.65	52.32	48.03	60.17	157.1	126.7	89.45	65.90	60.47	54371
1971	58.74	54.20	41.74	43.94	46.75	44.29	47.10	52.77	64.60	53.84	59.77	47.20	37110
1972	65.84	53.77	44.74	46.77	47.79	50.71	56.60	61.10	67.37	55.74	50.39	48.97	39220
1973	45.84	50.53	45.35	41.84	42.75	49.00	57.53	269.5	312.2	156.5	74.39	61.67	73011
1974	58.61	52.73	48.77	49.45	48.11	49.23	52.00	67.84	88.27	57.52	61.90	46.57	41111
1975	50.58	46.47	39.74	43.68	49.61	50.58	64.20	162.2	196.7	132.9	76.52	67.33	59250
1976	53.03	48.63	45.35	53.87	53.31	45.39	63.73	128.7	137.8	80.90	65.03	52.90	50032
1977	50.23	41.47	38.00	41.39	45.25	45.84	44.17	51.68	49.33	64.77	55.10	51.63	34953
1978	42.87	44.43	41.55	42.39	41.54	41.48	56.00	108.4	124.9	66.97	49.71	41.30	42360

Table B-54. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08267000 Red River at Mouth, near Questa, 1952-1978.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	837	810	868	868	791	868	840	868	840	868	868	840	10166
Avg Day	57.0	53.8	49.2	49.7	50.3	50.5	70.5	144.2	152.1	86.8	74.3	60.8	75.1
Max Day	113	88	77	162	85	98	242	490	541	264	260	133	541
Min Day	39	35	35	36	37	36	39	45	42	43	43	39	35
# Months	27	27	28	28	28	28	28	28	28	28	28	28	27
SDev Month	9.78	7.08	6.71	5.68	4.74	4.80	25.06	80.60	84.96	32.55	21.14	13.40	18.83
Skew Month	0.77	0.91	1.05	0.50	0.54	0.67	1.60	1.54	1.22	1.02	1.28	0.84	0.63
Min Month	42.87	41.47	38.00	41.39	41.54	41.48	44.17	51.68	49.33	45.94	49.71	41.30	48.28
Max Month	78.84	73.40	68.84	60.32	63.11	61.61	140.6	387.7	369.9	158.5	135.5	92.17	118.70
Exceedences													
1%	90.0	80.0	72.0	67.0	65.1	70.0	223.2	461.6	499.0	225.0	151.3	109.6	330.0
5%	78.3	68.0	64.0	61.0	59.0	60.0	150.0	346.4	347.0	158.6	123.6	88.0	178.7
10%	70.0	64.0	59.0	58.0	56.0	56.0	117.0	255.0	287.0	134.2	105.0	81.0	129.0
20%	64.0	59.0	55.0	54.0	55.0	54.0	81.0	193.0	200.0	110.0	90.0	73.0	86.0
50%	55.0	53.0	48.0	49.0	50.0	50.0	57.0	118.0	129.0	79.0	69.0	57.0	56.0
80%	47.0	47.0	43.0	44.0	46.0	46.0	50.0	70.0	78.0	57.6	55.0	49.0	48.0
90%	45.0	45.0	41.0	42.0	44.0	45.0	47.0	59.0	63.0	52.0	50.0	45.0	45.0
95%	43.0	43.0	39.0	40.0	41.0	43.0	45.0	52.0	56.0	48.0	47.4	42.0	43.0
99%	41.0	39.0	36.0	37.0	39.0	39.0	42.0	46.7	45.4	44.0	45.0	39.0	39.0

Figure B-76. Station 8267000 Red River at Mouth near Questa
Mean Annual Discharge 1952-1978

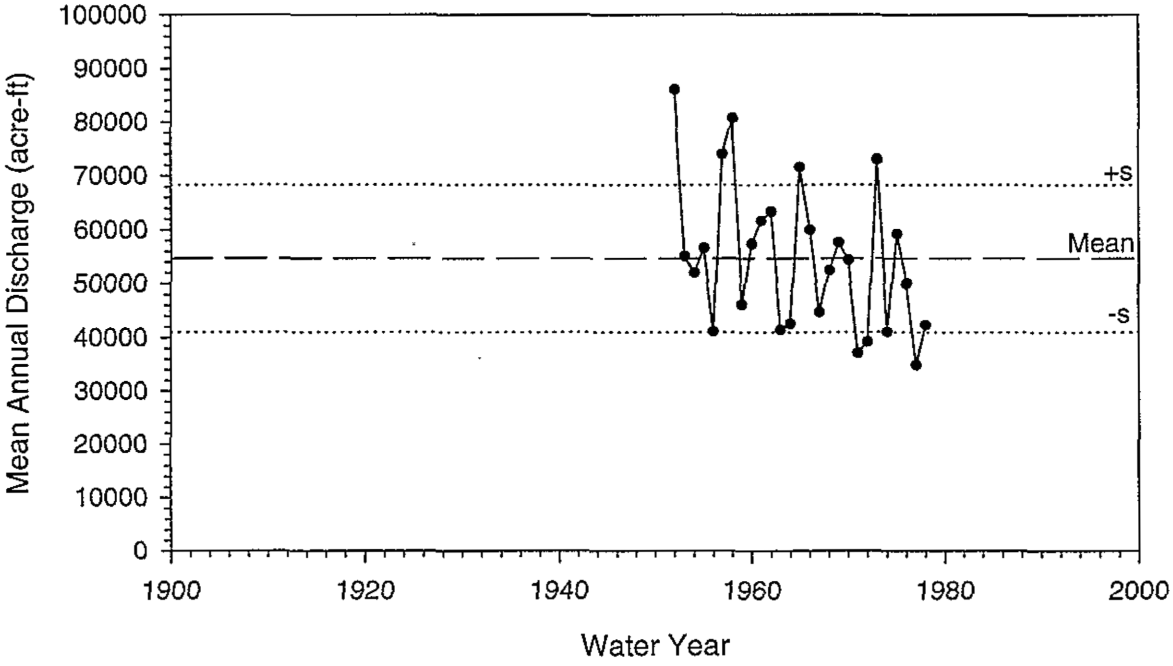


Figure B-77. Station 8267000 Red River at Mouth near Questa
Mean Monthly Discharge 1952-1978

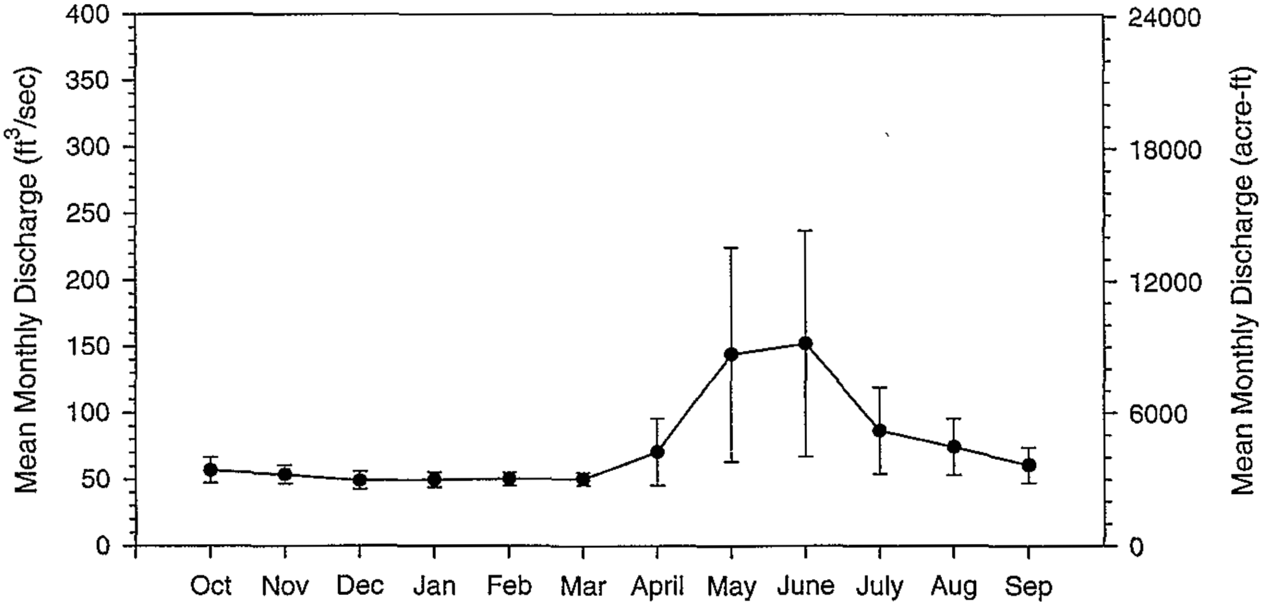
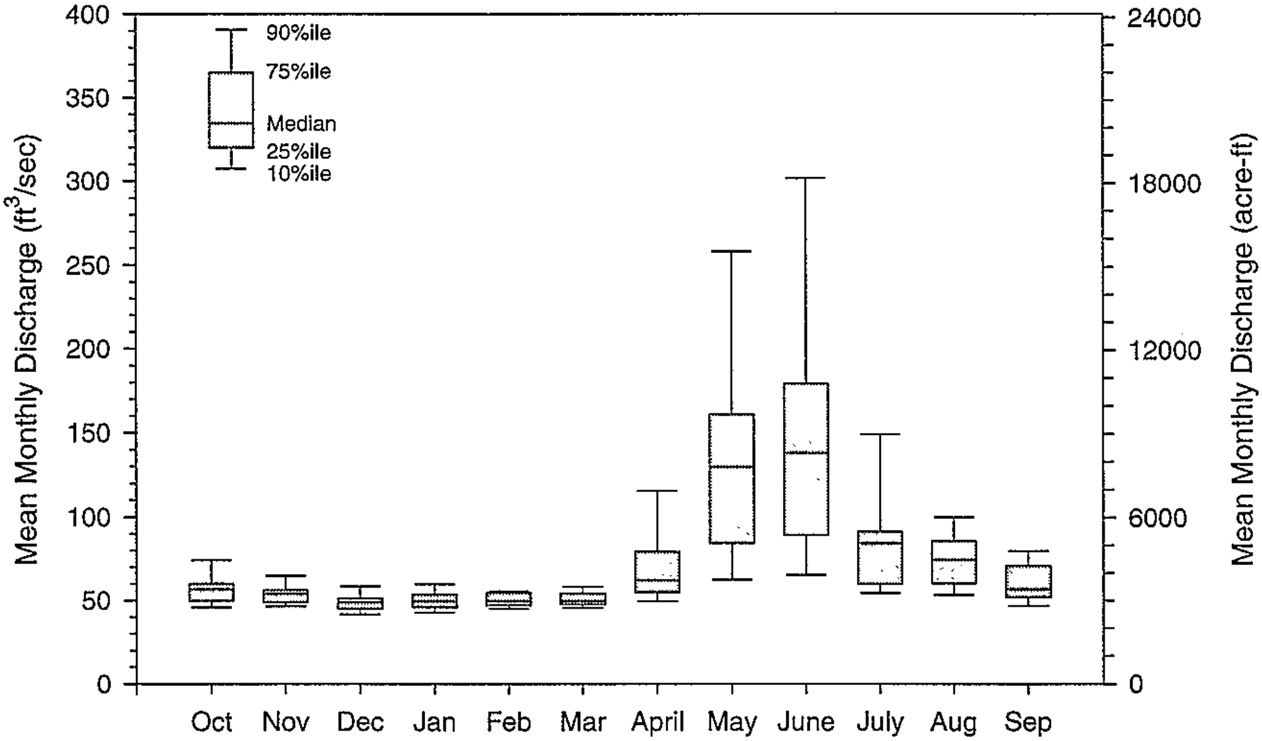


Figure B-78. Station 8267000 Red River at Mouth near Questa
Monthly Discharge 1952-1978



08267500 RIO HONDO NEAR VALDEZ, NM

LOCATION.--Lat 36 32'30", long 105 33'21", in S ½ section 28, T27N, R13E, Taos County, Hydrologic Unit 13020101, in Carson National Forest, on right bank 500 ft upstream from first diversion, 1.6 mi east of Valdez, 3.8 mi downstream from South Fork, and at mile 9.2.

DRAINAGE AREA.--36.2 mi^2.

PERIOD OF RECORD.--August 1934 to current year.

REVISED RECORDS.--WSP 1342: 1935. WSP 1712: Drainage area. WSP 1732: 1942(M).

GAGE.--Water-stage recorder. Concrete control since Oct. 28, 1938. Elevation of gage is 7,650 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 28, 1938, at datum 1.92 ft lower.

REMARKS.--No estimated daily discharges. Records good. No diversions upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--51 years, 34.9 ft^3/s, 25,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 541 ft^3/s, May 13, 1941; maximum gage height, 4.81 ft, Jan. 5, 1970 (ice jam); minimum discharge, about 1 ft^3/s, Jan 27, 1942, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than peak discharge of 80 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 18	2130	105	2.47
June 10	0145	*330	*3.44
May 10	1945	272	3.21

Minimum discharge, 6.O ft3/s, Feb. 2.

Table B-55. Mean daily streamflow (cfs), station 08267500 Rio Hondo near Valdez, 1935-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1935	18.29	12.37	9.93	6.03	6.08	12.04	31.47	72.74	167.3	69.55	35.77	24.60	28160
1936	21.42	15.10	12.35	10.68	10.12	17.06	50.03	108.9	59.57	26.87	32.06	22.13	23400
1937	19.68	18.37	14.87	12.68	13.57	21.06	92.43	233.3	192.3	77.42	31.58	21.77	45331
1938	19.71	15.17	13.94	12.45	10.61	14.29	52.90	129.5	193.3	78.16	32.23	31.37	36472
1939	26.10	19.63	14.97	13.94	13.00	28.03	56.37	92.19	55.73	22.87	17.19	14.60	22667
1940	14.42	11.27	8.88	8.98	8.28	14.37	28.93	71.84	75.57	28.29	19.97	17.27	18629
1941	18.19	14.40	13.13	12.23	12.07	14.74	24.83	245.9	231.4	128.5	50.94	32.70	48457
1942	43.52	35.83	23.10	20.13	16.61	15.90	77.07	215.2	250.3	80.87	32.68	25.40	50571
1943	18.94	16.53	13.97	13.03	13.29	14.19	53.80	75.39	61.90	28.71	25.03	20.13	21441
1944	16.48	14.20	11.87	10.06	11.48	12.74	24.47	175.9	193.4	68.39	26.61	16.83	35250
1945	17.00	15.37	13.32	11.32	11.32	13.68	37.07	231.3	205.5	79.39	34.87	22.00	41935
1946	17.29	14.93	12.58	12.23	11.46	12.58	26.23	35.00	28.07	18.16	20.23	25.57	14152
1947	24.74	21.33	18.77	14.23	13.75	16.52	30.53	122.9	88.80	33.94	21.45	16.80	25662
1948	15.19	12.90	12.50	11.21	11.14	11.48	29.87	81.39	106.5	40.65	31.68	19.07	23185
1949	14.19	13.17	10.74	10.15	9.12	11.92	40.57	118.4	134.3	62.32	32.19	21.33	28946
1950	17.32	15.47	14.32	14.45	14.75	13.74	37.00	49.16	55.33	26.32	16.16	14.80	17428
1951	13.65	10.53	9.90	8.05	8.84	8.35	18.32	60.42	62.67	19.68	13.52	11.73	14848
1952	10.90	8.28	9.30	9.74	9.16	11.67	50.83	151.6	179.9	49.65	30.29	20.70	32758
1953	14.61	12.83	11.03	9.66	10.20	11.71	20.53	60.10	99.17	33.52	20.71	13.57	19180
1954	12.27	13.70	11.06	10.91	11.05	10.14	44.90	89.00	67.20	34.65	21.81	17.30	20801
1955	16.06	14.63	11.15	10.42	10.38	10.60	16.67	70.26	99.60	44.13	44.23	40.90	23518
1956	19.87	15.57	12.94	11.16	11.07	15.35	21.93	50.55	44.20	17.65	15.71	9.87	14870
1957	10.76	9.90	8.11	8.08	9.19	11.56	29.27	89.71	214.0	92.97	60.32	42.67	35423
1958	28.16	25.63	16.58	12.68	12.61	13.00	36.63	175.0	150.5	42.39	25.03	23.90	34018

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1959	18.10	13.70	13.94	11.06	11.00	10.00	13.10	41.61	43.97	18.58	19.16	15.37	13881
1960	12.16	10.07	8.47	7.58	9.17	14.54	55.30	71.16	89.23	36.58	19.68	13.93	21001
1961	14.32	13.30	10.03	8.68	8.36	11.87	29.33	86.74	88.63	32.52	22.03	22.70	21074
1962	19.61	13.17	9.58	8.90	11.14	10.21	45.03	87.32	68.77	30.65	15.55	14.77	20232
1963	14.26	11.73	10.15	9.55	9.91	13.19	26.17	48.74	26.40	16.71	14.06	12.53	12910
1964	11.03	9.44	7.52	6.85	6.74	7.60	15.14	51.48	46.37	19.16	23.94	16.40	13417
1965	12.52	10.23	8.97	8.74	8.82	9.42	32.80	101.2	154.3	80.55	38.16	27.23	29812
1966	23.06	18.40	15.39	12.26	10.36	16.03	32.80	77.68	65.30	35.19	54.32	25.07	23383
1967	16.45	13.90	12.42	10.84	10.60	13.45	24.17	46.65	57.53	32.94	44.68	28.93	18908
1968	18.74	14.80	11.71	11.32	11.86	12.71	17.43	46.55	81.83	33.45	48.42	24.20	20132
1969	17.06	13.53	10.13	9.99	9.48	12.13	42.37	96.13	107.7	61.00	43.68	28.73	27350
1970	24.52	19.23	14.42	12.45	11.86	11.00	18.20	81.06	70.53	35.71	21.52	20.60	20648
1971	16.03	12.57	11.26	9.74	9.56	10.65	13.93	20.65	31.50	18.58	15.77	16.73	11291
1972	24.39	16.80	12.94	10.76	9.34	15.08	17.47	30.39	29.50	14.61	10.95	12.30	12370
1973	11.58	11.73	9.47	9.21	8.63	10.59	18.36	117.7	200.3	89.74	32.58	18.77	32575
1974	15.03	11.90	10.53	9.57	9.05	10.87	14.93	39.16	45.17	20.32	20.48	12.43	13271
1975	11.29	10.50	8.40	9.34	8.16	9.88	21.80	73.55	121.4	63.19	27.06	27.43	23695
1976	16.03	12.62	10.40	9.04	9.13	13.32	28.63	81.68	97.40	31.00	22.77	16.10	21044
1977	14.81	10.91	9.70	9.29	9.85	9.27	11.08	24.81	27.30	20.23	23.81	19.63	11530
1978	15.16	12.20	9.64	9.08	8.33	10.92	31.20	71.42	91.77	32.26	18.84	12.57	19542
1979	10.92	13.23	10.44	8.68	10.54	16.10	55.77	170.0	298.6	143.8	43.87	24.33	48736
1980	17.97	15.33	12.90	11.03	10.69	13.19	28.83	99.55	186.7	57.29	27.61	19.47	30218
1981	14.84	12.83	10.81	9.27	8.48	8.36	15.24	28.10	41.83	20.16	17.19	13.17	12099
1982	12.13	9.95	8.51	7.88	8.50	11.93	21.23	74.87	106.7	50.03	33.84	49.43	23865
1983	31.61	20.93	15.61	12.58	12.68	18.16	30.60	113.0	235.6	125.6	45.97	25.77	41614
1984	18.23	16.13	14.32	12.13	12.31	13.48	31.20	147.1	110.5	43.35	25.23	17.40	27948
1985	18.48	15.60	12.83	10.71	9.71	18.03	61.63	166.6	205.4	64.52	33.55	23.60	38727
1986	30.42	18.80	14.48	13.94	13.39	18.94	42.53	87.48	121.5	68.52	32.74	31.53	29886
1987	27.35	20.93	15.16	13.10	12.36	21.71	45.10	107.6	132.3	43.35	23.19	18.50	29050
1988	15.39	14.43	11.27	12.21	10.20	11.87	19.23	50.55	67.77	33.55	24.06	35.67	18495
1989	28.29	19.30	14.09	11.03	14.30	36.42	57.63	80.74	52.13	24.90	22.10	16.87	22855
1990	27.29	15.10	11.34	9.00	8.97	13.48	35.83	68.81	93.13	38.97	31.06	24.67	22833
1991	22.06	19.60	12.94	15.39	16.04	15.94	44.80	128.1	117.7	48.06	35.87	29.87	30619
1992	20.94	13.37	11.87	12.61	12.17	15.77	61.83	129.5	111.0	49.26	32.52	25.13	30004
1993	17.52	13.13	12.13	10.65	11.21	20.29	41.90	138.9	199.5	83.16	59.77	53.23	39990
1994	25.19	19.40	16.48	10.98	10.15	29.29	67.80	159.7	191.7	61.23	27.97	26.17	39059

Table B-56. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08267500 Rio Hondo near Valdez, 1935-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1860	1800	1860	1860	1695	1860	1800	1860	1800	1860	1860	1800	21915
Avg Day	18.6	14.9	12.2	10.8	10.7	14.2	35.1	97.5	113.9	48.1	29.1	22.5	35.7
Max Day	72	48	28	25	20	53	190	416	356	283	120	103	416
Min Day	8.6	7	5	3	3.8	5.6	7.5	16	17	11	9.7	8.8	3
# Months	60	60	60	60	60	60	60	60	60	60	60	60	60
SDev Month	6.18	4.41	2.80	2.30	2.10	5.05	17.16	53.40	66.85	28.95	11.50	8.85	13.95
Skew Month	1.47	2.10	1.14	1.08	0.58	2.27	1.00	1.04	0.72	1.35	0.91	1.43	0.67
Min Month	10.76	8.28	7.52	6.03	6.08	7.60	11.08	20.65	26.40	14.61	10.95	9.87	15.60
Max Month	43.52	35.83	23.10	20.13	16.61	36.42	92.43	245.9	298.6	143.8	60.32	53.23	69.86

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	47.0	34.0	22.4	20.0	18.0	43.0	127.0	327.6	305.0	175.0	73.0	64.0	244.0
5%	31.0	22.0	17.0	15.0	15.0	26.0	86.0	242.0	262.0	119.0	55.0	39.0	128.0
10%	26.0	20.0	16.0	14.0	14.0	20.0	70.0	192.0	221.0	91.0	47.0	33.0	86.0
20%	23.0	18.0	14.0	13.0	13.0	17.0	51.0	135.0	180.0	67.0	38.0	28.0	46.0
50%	17.0	14.0	12.0	11.0	10.0	13.0	26.0	83.0	98.0	37.0	26.0	21.0	18.0
80%	14.0	12.0	9.7	9.0	9.0	10.0	17.0	43.0	51.0	24.0	19.0	15.0	11.0
90%	12.0	10.0	8.5	8.0	8.0	9.0	13.0	30.0	34.0	18.0	16.0	13.0	9.9
95%	11.0	9.3	8.0	7.1	7.1	8.4	12.0	25.0	30.0	16.0	14.0	12.0	8.9
99%	9.8	8.0	6.4	6.0	6.0	7.0	9.1	19.0	21.0	14.0	11.0	10.0	7.0

Figure B-79. Station 8267500 Rio Hondo near Valdez
Mean Annual Discharge 1934-1994

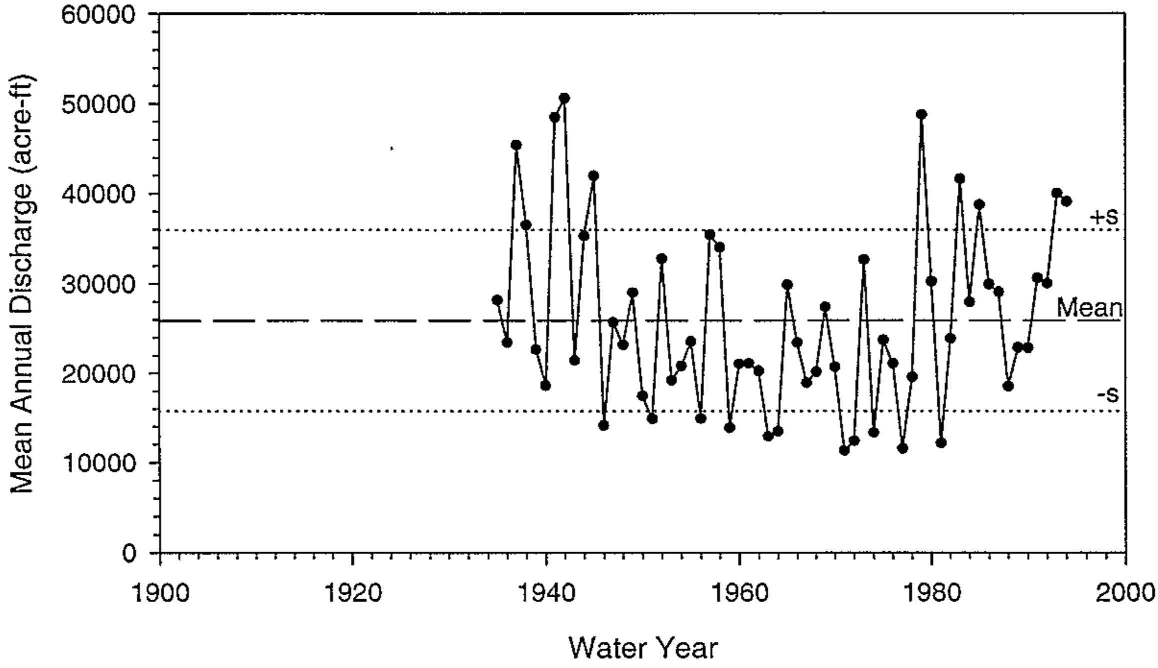


Figure B-80. Station 8267500 Rio Hondo near Valdez
Mean Monthly Discharge 1934-1994

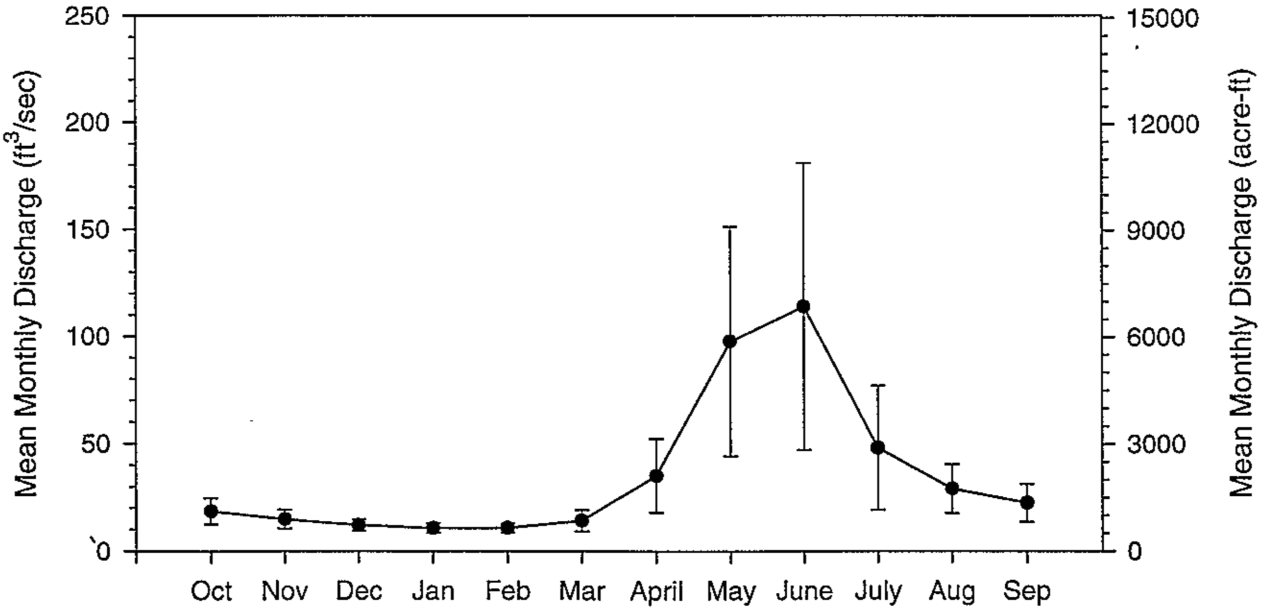
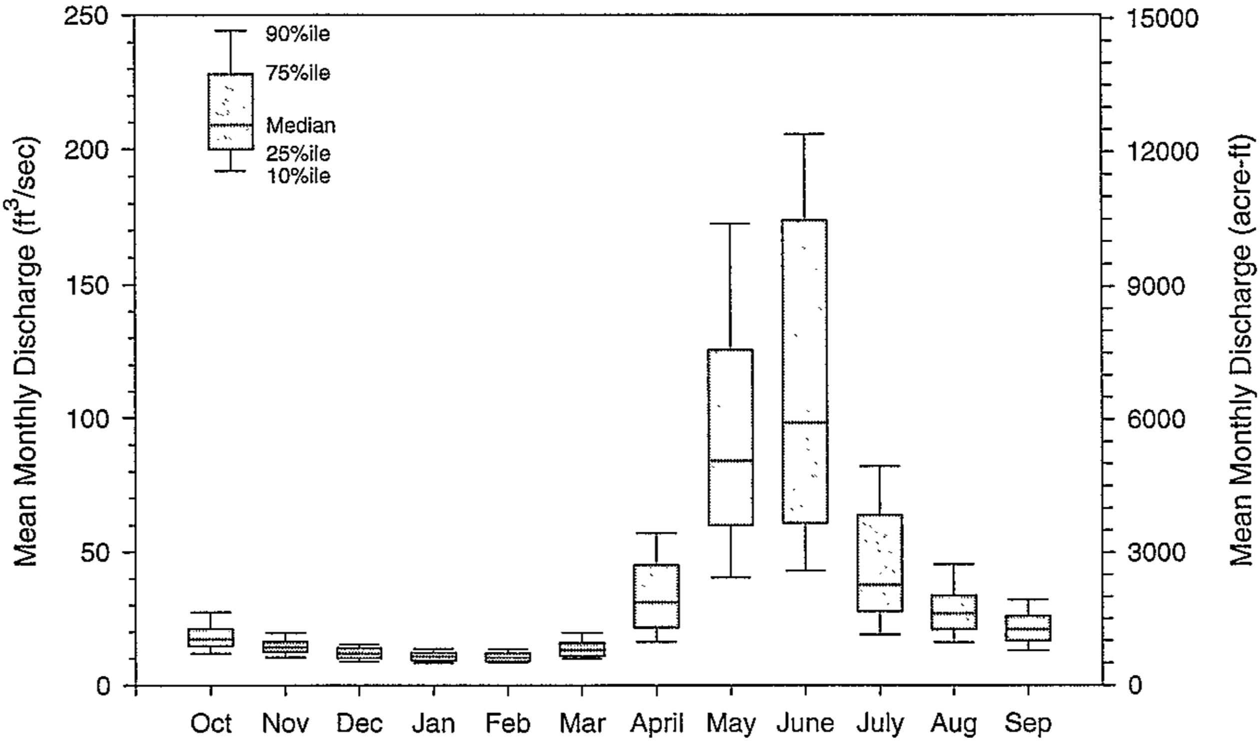


Figure B-81. Station 8267500 Rio Hondo near Valdez
Monthly Discharge 1934-1994



08268500 ARROYO HONDO AT ARROYO HONDO, NM

LOCATION.--Lat 36 31'56", long 105 41'06", in section 32, T27N, R12E (projected), Taos County, Hydrologic Unit 13020101, in Arroyo Hondo Grant, on left bank 0.9 mi downstream from Arroyo Hondo, and at mile 1.4.

DRAINAGE AREA.--65.6 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1910 to June 1912 (discharge measurements and fragmentary gage-height record), July 1912 to December 1928 (fragmentary), and January 1932 to current year. Monthly discharge only for some periods, published in WSP 1312. Statement in WSP 328 that there was no flow in January and much of February 1912 is erroneous. Published as Rio Hondo near Arroyo Hondo prior to 1928, and as Rio Hondo at Arroyo Hondo 1928-65. Discontinued October 1, 1985.

REVISED RECORDS.--WSP 1342: 1915, 1932(M), 1934-38(M). WSP 1712: Drainage area. WSP 1732: 1926. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Elevation of gage is 6,670 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WSP 1923 for history of changes prior to Sept. 11, 1963. Sept. 11, 1963 to Apr. 2. 1969 at site 25 ft downstream on right bank at same datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Diversions upstream from station for irrigation of about 2,500 acres, of which about 1,700 acres is a transbasin diversion to Rio Lucero.

AVERAGE DISCHARGE.--69 years (water years 1913-28, 1933-85), 27.2 ft^3/s, 19,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (since 1937)--Maximum discharge, 1,060 ft^3/s, July 19, 1948, gage height, 3.75 ft, from rating curve extended above 200 ft^3/s; maximum gage height, 5.06 ft, June 8, 1979, backwater from debris; minimum discharge, 3.3 ft^3/s, May 7, 1977. Maximum gage height observed, 5.45 ft, site and datum then in use, Aug. 23, 1935; discharge uncertain, but probably exceeded 1,200 ft^3/s. A minimum daily discharge of 3 ft^3/s occurred Oct. 19, 1912. Discharge not determined for the major floods of Oct. 6, 1911, Sept. 1, 1932 and July 22, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 75 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 18	2245	87	3.09
June 11	0930	*169	*3.56
May 10	2100	157	3.51

Minimum discharge, 6.6 ft^3/s, Sept. 16.

Table B-57. Mean daily streamflow (cfs), station 08268500 Arroyo Hondo at Arroyo Hondo, 1913-1985.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1913	8.74	14.03	25.90	11.52	12.29	12.32	19.15	44.68	43.20	22.99	9.31	9.09	14097
1914	9.92	13.64	11.71	12.42	14.00	16.03	19.17	62.84	52.23	26.65	13.23	9.07	15773
1915	11.90	14.00	13.35	12.00	14.93	14.10	38.90	171.9	270.6	75.52	13.10	9.33	39810
1916	10.03	10.97	21.48	21.81	22.72	41.55	80.33	243.8	219.4	58.97	28.42	23.67	47355
1917	23.84	23.67	28.13	24.81	23.57	20.87	24.10	79.16	160.5	46.23	12.00	34.93	30232
1918	9.50	8.81	12.15	12.71	16.14	18.55	24.93	67.42	73.93	21.55	7.36	11.03	17136
1919	10.77	10.00	13.52	12.00	12.14	16.00	38.57	114.6	106.9	56.23	12.87	8.91	24966
1920	20.61	25.33	25.45	30.23	24.69	12.19	21.13	186.2	254.5	52.74	15.90	14.30	41240
1921	8.50	12.17	18.23	15.32	15.79	13.19	14.87	116.3	175.2	67.10	61.19	32.93	33306
1922	12.29	18.73	21.52	20.81	17.96	16.23	21.67	49.66	30.52	5.10	6.47	7.00	13755
1923	5.77	6.30	7.76	9.75	12.46	15.26	29.80	117.8	89.47	21.06	25.13	34.27	22656
1924	37.00	33.80	24.06	16.61	15.24	20.48	48.23	168.1	117.3	44.39	9.09	14.43	33225
1927	7.55	11.73	13.45	14.68	11.75	16.81	42.93	122.3	111.7	18.42	10.68	19.63	24256

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1928	22.00	18.00	17.00	17.32	18.00	16.23	16.63	72.87	48.90	9.84	7.00	4.00	16185
1933	14.58	15.60	15.00	14.68	13.93	13.06	11.93	27.29	84.07	18.94	10.06	10.90	15048
1934	9.77	9.83	15.10	15.55	15.21	13.42	10.27	21.10	9.13	20.97	5.81	12.10	9558
1935	11.69	10.69	16.77	15.84	15.96	14.65	16.08	57.32	152.2	25.57	19.92	17.93	22549
1936	20.81	14.53	20.26	18.45	15.03	18.26	39.16	87.00	18.61	7.51	26.26	10.89	17993
1937	15.39	24.77	25.16	20.00	24.32	18.79	68.33	276.8	187.8	42.89	11.21	21.00	44539
1938	20.68	15.23	17.16	18.00	17.86	16.97	42.03	110.0	128.3	24.33	10.98	24.89	26926
1939	19.06	17.80	21.90	18.19	16.29	24.55	51.00	48.55	13.95	7.40	7.37	7.53	15317
1940	10.20	16.37	14.87	14.65	14.31	16.08	14.39	46.52	26.83	7.95	8.03	8.94	12027
1941	10.11	21.88	21.00	16.34	18.07	20.06	16.51	237.4	187.4	99.39	16.29	17.50	41341
1942	43.81	41.33	32.97	23.45	20.71	19.58	80.77	208.3	200.4	41.61	16.29	13.07	44853
1943	13.48	16.50	19.32	19.45	18.14	14.23	26.63	32.74	17.59	11.38	8.37	9.60	12507
1944	12.29	12.83	16.55	16.61	15.21	17.81	21.30	122.2	125.1	33.65	9.85	8.43	24899
1945	16.82	17.83	19.74	18.32	18.71	18.84	38.40	167.9	124.9	41.13	11.68	9.02	30457
1946	9.64	12.67	18.42	16.65	17.18	13.13	9.51	7.69	6.43	6.00	6.74	6.89	7879
1947	18.58	22.83	19.91	16.55	17.25	14.86	11.87	73.19	40.67	13.01	9.56	8.54	16137
1948	8.17	13.27	14.89	14.39	15.72	15.06	17.80	44.40	51.63	15.91	12.13	7.34	13914
1949	9.11	16.63	17.13	15.84	14.57	14.23	25.20	68.23	71.50	22.03	13.16	12.03	18090
1950	14.94	16.77	18.61	19.26	19.93	17.61	20.33	10.05	19.37	16.45	7.53	8.82	11414
1951	11.79	13.59	14.90	15.00	15.14	14.32	11.80	37.39	24.42	8.61	7.96	7.16	10992
1952	7.88	9.30	15.29	17.16	16.21	15.74	41.33	111.5	119.4	25.61	10.43	10.40	24156
1953	9.92	13.63	16.81	16.13	15.61	15.55	13.43	46.17	56.10	13.78	7.81	6.81	13978
1954	8.77	16.74	15.92	15.71	15.93	11.21	36.10	56.26	26.33	10.52	9.48	7.88	13927
1955	9.78	12.31	15.77	15.13	14.50	11.66	7.00	52.68	48.10	13.48	15.81	14.36	13929
1956	11.58	14.37	17.10	16.45	15.66	13.59	10.42	12.05	11.53	6.44	6.00	5.63	8482
1957	6.24	9.56	13.12	14.26	13.61	8.61	16.27	59.39	192.5	56.77	36.23	35.37	27819
1958	34.68	37.90	24.45	20.23	19.18	18.35	37.83	156.8	92.57	15.46	13.26	14.38	29350
1959	14.65	15.97	16.98	15.85	15.57	10.85	10.30	10.47	9.35	8.75	10.96	8.98	8961
1960	12.80	12.24	15.97	13.52	12.90	18.42	45.50	35.65	59.40	11.35	8.00	7.89	15271
1961	8.09	12.27	14.90	15.87	14.61	12.23	23.10	52.42	34.73	11.53	11.55	19.07	13901
1962	13.68	14.10	16.06	15.90	17.32	14.58	35.23	29.87	14.10	8.60	8.30	9.38	11873
1963	10.34	14.62	15.03	15.29	17.29	17.00	16.62	8.82	8.66	6.56	5.94	6.83	8597
1964	6.84	8.89	12.52	10.85	11.79	11.97	8.24	15.10	11.27	8.26	10.36	8.15	7497
1965	8.06	10.92	13.62	15.27	14.61	12.89	19.61	63.19	110.4	34.65	16.24	16.43	20254
1966	18.58	16.22	19.23	15.65	17.79	20.77	17.36	23.48	23.43	9.90	33.87	7.93	13551
1967	7.94	8.57	15.17	17.13	16.89	14.16	8.50	14.06	22.09	11.75	29.24	20.50	11218
1968	13.01	11.86	19.35	16.45	14.79	13.13	10.24	17.97	27.10	10.19	26.64	12.39	11664
1969	9.39	12.93	19.94	18.65	17.93	19.23	24.93	51.55	58.67	22.23	16.77	12.63	17191
1970	13.77	19.87	22.32	19.29	19.82	16.06	16.70	38.74	25.53	11.47	9.02	7.90	13301
1971	13.90	16.87	17.06	16.48	15.71	13.84	8.29	6.33	6.63	7.00	6.81	7.12	8194
1972	17.61	18.57	17.74	16.44	17.62	12.28	6.08	6.65	7.56	7.25	6.42	6.91	8495
1973	6.76	13.76	15.73	15.45	16.25	17.00	18.93	97.58	158.9	51.58	8.25	6.53	25748
1974	7.12	9.58	15.94	15.19	14.71	13.68	6.23	5.20	9.88	5.86	6.27	5.55	6934
1975	6.70	7.81	14.36	15.10	15.14	16.06	14.87	26.48	62.50	23.71	8.15	8.24	13198
1976	7.53	10.87	18.97	16.45	18.72	17.65	10.46	23.30	31.03	9.64	9.57	6.64	10890
1977	7.62	9.69	15.74	14.97	15.89	13.03	7.06	4.76	5.80	6.51	6.95	7.56	6952
1978	7.22	17.35	17.81	16.27	15.61	15.87	10.36	30.79	34.83	9.85	8.65	7.13	11558
1979	7.34	9.62	15.80	13.93	15.39	20.55	56.10	181.5	292.6	107.4	23.03	11.80	45601
1980	10.17	16.55	22.16	20.23	18.48	18.13	30.83	85.77	122.6	26.56	9.51	8.32	23474
1981	8.31	13.27	19.00	16.74	15.68	14.13	8.27	6.86	7.57	6.82	7.37	7.30	7909
1982	7.64	8.50	14.79	14.84	15.34	15.68	12.05	28.74	45.9	17.48	19.03	44.10	14698
1983	32.13	24.93	22.68	19.35	21.75	26.48	38.20	112.8	222.8	95.55	26.61	11.44	39538

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1984	9.34	10.88	23.68	18.74	18.14	21.29	33.87	106.9	65.13	17.19	11.19	11.30	21028
1985	17.84	24.27	24.87	18.55	22.39	26.35	54.47	112.1	121.9	36.97	15.71	11.77	29401

Table B-58. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08268500 Arroyo Hondo at Arroyo Hondo, 1913-1985.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	2139	2070	2139	2139	1978	2170	2100	2170	2070	2139	2139	2070	25323
Avg Day	13.0	15.3	18.0	16.5	16.7	16.7	26.3	75.4	81.2	25.6	13.5	12.7	27.6
Max Day	60	52	49	35	66	66	236	495	430	390	152	125	495
Min Day	3.0	4.0	5.6	6.8	6.9	5.0	4.4	4.0	5.0	4.0	4.0	4.0	3.0
# Months	69	69	69	69	70	70	70	70	69	69	69	69	67
SDev Month	7.46	6.59	4.33	3.24	3.17	4.88	18.39	64.68	72.98	23.17	9.15	8.08	15.25
Skew Month	2.16	1.88	0.83	1.25	0.95	2.46	1.42	1.18	1.07	1.83	2.75	2.05	1.03
Min Month	4.00	6.30	7.76	9.75	9.71	8.61	6.08	4.76	5.80	5.10	5.81	4.00	9.58
Max Month	43.81	41.33	32.97	30.23	26.72	41.55	84.73	276.8	292.6	107.4	61.19	44.10	65.29
Exceedences													
1%	44.00	42.30	34.61	30.00	28.22	36.30	121.0	355.9	316.5	170.6	56.00	51.30	232.0
5%	30.00	27.00	27.00	23.00	23.00	27.00	74.00	238.5	246.0	85.00	37.00	33.00	103.0
10%	22.00	24.00	24.00	21.00	21.00	23.00	57.00	181.0	205.0	60.00	26.00	23.00	55.00
20%	17.00	19.00	22.00	19.00	19.00	20.00	38.00	125.0	149.0	36.00	16.00	16.00	26.00
50%	10.00	14.00	18.00	16.00	16.00	16.00	18.00	50.00	51.00	13.00	9.70	9.20	16.00
80%	7.60	9.70	14.00	13.00	14.00	13.00	9.10	12.00	12.00	7.90	7.00	7.10	9.10
90%	6.80	8.20	12.00	12.00	12.00	11.00	6.90	7.40	7.80	6.70	6.00	6.50	7.30
95%	6.30	7.10	11.00	11.00	11.00	9.80	6.10	6.30	6.90	5.70	5.70	6.00	6.40
99%	4.00	5.60	7.94	9.00	10.00	7.17	5.00	4.60	5.47	5.10	5.00	4.00	5.10

Figure B-82. Station 8268500 Arroyo Hondo at Arroyo Hondo
Mean Annual Discharge 1913-1924, 1927-1928,1933-1985

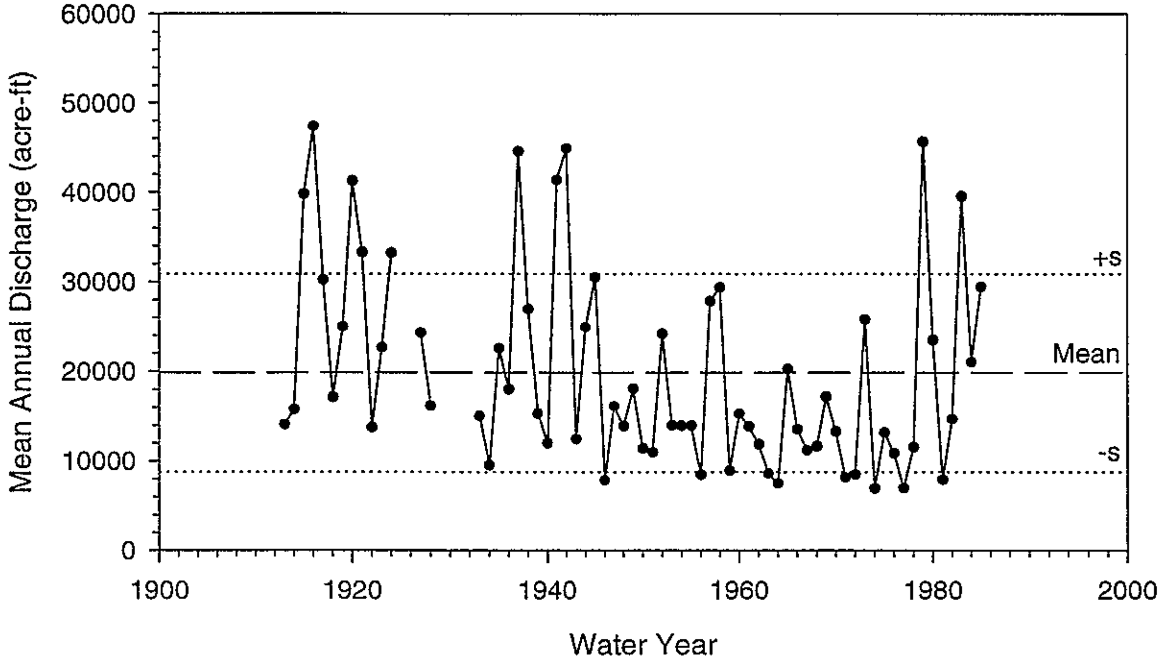


Figure B-83. Station 8268500 Arroyo Hondo at Arroyo Hondo
Mean Monthly Discharge, 1913-1924, 1927-1928, 1933-1985

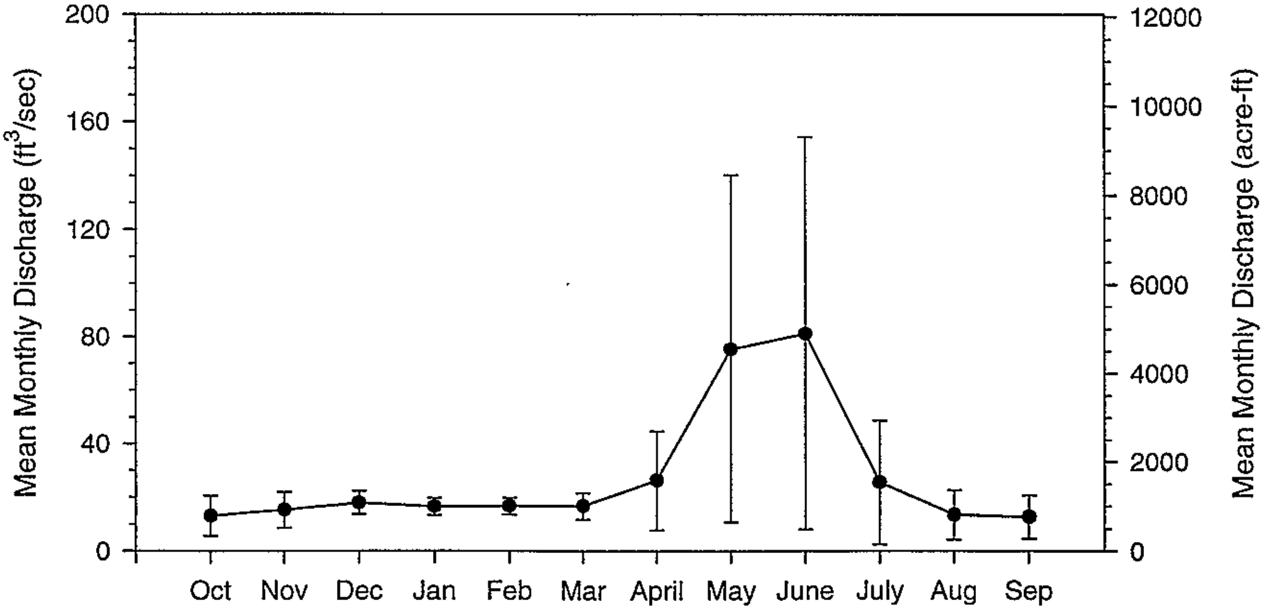
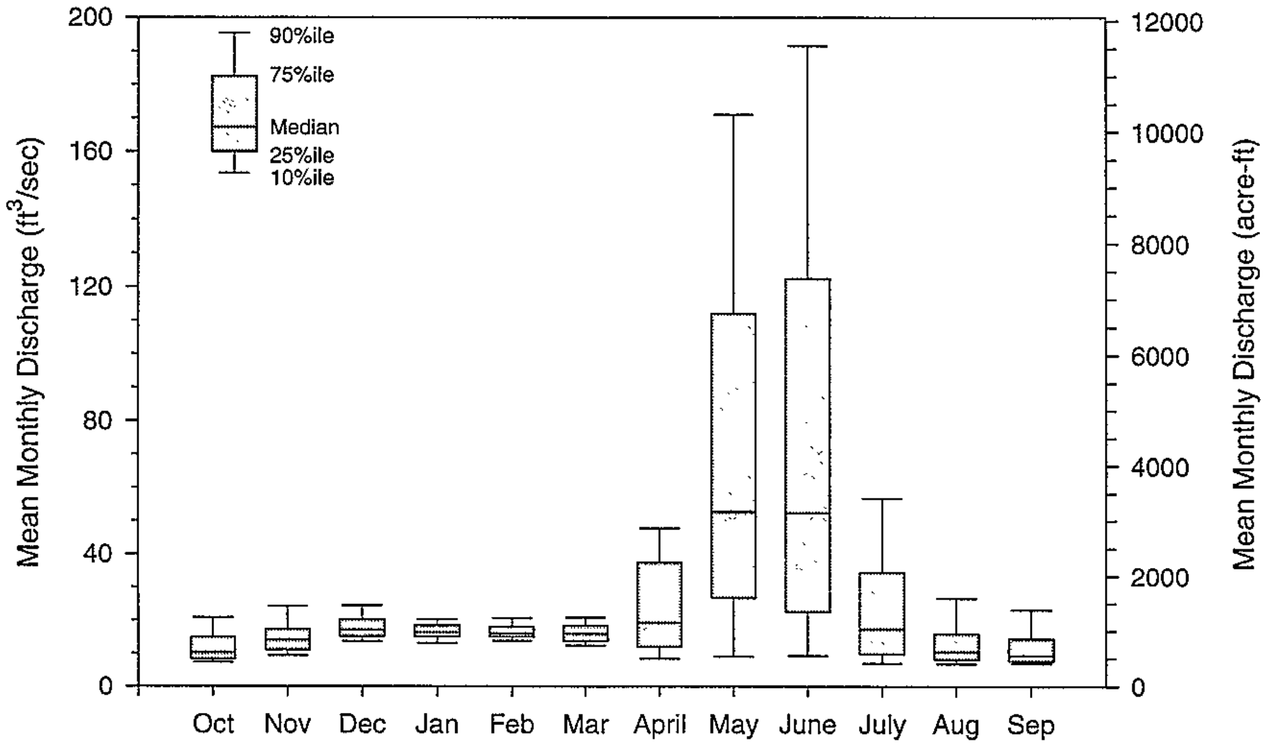


Figure B-84. Station 8268500 Arroyo Hondo at Arroyo Hondo
Monthly Discharge, 1913-1924, 1927-1928, 1933-1985



08268700 RIO GRANDE NEAR ARROYO HONDO, NM

LOCATION.--Lat 36 32'04", long 105 42'34", in NW1/4 sec.31, T.27 N., R.12 E., Taos County, Hydrologic Unit 13020101, on right bank 350 ft downstream from Arroyo Hondo, 400 ft downstream from bridge on county road, 2.2 mi west of Arroyo Hondo, 11.6 mi northwest of Taos, and at mile 1,677.4.

DRAINAGE AREA.--8,760 mi2, approximately, including 2,940 mi^2 in closed basin in San Luis Valley, CO.

PERIOD OF RECORD.--February 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,470 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Diversions upstream from station for irrigation of about 620,000 acres in Colorado and 15,000 acres in New Mexico. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 643 ft^3/s, 465,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,940 ft^3/s, June 14, 1985, gage height, 8.08 ft; minimum, 136 ft^3/s, Aug. 2, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 20	2215	4,310	6.02
June 1	1315	5,190	6.72
May 13	1315	6,350	7.62
June 14	0645	*6,940	8.08

Minimum discharge, 199 ft3/s, Sept. 10.

Table B-59. Mean daily streamflow (cfs), station 08268700 Rio Grande near Arroyo Hondo, 1964-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1964	165.7	224.6	209.8	271.3	291.9	369.4	248.7	266.9	214.2	170.5	194.3	168.0	168441
1965	167.1	298.2	229.9	331.3	377.9	475.8	518.2	1557	2665	1473	721.1	486.3	561762
1966	715.2	787.0	586.2	547.0	522.3	844.2	828.4	905.4	633.6	285.7	353.8	209.3	435837
1967	219.9	693.2	426.9	356.4	434.9	411.4	220.0	269.5	562.7	279.6	546.4	303.0	284343
1968	222.6	475.1	375.9	381.3	431.5	638.9	427.8	961.9	1653	557.2	941.1	279.7	443493
1969	232.9	486.2	385.5	459.1	485.8	551.0	637.1	1151	1443	635.8	489.2	424.9	445044
1970	905.5	1018	656.5	496.1	643.5	662.2	651.2	1160	702.4	380.3	243.8	768.7	499561
1971	573.4	876.7	564.0	511.4	656.6	850.3	482.4	248.6	291.2	290.9	244.2	251.5	351480
1972	552.2	565.6	455.5	439.7	510.4	693.0	305.4	221.6	262.8	188.4	232.6	276.6	283389
1973	311.9	608.3	441.4	412.3	438.6	696.3	652.8	2131	2842	1460	542.0	449.5	663865
1974	558.2	491.6	437.9	418.8	419.2	708.9	437.4	341.8	270.2	176.0	182.7	158.1	277704
1975	191.6	240.7	304.5	313.4	384.3	539.3	602.4	1369	1974	1386	632.1	547.3	512734
1976	410.6	953.6	464.8	385.8	505.1	658.7	661.6	956.1	1105	465.7	310.3	185.5	425503
1977	232.8	266.3	262.9	259.5	327.9	444.8	273.9	203.1	167.6	186.5	167.6	164.1	178137
1978	154.6	220.1	221.5	294.1	349.8	369.5	237.3	621.1	755.1	559.0	273.0	189.4	256120
1979	360.7	389.7	286.5	315.1	348.0	647.5	1060	2635	4613	2487	899.5	268.0	865255
1980	210.5	267.9	341.5	432.9	504.3	536.6	880.9	2566	2735	892.0	339.8	203.3	598274
1981	184.1	262.4	435.5	379.9	409.8	422.0	223.6	251.2	261.7	253.0	261.5	254.0	216849
1982	364.8	553.1	322.7	363.3	438.4	552.3	547.0	1407	1773	976.4	733.1	988.2	544304
1983	691.5	639.7	456.3	471.0	609.7	746.1	801.3	1338	2951	1280	400.8	210.1	638732
1984	224.3	257.5	439.2	424.5	444.8	750.5	1186	2441	1657	574.3	366.0	289.6	547377
1985	340.8	648.5	531.7	526.6	527.5	847.0	2620	4381	5013	1016	476.1	295.2	1038869

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1986	447.0	838.4	699.2	639.9	736.8	867.6	1246	1787	4528	2383	370.3	419.6	901689
1987	803.1	1200	832.3	638.5	758.4	1077	2545	5542	3587	730.9	276.4	243.4	1101619
1988	234.9	530.7	494.5	446.8	541.4	787.1	681.8	357.8	389.6	301.4	230.7	268.4	316805
1989	265.1	500.2	482.2	464.0	522.7	1073	1396	696.9	487.4	239.2	229.0	215.0	395750
1990	265.9	255.1	314.0	353.6	391.8	506.8	329.3	816.0	537.3	385.2	349.7	253.7	287521
1991	413.7	533.6	387.3	447.6	502.8	657.0	1185	1566	1141	560.0	462.1	426.8	499782
1992	282.7	451.1	430.7	419.6	469.2	865.7	1496	839.5	863.1	355.8	371.5	290.6	429800
1993	268.9	362.3	417.0	474.9	551.5	870.3	967.1	2221	2165	654.9	390.5	684.9	605041
1994	327.5	466.1	526.0	515.8	546.1	741.8	801.5	1818	1634	342.9	227.8	250.4	494565

Table B-60. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08268700 Rio Grande near Arroyo Hondo, 1964-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	961	930	961	961	876	992	960	992	960	992	992	960	11537
Avg Day	364.5	527.8	432.9	425.5	486.3	667.8	797.2	1351	1565	690.2	394.7	331	672.3
Max Day	1530	1420	1130	723	1000	1760	5450	7290	6840	4240	1760	2040	7290
Min Day	148	156	150	231	258	252	178	169	154	141	138	150	138
# Months	31	31	31	31	31	32	32	32	32	32	32	32	31
SDev Month	200.3	255.6	140.6	94.36	112.1	187.5	586.8	1214	1401	602.8	204.6	190.2	323.8
Skew Month	1.27	0.86	0.75	0.39	0.66	0.32	1.84	1.83	1.10	1.72	1.27	1.97	1.04
Min Month	154.6	220.1	209.8	259.5	291.9	369.4	220.0	203.1	167.6	158	167.6	158.1	232.8
Max Month	905.5	1200	832.3	639.9	758.4	1077	2620	5542	5013	2487	941.1	988.2	1522
Exceedences													
1%	1268	1320	1016	677.0	830.0	1351	4114	6120	5970	3256	1350	1484	4426
5%	858.3	1160	703.8	627.0	739.0	1190	1900	4182	4740	2090	948.0	756.0	2030
10%	655.9	976.0	619.7	559.0	677.6	983.0	1500	3164	3990	1650	723.6	569.0	1300
20%	501.8	737.0	521.0	493.0	567.0	819.6	1140	2090	2570	1076	518.8	388.0	790.0
50%	271.0	480.0	424.0	423.0	465.0	628.0	602.0	925.0	1010	411.0	309.0	256.0	444.0
80%	208.0	261.0	308.2	330.2	389.0	478.4	302.0	277.4	309.0	233.0	223.0	195.0	260.0
90%	178.0	227.0	243.1	298.1	349.8	409.4	242.0	219.0	227.0	176.0	190.2	170.0	213.0
95%	157.0	200.0	214.0	270.0	317.8	351.6	211.0	198.6	186.0	166.0	167.6	160.0	184.0
99%	151.0	184.6	187.8	255.0	279.0	307.5	186.6	178.0	163.6	154.8	152.0	154.6	157.0

Figure B-85. Station 8268700 Rio Grande near Arroyo Hondo
Mean Annual Discharge 1964-1994

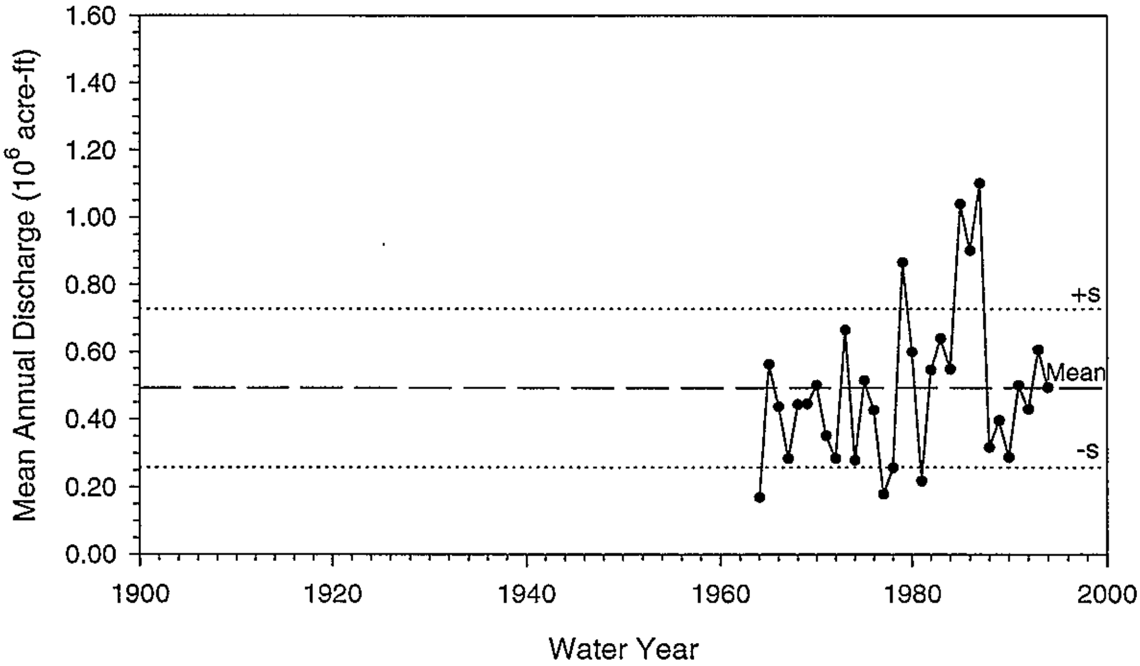


Figure B-86. Station 8268700 Rio Grande near Arroyo Hondo
Mean Monthly Discharge, 1964-1994

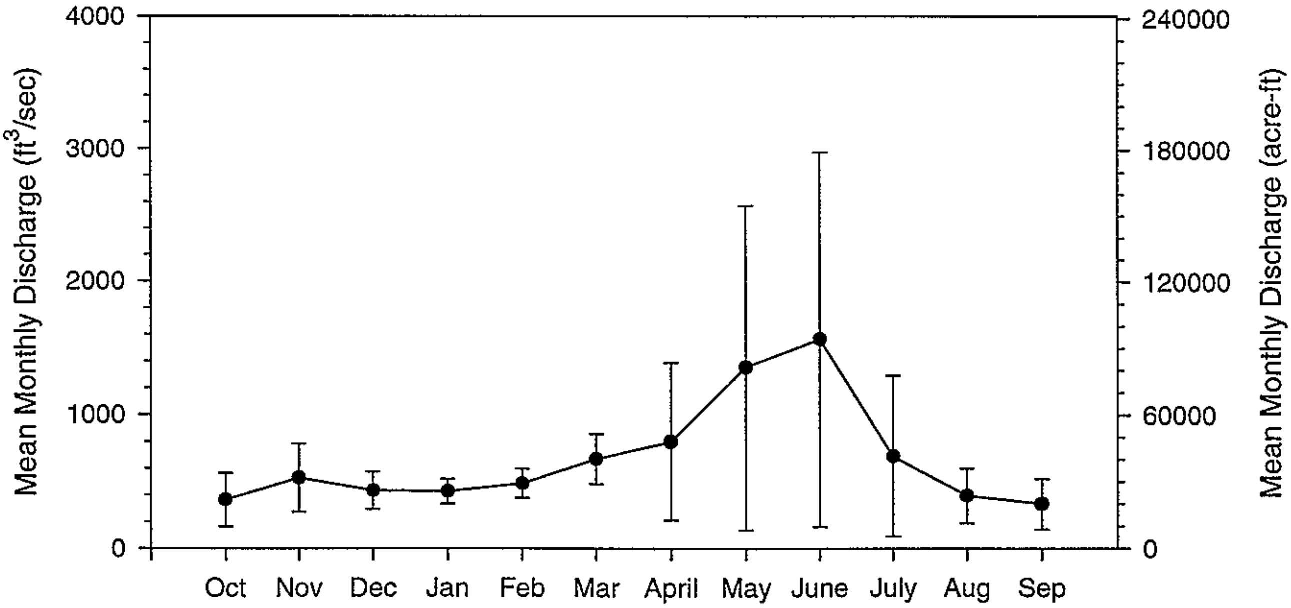
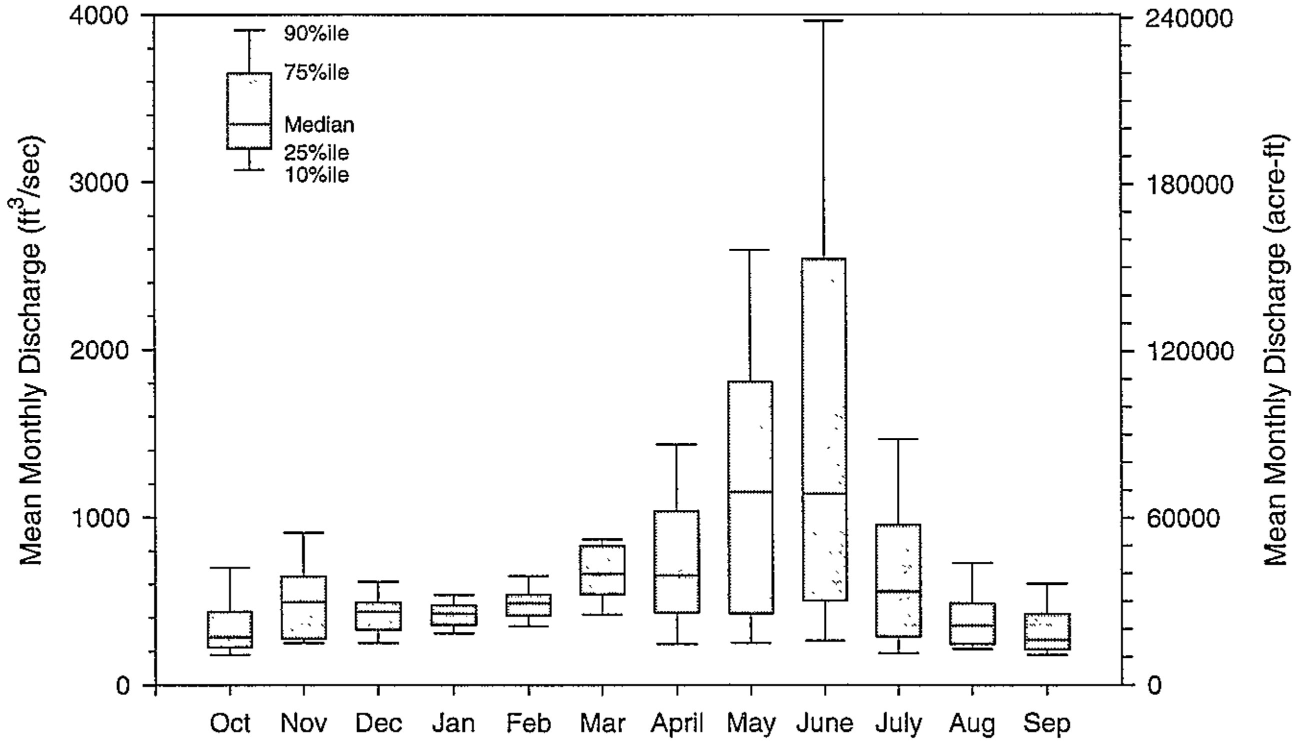


Figure B-87. Station 8268700 Rio Grande near Arroyo Hondo
Monthly Discharge, 1964-1994



08269000 RIO PUEBLO DE TAOS NEAR TAOS, NM

LOCATION.--Lat 36 26'22", long 105 30'11", in SW ¼ of SE ¼ of section 36, T.26 N., R.13 E., Taos County, Hydrologic Unit 13020101, in Taos Pueblo Grant, on right bank 2.3 mi east of Taos Pueblo, 4.5 mi northeast of Taos, 5.8 mi upstream from Rio Lucero, and at mile 15.1.

DRAINAGE AREA.--66.6 mi^2.

PERIOD OF RECORD.--January 1911 to December 1916, January 1940 to December 1951, annual maximum, water years 1952-62, October 1962 (monthly discharge only), November 1962 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 1312: 1911-12, 1914. WSP 1732: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Nov. 20, 1962. Elevation of gage to 7,380 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WSP 1923 for history of changes prior to Nov. 20, 1962.

REMARKS.--Estimated daily discharges: Nov. 21 to Dec. 13. Records good except for estimated daily discharges, which are fair. No diversions upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years (water years 1911-16, 1941-51, 1963-85), 29.8 ft^3/s, 21,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft^3/s, May 26, 1979, gage height, 3.42 ft, from rating curve extended above 370 ft^3/s; maximum gage height, 3.90 ft, from floodmark, May 14, 1941, site and datum then in use; minimum discharge, about 0.9 ft^3/s, Jan. 9, 1964, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Mar 11	2300	63	1.27
May 30	0300	207	1.91
Apr 18	2330	207	1.91
June 10	0230	189	1.84
May 4	2400	*453	*2.55
July 12	0145	63	1.28

Minimum daily discharge, 6.6 ft3/s, Feb. 11.

Table B-61. Mean daily streamflow (cfs), station 08269000 Rio Pueblo de Taos near Taos, 1915-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1915	9.43	8.88	7.83	7.34	8.08	13.72	68.43	142.0	137.4	30.42	17.55	12.22	27989
1941	8.43	7.75	7.75	7.03	8.11	14.50	40.60	356.3	192.5	65.87	25.90	14.27	45500
1942	19.10	17.50	11.95	9.02	8.02	11.27	155.3	319.8	169.1	39.55	22.16	20.27	48611
1943	13.81	10.27	11.12	8.84	10.57	13.22	80.00	73.45	32.40	14.53	13.45	7.95	17485
1944	7.29	7.20	6.74	5.82	7.01	9.29	29.50	169.4	110.5	26.97	12.17	7.31	24198
1945	9.29	9.99	7.72	7.58	8.15	12.92	49.17	267.6	145.9	33.77	16.13	11.43	35163
1946	9.51	8.86	7.70	7.13	7.15	10.00	30.93	24.39	11.16	6.68	9.65	15.83	8986
1947	9.10	9.04	8.04	6.57	8.19	15.07	37.13	122.2	43.77	13.16	10.09	6.32	17510
1948	5.64	5.69	5.90	5.46	6.36	8.15	48.80	103.3	67.10	17.32	13.00	6.94	17764
1949	7.37	6.78	5.67	5.86	6.25	10.11	56.98	118.0	81.63	31.55	19.35	10.56	21796
1950	9.08	8.08	6.63	6.98	8.08	11.84	48.80	43.71	32.37	19.06	9.33	7.09	12738
1951	5.16	5.44	4.08	3.60	4.54	5.78	21.02	53.06	24.93	7.78	7.83	4.57	8949
1964	4.91	5.45	4.05	3.39	3.64	5.58	20.73	51.32	19.43	8.48	12.94	6.69	8889
1965	4.84	5.29	5.42	5.55	6.30	8.06	56.80	128.8	96.73	31.77	17.23	13.93	23029

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1966	10.54	10.17	9.63	7.16	6.35	17.28	44.00	60.81	27.67	14.94	26.61	10.71	14896
1967	7.83	7.19	6.84	5.84	7.01	13.29	28.27	33.77	26.60	12.79	29.06	23.50	12208
1968	10.74	7.78	5.95	6.24	6.68	8.45	23.83	86.7	58.40	15.81	18.42	8.88	15617
1969	7.03	7.05	6.55	6.14	6.25	8.67	53.87	117.8	65.10	34.77	32.00	19.87	22122
1970	15.42	14.06	10.99	8.02	8.11	8.37	24.42	95.65	43.53	19.42	11.31	8.90	16262
1971	9.04	8.74	7.99	6.40	6.30	8.34	13.06	15.94	12.40	8.01	6.74	5.94	6579
1972	9.93	7.97	6.64	5.35	5.20	11.11	13.50	11.29	8.64	4.60	4.45	4.17	5610
1973	4.99	5.80	5.31	4.71	4.93	7.66	28.45	221.3	146.5	37.29	14.35	9.84	29791
1974	9.02	7.37	7.28	6.27	6.30	11.23	21.87	37.87	25.33	10.95	13.27	5.44	9817
1975	6.74	6.36	5.22	5.41	6.10	8.76	31.33	104.0	71.17	27.87	13.50	16.52	18344
1976	8.83	7.57	7.74	7.31	8.09	11.76	37.77	75.06	40.53	14.45	9.16	7.72	14277
1977	7.59	6.36	6.29	5.19	5.77	6.35	15.47	22.42	11.97	11.02	12.14	8.02	7174
1978	6.56	6.03	5.10	5.28	5.89	12.16	51.60	87.97	53.60	15.48	8.43	5.49	15941
1979	5.98	9.24	6.89	5.98	7.63	15.89	107.3	321.4	267.9	74.81	27.19	14.77	52348
1980	10.61	10.59	9.39	7.99	9.32	11.77	46.30	207.3	152.7	31.29	14.32	10.09	31585
1981	9.65	9.32	8.91	6.88	6.84	7.53	16.67	19.03	14.90	6.93	8.86	6.60	7374
1982	5.88	4.80	5.13	5.25	5.70	11.52	36.40	99.74	76.97	23.68	25.19	32.43	20124
1983	17.00	12.57	9.88	8.94	9.55	19.61	66.13	238.4	222.8	54.61	21.03	13.47	41990
1984	10.77	10.14	9.89	11.14	10.43	14.70	52.63	253.4	80.23	28.19	19.61	12.83	31231
1985	14.48	13.31	10.89	9.20	8.56	27.32	133.1	234.5	118.2	33.35	18.32	13.70	38437
1986	15.90	11.59	10.71	8.43	9.42	17.32	70.07	101.5	116.7	35.32	16.81	17.97	26061
1987	15.97	15.13	11.38	9.30	10.09	18.06	83.20	155.3	72.77	18.97	10.91	8.61	26004
1988	8.87	10.90	12.19	9.75	8.17	9.74	21.23	37.06	28.77	15.97	14.35	13.32	11506
1989	10.63	8.64	9.00	7.71	9.04	39.74	91.83	56.71	22.53	9.73	8.58	7.43	17000
1990	13.90	8.89	8.94	5.60	5.58	13.58	56.20	61.84	34.50	16.94	13.53	8.94	15027
1991	8.79	9.39	7.51	5.08	4.23	7.32	70.33	160.5	59.63	19.77	32.19	26.27	24918
1992	15.52	14.57	12.54	9.45	10.39	18.94	129.3	117.9	57.73	20.87	15.77	11.62	26238
1993	8.80	9.01	8.34	8.12	8.80	21.81	60.80	164.5	115.1	31.65	23.48	19.07	29025
1994	11.58	11.21	9.84	9.64	7.97	25.37	104.0	262.1	135.0	25.03	16.03	16.37	38415

Table B-62. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08269000 Rio Pueblo de Taos near Taos, 1915-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1364	1320	1395	1395	1299	1426	1380	1426	1380	1426	1426	1380	16617
Avg Day	9.8	9.0	7.9	6.9	7.4	13.2	51.9	121	74.1	22.9	15.6	11.7	29.6
Max Day	35	27	23	14	16	61	343	926	489	152	96	62	926
Min Day	3.0	2.8	2.0	2.0	2.7	2.4	5.5	10	5.2	3.1	3.0	3.1	2.0
# Months	44	44	45	45	46	46	46	46	46	46	46	46	43
SDev Month	3.53	2.85	2.23	1.74	1.87	6.27	32.89	90.79	61.01	15.02	6.95	6.01	16.43
Skew Month	0.82	0.99	0.33	0.25	0.51	2.08	1.37	0.97	1.26	1.55	0.79	1.41	0.81
Min Month	4.84	4.80	4.05	3.39	3.64	5.58	13.06	11.29	8.64	4.60	4.45	4.17	7.74
Max Month	19.10	17.50	12.54	11.14	13.00	39.74	155.3	356.3	267.9	74.81	32.19	32.43	72.31

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	23.00	20.00	15.00	12.00	13.00	50.74	240.4	514.0	315.0	94.48	46.00	41.00	279.0
5%	18.00	16.00	12.00	10.00	11.00	30.70	163.0	346.4	212.0	56.00	32.00	25.00	127.2
10%	15.00	14.00	11.00	9.40	10.00	23.40	108.0	276.0	174.0	43.00	27.00	20.00	72.00
20%	12.00	11.00	10.00	8.80	9.00	17.00	71.00	186.0	114.0	32.00	21.00	15.00	32.00
50%	9.00	8.40	7.90	6.70	7.00	10.00	35.00	87.00	52.00	18.00	14.00	9.60	11.00
80%	6.70	6.60	5.60	5.40	6.00	7.30	19.00	40.20	20.00	10.00	8.72	6.60	6.90
90%	5.30	5.40	5.00	4.55	5.00	6.40	13.00	26.00	13.00	7.70	7.10	5.50	5.80
95%	4.90	5.00	4.10	4.00	4.39	5.50	11.00	17.00	10.00	6.00	6.30	4.80	5.00
99%	4.10	4.06	3.50	3.00	3.00	3.93	7.48	11.00	6.90	3.80	3.83	3.78	3.60

Figure B-88. Station 8269000 Rio Pueblo de Taos near Taos
Mean Annual Discharge 1915, 1941-1951,1964-1994

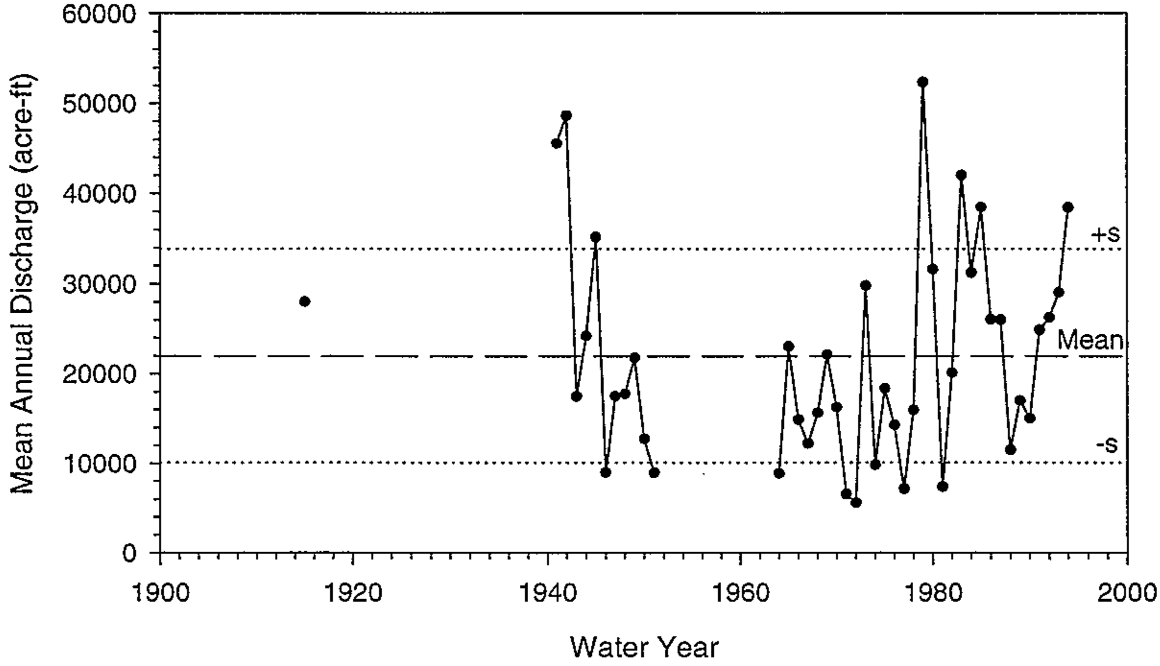


Figure B-89. Station 8269000 Rio Pueblo de Taos near Taos
Mean Monthly Discharge 1915, 1941-1951,1964-1994

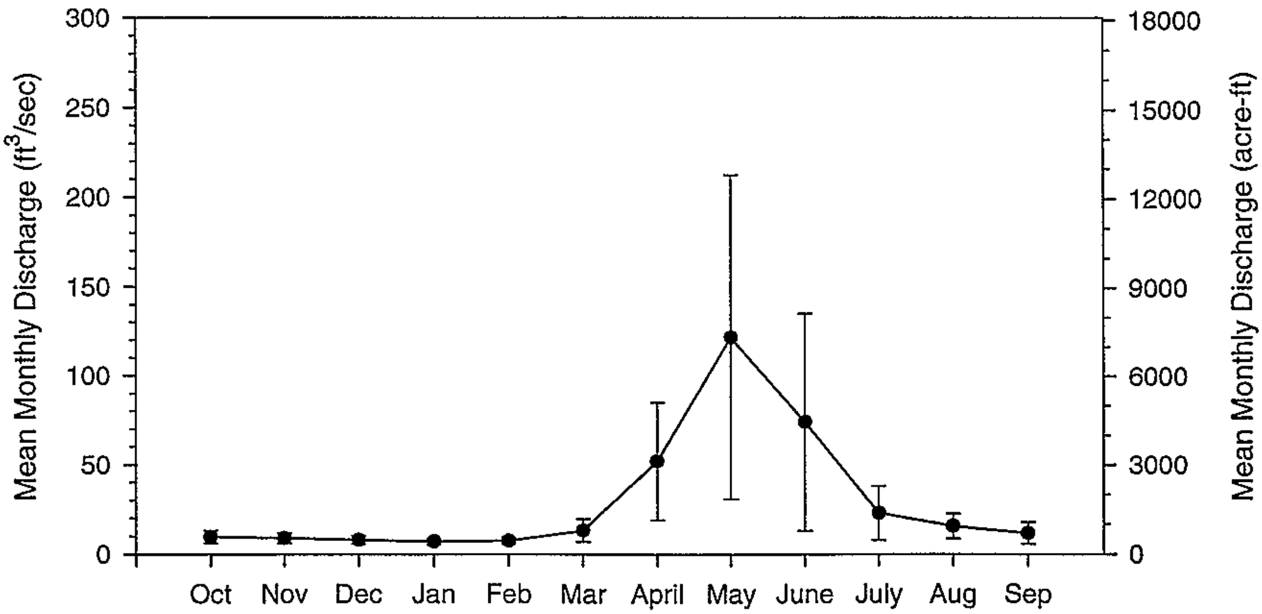
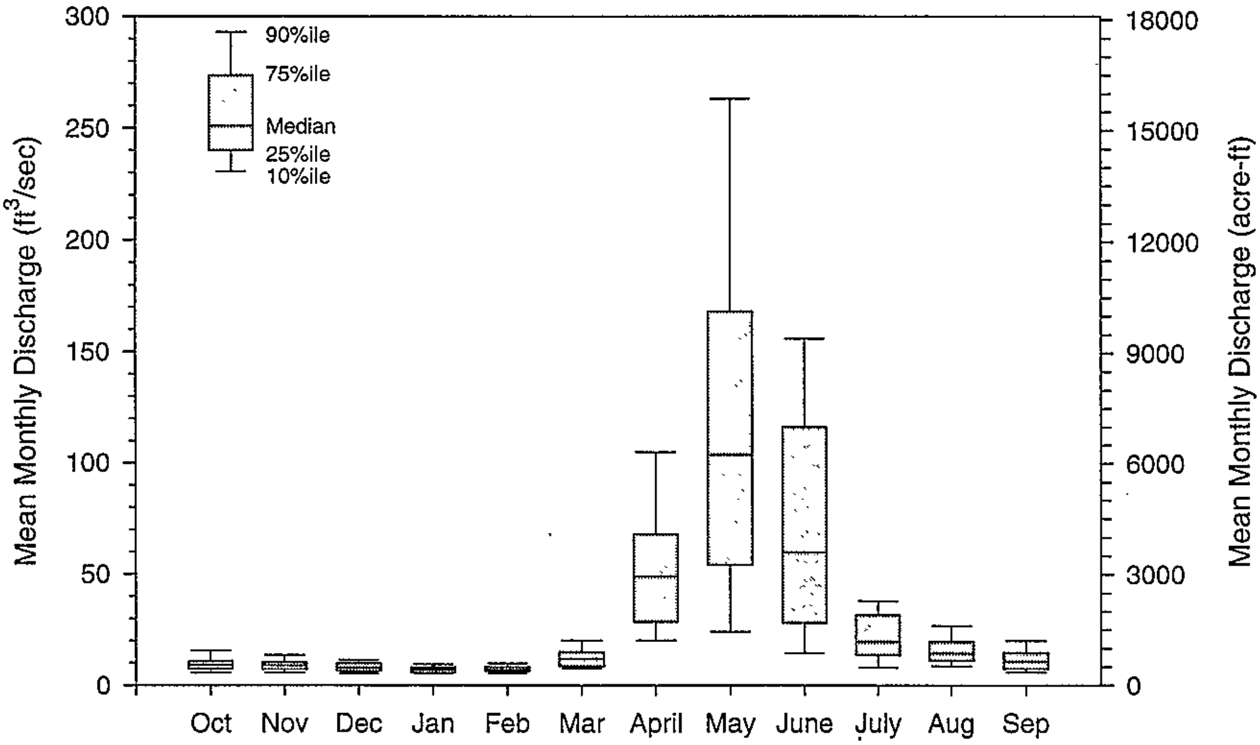


Figure B-90. Station 8269000 Rio Pueblo de Taos near Taos
Monthly Discharge 1915, 1941-1951,1964-1994



08271000 RIO LUCERO NEAR ARROYO SECO, NM

LOCATION.--Lat 36 30'30", long 105 31'49", in NE ¼ of section 10, T.26 N., R.13 E. (projected), Taos County, Hydrologic Unit 13020101, in Tract C Taos Pueblo Grant, on right bank 200 ft upstream from diversion dam for Tenorio and Indian ditches, 2.2 mi east of Arroyo Seco, 7.4 mi northeast of Taos, and at mile 8.1.

DRAINAGE AREA.--16.6 mi^2.

PERIOD OF RECORD.--April to December 1910 (discharge measurements and occasional gage heights), January 1911 to September 1915, March to December 1916 (fragmentary), October 1933 to December 1951, annual maximum, water years 1952-62, October 1962 (monthly discharge only), November 1962 to current year. Monthly discharge only for some periods, published in WSP 1312. Fragmentary records for October 1915 to February 1916, published in WSP 438, are unreliable and should not be used. Published as "near Taos," 1910-16.

REVISED RECORDS.--WSP 1512: 1912, 1916, 1949. WSP 1732: Drainage area. WDR NM-75-1: 1973. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Concrete control since Nov. 21, 1962. Datum of gage is 8,051.44 ft above National Geodetic Vertical Datum of 1929. See WSP 1923 for history of changes prior to Nov. 21, 1962.

REMARKS.--No estimated daily discharges. Records good. No diversion upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years (water years 1911-15, 1934-51, 1963-85), 22.0 ft^3/s, 15,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 310 ft^3/s, June 8, 1979, gage height, 2.33 ft; maximum gage height, 3.12 ft, May 13, 1941, datum then in use; minimum discharge, about 1.4 ft^3/s, Nov. 2, 1951, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7O ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
May 10	2315	149	1.95
June 9	2130	*180	*2.09
June 25	0100	123	1.92

Minimum discharge, 4.5 ft3/s, Feb. 2.

Table B-63. Mean daily streamflow (cfs), station 08271000 Rio Lucero near Arroyo Seco, 1914-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1914	19.06	13.60	11.48	7.85	6.03	12.48	27.97	77.29	91.40	32.74	25.77	15.10	20623
1915	15.68	10.57	7.82	5.83	5.45	8.99	34.40	50.19	115.7	51.68	26.16	11.30	20764
1935	10.48	7.24	6.68	6.81	8.89	10.53	19.87	42.35	104.5	34.65	19.90	15.33	17317
1936	11.94	8.59	6.99	6.00	5.32	9.64	34.82	69.45	34.43	15.10	17.26	13.80	14134
1937	12.90	13.17	8.35	7.18	6.71	9.75	47.47	124.2	123.9	46.48	16.10	12.44	25926
1938	11.52	8.91	7.22	6.03	5.69	7.25	34.16	77.58	106.0	34.39	15.94	20.87	20262
1939	17.16	12.13	8.46	6.94	6.13	15.90	32.87	59.00	31.90	11.99	8.72	8.79	13320
1940	7.97	6.29	5.10	4.94	4.98	10.22	20.37	68.42	49.17	17.61	15.48	13.43	13565
1941	13.38	8.50	8.78	8.75	9.01	10.74	16.20	156.5	178.1	96.61	34.19	17.03	33807
1942	27.84	22.00	13.84	10.04	8.20	8.20	41.47	122.5	172.2	42.13	15.94	14.47	30127
1943	10.19	7.07	5.89	5.68	5.81	8.50	32.03	54.74	34.53	17.42	15.39	10.90	12596
1944	8.88	9.15	6.79	5.87	5.51	7.20	14.86	81.71	107.2	37.97	14.55	7.87	18602
1945	9.15	8.66	7.53	6.87	7.44	10.28	25.63	121.3	111.0	40.84	17.68	10.16	22800
1946	7.53	5.64	4.48	4.76	4.94	5.95	21.30	25.13	15.57	9.99	11.75	15.47	8003

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1947	13.48	10.60	8.20	5.65	7.40	10.79	19.23	71.03	53.63	16.90	13.35	9.86	14535
1948	7.76	5.64	5.30	4.39	3.95	5.81	24.61	62.35	75.53	21.94	14.71	8.86	14558
1949	7.26	6.19	5.55	4.83	4.06	6.57	26.73	61.94	85.90	32.74	19.23	12.83	16552
1950	10.70	8.62	7.10	7.16	6.23	10.64	24.07	32.39	32.90	19.81	10.89	9.09	10858
1951	7.32	6.43	4.26	3.51	3.89	4.78	15.77	51.84	35.33	11.80	8.02	7.68	9724
1964	7.84	6.78	5.16	3.95	3.47	4.24	12.01	36.87	25.93	12.74	20.06	11.29	9112
1965	7.72	6.74	5.51	5.66	6.01	6.23	22.90	59.13	101.3	51.23	29.42	18.70	19377
1966	14.45	10.60	9.03	7.20	6.53	11.26	22.47	46.35	36.93	19.97	24.94	13.53	13523
1967	10.04	7.58	6.03	4.89	5.04	7.34	14.63	27.00	28.53	21.74	37.52	24.37	11793
1968	13.41	9.46	7.17	6.38	6.13	7.10	11.68	34.23	55.47	20.97	30.74	15.23	13184
1969	9.91	7.16	5.93	5.30	4.84	6.91	27.57	67.65	66.23	36.26	34.13	20.00	17679
1970	15.16	11.46	8.11	6.80	6.05	6.19	11.71	48.42	43.27	23.77	14.42	12.40	12582
1971	9.94	9.19	6.47	5.20	5.01	6.45	11.41	15.90	19.33	11.01	11.71	11.11	7415
1972	16.58	11.73	7.78	6.10	5.52	10.61	10.73	14.52	14.05	7.86	6.55	6.74	7184
1973	7.11	7.05	5.30	5.25	5.20	6.95	15.27	75.97	145.6	64.68	17.48	10.46	22139
1974	8.02	6.08	5.46	4.82	4.35	6.56	9.57	27.45	29.13	13.03	14.65	8.67	8340
1975	7.10	6.23	5.89	5.23	5.05	5.73	14.87	48.87	76.17	37.35	16.87	20.70	15111
1976	10.94	8.23	6.59	5.33	5.57	8.29	17.47	39.23	45.67	16.10	10.65	8.22	11017
1977	7.66	5.37	5.64	4.76	4.25	4.11	8.77	18.94	17.30	14.48	15.74	13.70	7308
1978	9.87	7.76	6.69	5.75	4.93	7.98	26.80	48.65	62.60	21.71	11.51	7.45	13395
1979	6.29	7.36	6.01	4.79	5.33	8.27	27.54	92.45	157.0	84.29	24.74	12.93	26432
1980	9.00	6.61	6.36	5.51	5.16	6.54	17.75	51.58	115.8	33.10	14.71	10.19	17030
1981	7.91	6.86	5.64	4.23	4.52	4.55	11.99	23.94	29.13	12.10	13.05	8.97	8031
1982	8.02	6.06	5.15	4.59	4.71	6.42	13.85	45.65	70.90	32.84	29.84	34.47	15864
1983	18.06	12.70	10.24	7.11	8.24	11.95	20.23	71.42	131.7	65.13	25.35	13.37	23916
1984	10.09	8.40	6.95	6.99	6.80	9.06	18.83	98.77	77.00	26.16	20.10	11.87	18238
1985	11.71	10.09	7.83	6.56	6.27	10.63	32.97	91.48	118.2	36.10	19.42	12.30	21973
1986	15.61	10.88	7.76	7.14	7.70	13.41	26.63	51.26	83.73	43.68	17.68	19.23	18411
1987	16.32	13.13	9.71	7.91	7.29	11.06	25.30	55.65	71.53	25.10	13.58	9.99	16109
1988	8.87	8.81	8.05	6.09	5.54	8.26	13.58	35.77	45.63	24.00	17.71	23.40	12434
1989	16.52	11.09	8.98	7.48	7.26	21.25	31.53	44.77	28.30	14.16	12.16	10.44	12950
1990	18.61	10.14	7.86	5.92	4.64	9.97	24.93	47.90	54.00	24.26	21.00	15.57	14817
1991	12.77	14.16	14.77	6.74	9.92	10.15	31.03	71.84	58.60	24.13	21.23	21.77	17960
1992	15.71	9.97	8.28	7.50	8.43	12.74	37.17	69.35	74.63	32.29	20.00	14.33	18766
1993	10.09	8.45	6.14	6.14	6.54	12.13	26.23	76.39	100.6	48.45	34.35	30.33	22127
1994	13.81	10.15	8.55	6.66	7.09	17.65	35.80	96.19	125.8	31.77	14.74	16.30	23227

Table B-64. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08271000 Rio Lucero near Arroyo Seco, 1914-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1550	1500	1581	1612	1468	1612	1560	1612	1560	1612	1612	1560	18839
Avg Day	11.7	9.1	7.3	6.1	6.0	9.1	22.9	60.1	71.7	29.9	18.5	14.0	22.3
Max Day	38	29	47	11	15	37	101	242	246	156	83	66	246
Min Day	5.3	3.5	3	2	2.5	3	4	12	9.7	6.3	5.5	6	2
# Months	50	50	51	52	52	52	52	52	52	52	52	52	50
SDev Month	4.24	2.97	2.08	1.25	1.44	3.34	8.93	29.47	43.11	18.49	7.30	5.68	8.27
Skew Month	1.33	1.82	1.63	0.56	0.65	1.27	0.48	1.04	0.66	1.60	0.91	1.57	0.65
Min Month	6.29	5.37	4.26	3.51	3.47	4.11	8.77	14.52	14.05	7.86	6.55	6.74	9.91
Max Month	27.84	22.00	14.77	10.04	9.92	21.25	47.47	156.5	178.1	96.61	37.52	34.47	46.69

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	30.00	22.00	17.00	10.00	11.00	26.88	72.80	204.9	209.2	117.8	53.88	39.00	149.0
5%	20.00	14.00	11.00	8.50	8.90	18.00	52.00	140.4	164.0	73.40	35.40	26.00	82.00
10%	17.00	13.00	9.70	7.70	8.00	14.00	42.00	116.0	139.0	56.00	29.00	21.00	54.00
20%	15.00	11.00	8.60	7.10	7.20	12.00	33.00	82.00	112.0	41.00	23.00	18.00	29.00
50%	11.00	8.40	7.00	6.00	5.80	7.60	19.00	51.00	63.00	23.00	16.00	12.00	11.00
80%	7.90	6.60	5.50	4.90	4.80	5.80	11.00	28.00	30.00	14.00	12.00	9.10	6.50
90%	7.20	6.00	5.00	4.50	4.30	5.00	8.80	20.00	20.00	11.00	10.00	8.10	5.50
95%	6.80	5.60	4.70	4.00	4.00	4.46	7.20	16.00	16.00	9.90	8.50	7.30	4.90
99%	5.90	4.80	4.00	3.00	3.00	3.71	5.30	13.00	11.60	7.61	6.40	6.40	4.00

Figure B-91. Station 8271000 Rio Lucero near Arroyo Seco
Mean Annual Discharge 1914-1915, 1935-1951, 1964-1994

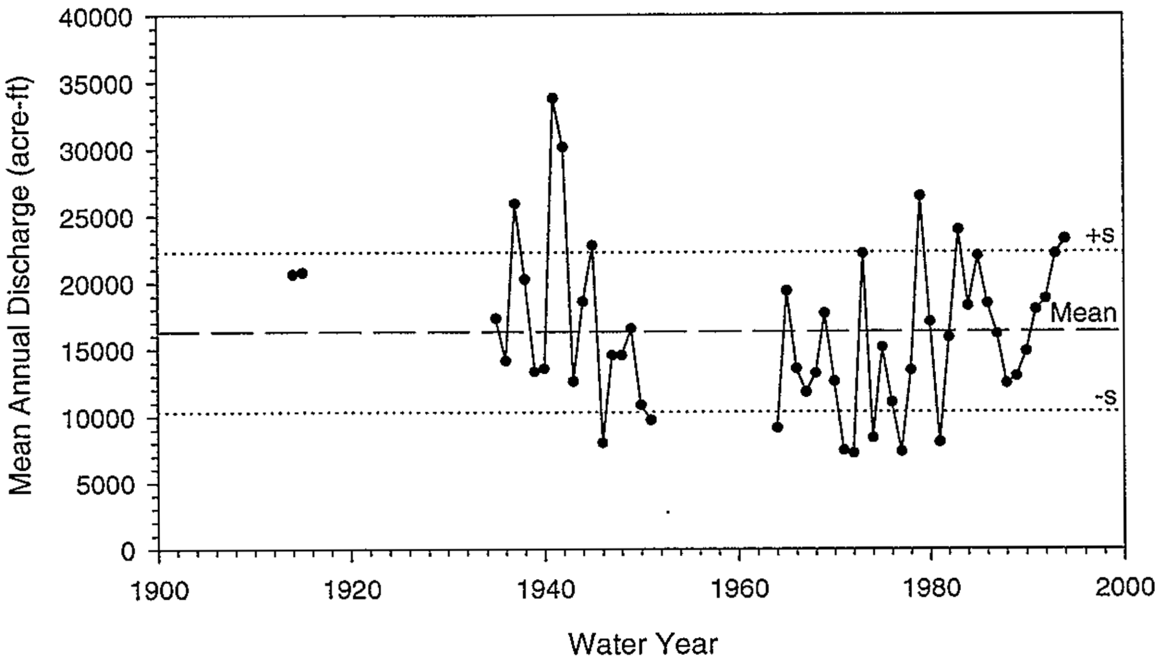


Figure B-92. Station 8271000 Rio Lucero near Arroyo Seco
Mean Monthly Discharge 1914-1915, 1935-1951, 1964-1994

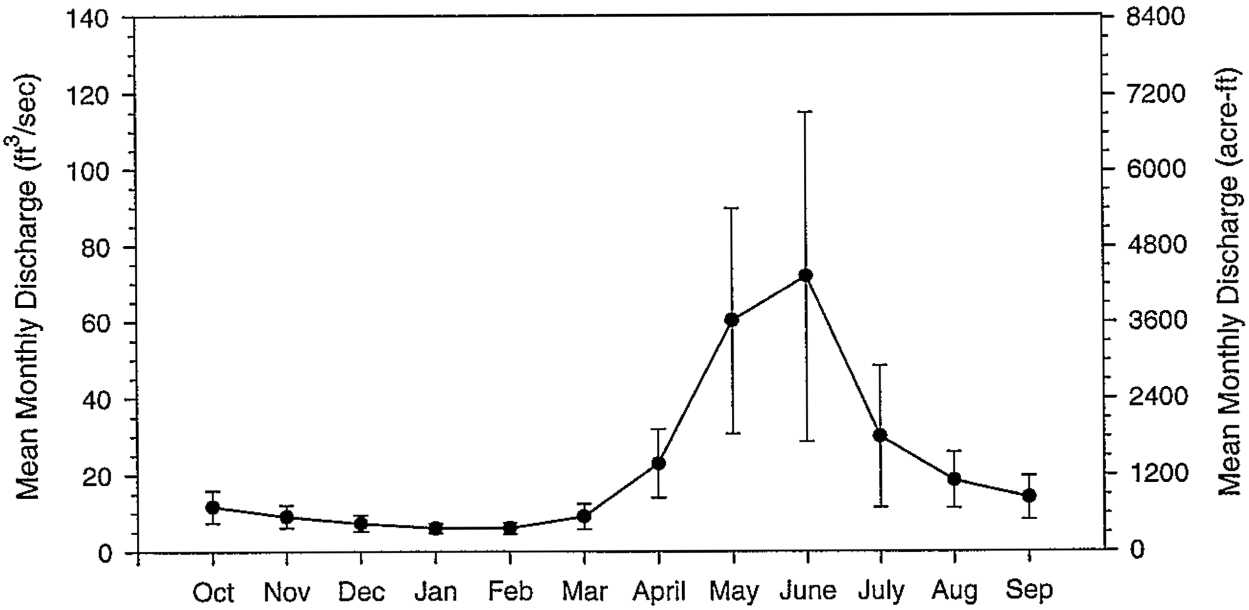
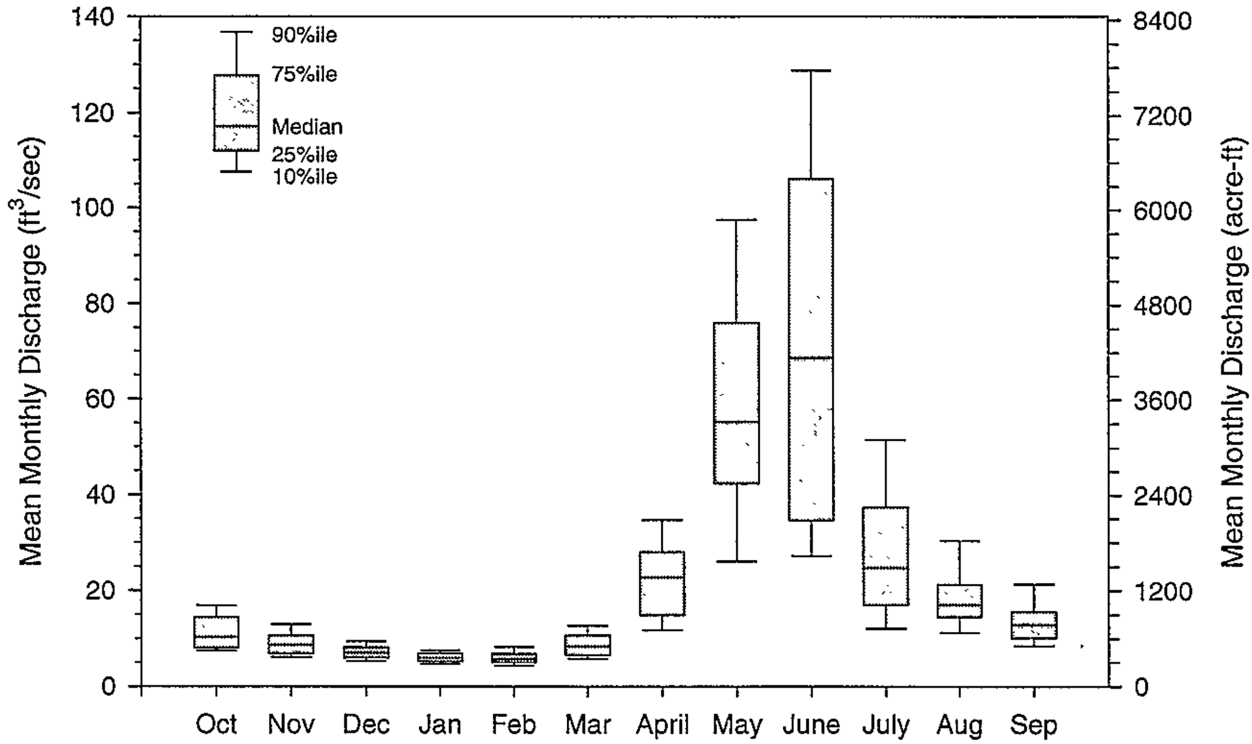


Figure B-93. Station 8271000 Rio Lucero near Arroyo Seco
Monthly Discharge 1914-1915, 1935-1951, 1964-1994



08275000 RIO FERNANDO DE TAOS NEAR TAOS, NM

No Remarks Available for this Station.

Station Name RIO FERNANDO DE TAOS NEAR TAOS, NM
Station ID 08275000
State NEW MEXICO
County TAOS
Latitude 36:22:32
Longitude 105:32:55
Elevation 7140.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1963	1980	18	6500	0	5.61	192.00	0.02		
STREAM STAGE FEET	Mean	1974	1980	7	2339	0	-0.33	2.32	-99.23		

Table B-65. Mean daily streamflow (cfs), station 08275000 Rio Fernando de Taos near Taos, 1964-1980.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1964	0.31	0.57	0.36	0.16	0.20	0.89	10.96	12.89	2.72	0.58	2.29	0.75	1979
1965	0.54	0.67	0.64	1.89	1.82	2.37	21.26	28.00	11.87	4.86	5.04	2.59	4931
1966	2.15	2.23	2.19	1.49	1.01	7.89	12.19	7.97	2.43	1.58	2.76	1.28	2735
1967	0.98	1.28	1.08	0.10	0.30	5.30	5.54	2.96	1.94	0.77	2.77	2.18	1525
1968	1.16	1.01	0.68	0.79	1.57	2.68	8.20	17.12	3.79	0.93	1.11	0.71	2407
1969	0.85	0.90	0.30	0.22	0.97	2.33	14.52	28.87	6.07	3.05	1.64	1.36	3704
1970	1.70	2.05	1.79	1.48	2.09	2.56	9.12	17.38	4.19	1.79	1.22	0.76	2792
1971	1.03	1.29	1.18	0.97	1.37	2.23	2.79	2.25	0.85	0.43	0.74	0.17	922
1972	0.92	1.14	1.09	1.07	2.21	3.32	2.90	1.98	0.62	0.11	0.11	0.06	931
1973	0.12	0.09	0.03	0.05	1.05	2.62	16.72	114.7	22.32	6.42	2.45	1.96	10274
1974	2.33	2.35	2.32	2.64	2.59	4.79	6.59	5.23	1.82	0.41	1.57	0.32	1990
1975	0.91	1.40	0.99	0.87	1.61	3.29	17.29	33.68	8.44	3.70	1.96	2.67	4653
1976	1.87	1.85	2.65	2.73	3.03	5.19	15.09	20.38	5.18	1.85	1.20	0.76	3735
1977	1.26	1.35	1.16	0.78	1.86	2.80	4.79	4.35	1.08	0.80	0.41	0.33	1263
1978	0.37	0.83	0.99	0.97	1.18	4.53	10.62	14.57	3.99	0.56	0.25	0.03	2354
1979	0.09	0.50	1.31	1.75	2.27	5.08	46.42	90.16	59.57	14.55	8.12	4.18	14155
1980	3.65	4.24	3.78	3.75	4.16	5.10	19.74	88.45	19.95	5.52	4.01	2.47	10018

Table B-66. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08275000 Rio Fernando de Taos near Taos, 1964-1980.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	544	510	527	558	509	558	540	558	540	558	558	540	6500
Avg Day	1.2	1.4	1.3	1.3	1.8	3.9	13.1	27.5	8.8	2.7	2.1	1.3	5.6
Max Day	6	5.4	4.3	4.4	5.4	26	103	192	135	23	13	8.2	192
Min Day	0.04	0.04	0.03	0.02	0.04	0.20	2.20	1.20	0.17	0.03	0.04	0.02	0.02
# Months	17	17	17	18	18	18	18	18	18	18	18	18	17
SDev Month	0.92	0.96	0.96	1.00	0.99	1.93	9.97	34.10	14.15	3.54	2.01	1.16	5.22
Skew Month	1.23	1.62	1.13	0.99	0.55	0.77	2.28	1.73	3.07	2.48	1.79	1.02	1.70
Min Month	0.09	0.09	0.03	0.05	0.20	0.89	2.79	1.98	0.62	0.11	0.11	0.03	1.27
Max Month	3.65	4.24	3.78	3.75	4.16	7.92	46.42	114.7	59.57	14.55	8.12	4.18	19.55

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	4.47	4.99	4.10	4.14	4.80	21.42	93.60	164.4	91.40	20.42	9.70	5.46	85.00
5%	3.10	4.1C	3.57	3.32	4.10	9.80	38.00	114.4	37.00	9.73	7.30	4.10	22.00
10%	2.56	2.50	2.80	2.80	3.40	7.12	26.00	81.20	22.00	6.80	5.20	3.00	12.00
20%	2.00	2.00	2.10	2.20	2.60	5.04	16.00	40.40	10.00	4.30	3.30	2.10	5.00
50%	1.10	1.20	1.10	1.10	1.60	3.00	9.50	14.00	3.20	1.20	1.30	0.80	1.80
80%	0.40	0.60	0.57	0.26	0.98	2.20	4.50	3.60	1.10	0.35	0.40	0.20	0.60
90%	0.13	0.50	0.28	0.10	0.30	1.70	3.00	2.48	0.64	0.20	0.10	0.07	0.27
95%	0.10	0.12	0.04	0.04	0.11	1.40	2.70	2.00	0.53	0.10	0.08	0.03	0.10
99%	0.05	0.07	0.03	0.04	0.05	0.20	2.50	1.46	0.29	0.08	0.05	0.03	0.04

Figure B-94. Station 8275000 Rio Fernando de Taos near Taos
Mean Annual Discharge 1964-1980

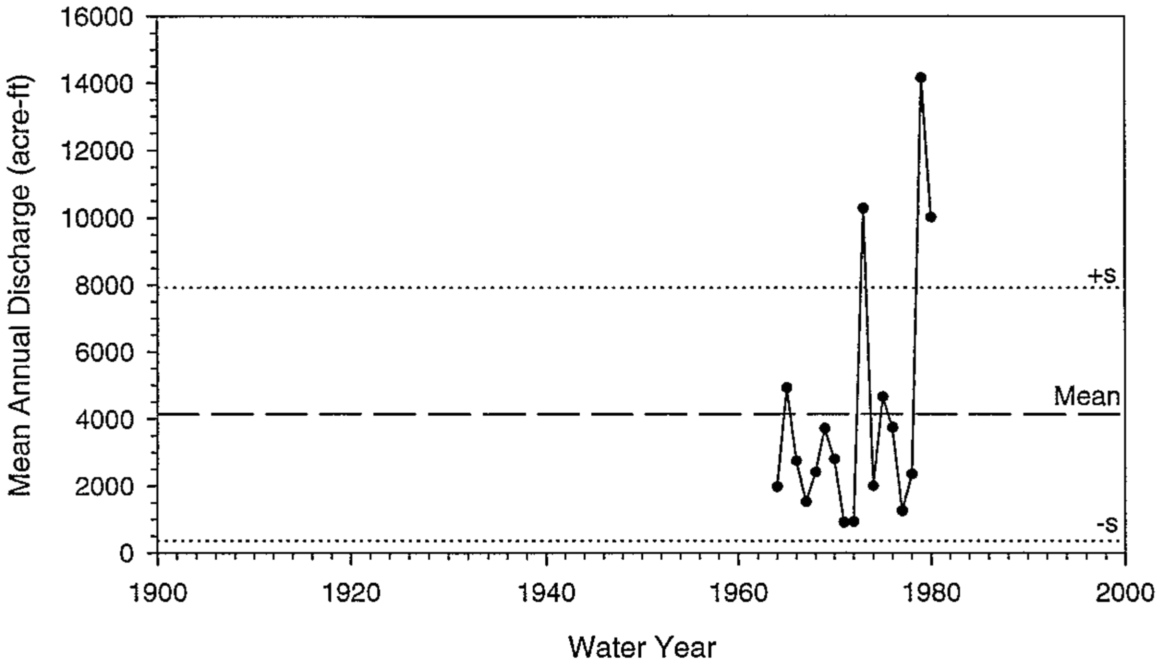


Figure B-95. Station 8275000 Rio Fernando de Taos near Taos
Mean Monthly Discharge 1964-1980

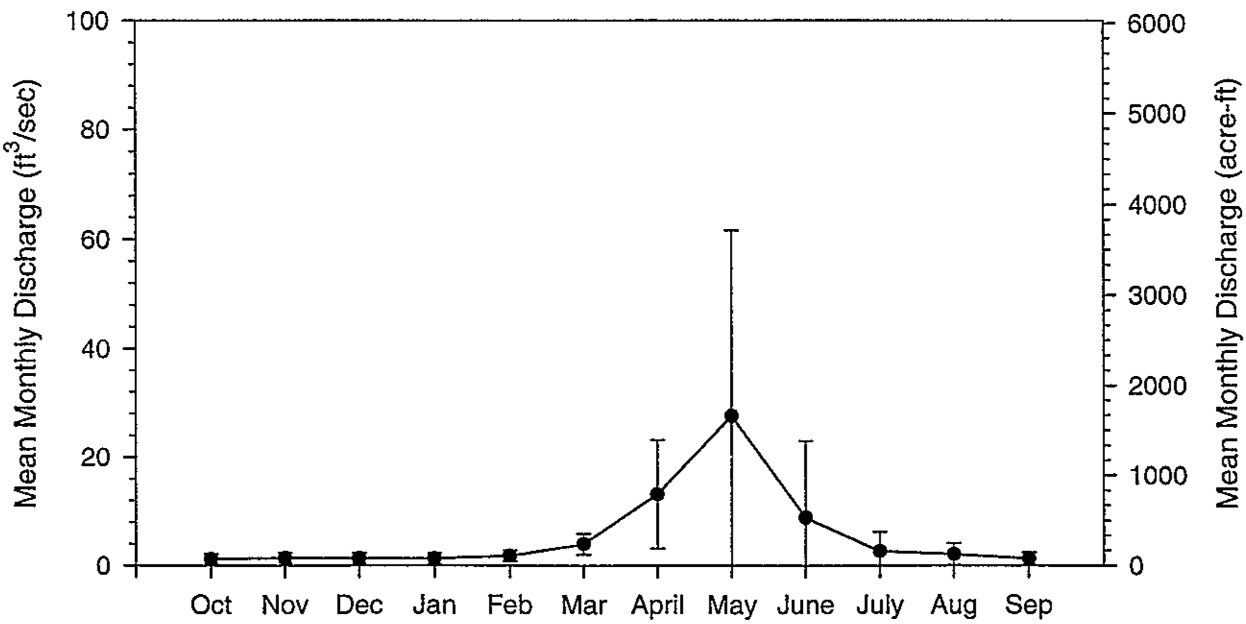
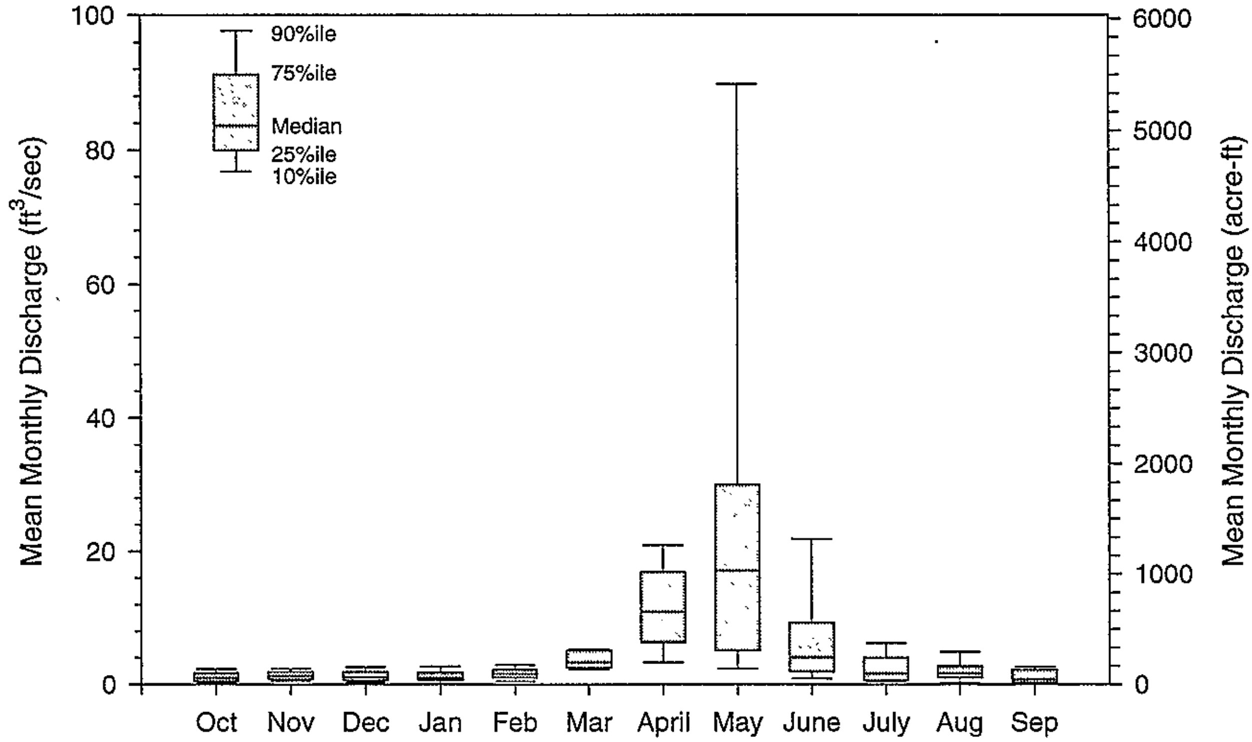


Figure B-96. Station 8275000 Rio Fernando de Taos near Taos
Monthly Discharge 1964-1980



08275300 RIO PUEBLO DE TAOS NEAR RANCHITO, NM

No Remarks Available for this Station.

Station Name	RIO PUEBLO DE TAOS NEAR RANCHITO, NM
Station ID	08275300
State	NEW MEXICO
County	TAOS
Latitude	36:23:38
Longitude	105:37:23
Elevation	6747.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1957	1980	24	8630	0	31.92	1090.00	0.34		
STREAM STAGE FEET	Mean	1974	1980	7	2450	0	1.82	4.63	-5.31		

Table B-67. Mean daily streamflow (cfs), station 08275300 Rio Pueblo de Taos near Ranchito, 1958-1980.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1958	45.06	51.70	35.29	25.71	27.25	29.84	141.1	371.2	133.3	9.71	9.85	15.60	54229
1959	19.71	23.53	24.58	22.77	21.32	18.65	14.82	15.41	5.03	4.18	6.86	3.92	10895
1960	10.09	13.67	16.81	13.26	13.41	36.81	60.37	47.26	32.28	7.92	4.24	4.28	15712
1961	10.08	17.50	20.52	14.26	17.68	18.06	60.83	99.29	38.93	15.23	16.12	20.00	21051
1962	21.35	20.07	19.45	20.26	32.75	29.00	150.4	86.55	17.76	7.14	3.70	4.91	24837
1963	13.71	17.30	18.10	15.74	23.75	27.52	41.37	6.35	2.76	1.50	1.65	2.80	10341
1964	4.14	8.78	10.43	8.34	12.45	14.29	21.30	23.14	5.72	2.19	3.00	2.98	7028
1965	3.96	8.23	15.42	19.71	16.04	16.29	56.70	113.5	117.6	29.29	22.26	22.93	26670
1966	24.00	25.87	29.55	22.77	23.54	38.58	54.47	43.29	19.50	7.90	31.72	9.37	19969
1967	12.66	20.63	19.31	15.23	17.46	25.52	22.67	6.29	8.28	5.00	32.81	30.37	13029
1968	20.26	21.33	18.45	21.90	24.69	22.48	24.30	67.71	30.12	6.54	21.94	16.03	17856
1969	13.10	20.60	16.94	19.97	21.54	25.32	80.63	134.4	63.00	23.92	31.23	29.57	29015
1970	34.35	30.20	23.71	19.00	21.25	20.29	36.60	67.32	23.93	10.49	8.89	10.93	18546
1971	18.74	20.70	16.65	16.58	17.18	16.55	12.60	4.53	2.58	2.29	3.80	3.00	8134
1972	9.27	17.83	17.81	15.65	17.41	16.81	4.67	2.79	2.74	1.72	1.72	2.32	6651
1973	5.96	10.55	10.23	9.50	13.25	21.84	41.43	316.5	190.6	54.23	9.77	7.74	41949
1974	14.10	15.10	15.19	17.87	19.39	23.94	19.79	15.81	12.30	3.36	6.89	4.20	10109
1975	7.73	12.87	12.68	15.18	16.71	18.77	37.10	101.2	63.07	20.04	6.93	15.64	19808
1976	11.61	14.03	16.90	17.39	20.93	20.29	36.13	57.19	24.31	5.31	4.52	4.59	14057
1977	8.16	14.50	12.74	11.39	18.54	15.61	18.90	8.00	2.55	2.85	3.80	6.01	7372
1978	6.47	10.98	13.10	15.29	15.36	22.03	43.80	79.61	39.20	8.45	4.49	2.20	15765
1979	5.79	14.78	16.13	17.19	24.36	33.65	134.3	453.6	461.1	109.2	17.75	10.83	78476
1980	13.35	22.23	21.35	22.32	21.76	23.35	61.63	245.6	170.8	25.31	12.73	9.54	39311

Table B-68. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08275300 Rio Pueblo de Taos near Ranchito, 1958-1980.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	728	690	713	713	650	744	720	744	720	744	744	720	8630
Avg Day	14.4	18.8	18.3	17.3	19.9	23.1	51.3	105.2	69.5	16.8	13.8	11.7	31.9
Max Day	160	70	46	43	69	73	360	1090	1040	248	164	120	1090
Min Day	2.5	4.2	7.5	5	9	10	2	1.3	0.8	0.7	0.3	0.9	0.3
# Months	23	23	23	23	23	24	24	24	24	24	24	24	23

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
SDev Month	9.87	9.03	5.83	4.38	4.84	6.63	39.76	122.7	104.1	23.77	14.63	10.51	23.80
Skew Month	1.70	2.27	1.29	-0.17	0.70	0.93	1.47	1.69	2.64	2.92	2.12	1.42	1.99
Min Month	3.96	8.23	10.23	8.34	12.45	14.29	4.67	2.79	2.55	1.50	1.65	2.20	9.21
Max Month	45.06	51.70	35.29	25.71	32.75	38.58	150.4	453.6	461.1	109.2	64.84	41.53	108.4
Exceedences													
1%	60.16	61.10	39.00	29.87	43.00	56.00	328.0	737.6	533.2	164.3	79.36	66.80	340.0
5%	28.00	39.50	32.35	26.00	30.00	41.00	173.0	395.6	282.0	68.80	52.00	32.00	117.0
10%	23.00	26.00	26.00	24.00	27.00	34.00	98.00	286.0	205.0	39.00	31.00	25.00	60.00
20%	20.00	22.00	22.00	22.00	24.00	27.00	67.00	151.0	111.0	23.00	20.00	19.00	30.00
50%	12.00	18.00	17.00	17.00	19.00	21.00	35.00	60.00	25.00	6.90	7.60	8.50	17.00
80%	6.20	12.00	13.00	13.00	15.00	17.00	17.00	9.26	4.00	3.00	3.50	3.30	7.50
90%	4.30	10.00	11.00	10.00	13.00	15.00	12.00	4.44	2.50	2.00	2.14	2.00	4.00
95%	3.58	7.90	10.00	9.00	13.00	14.00	9.50	3.22	2.00	1.50	1.30	1.90	2.50
99%	2.70	5.48	8.56	6.57	11.00	12.00	2.26	2.33	1.40	1.10	0.87	1.30	1.40

Figure B-97. Station 8275300 Rio Pueblo de Taos near Ranchito
Mean Annual Discharge 1958-1980

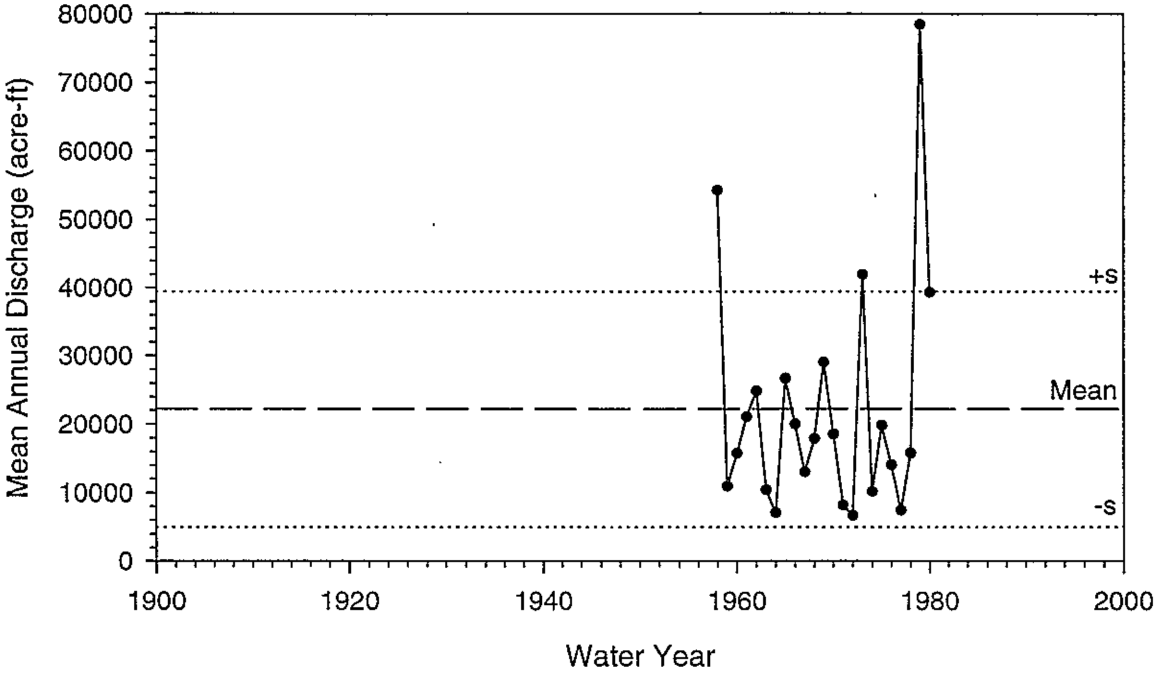


Figure B-98. Station 8275300 Rio Pueblo de Taos near Ranchito
Mean Monthly Discharge 1958-1980

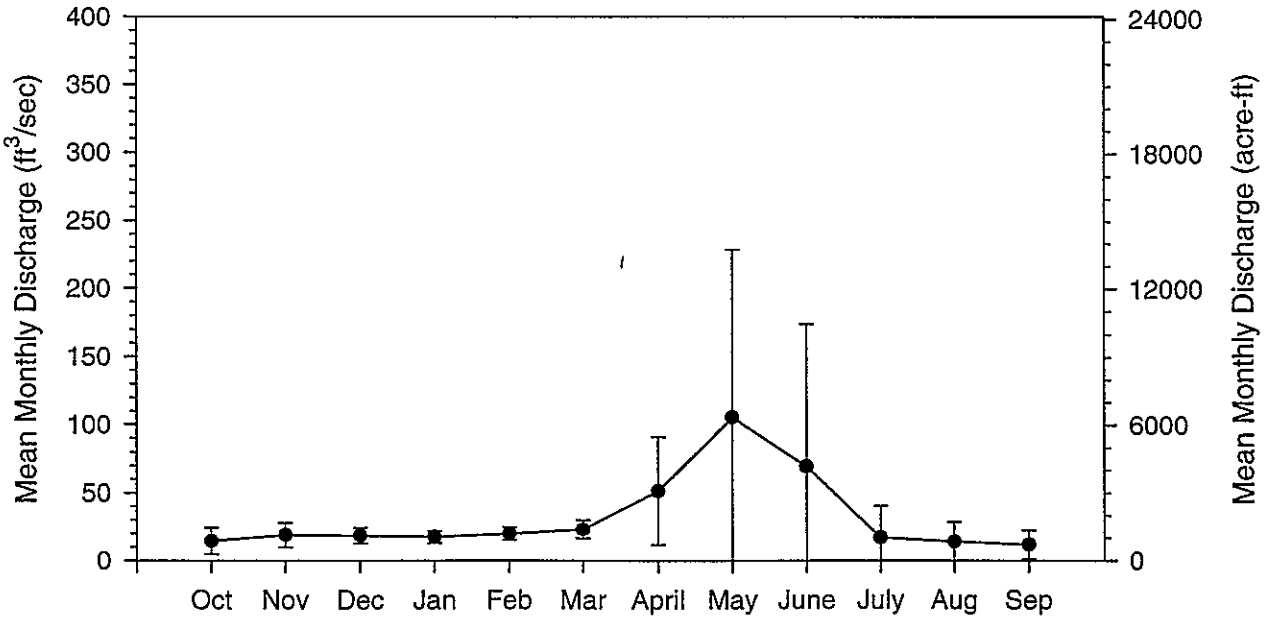
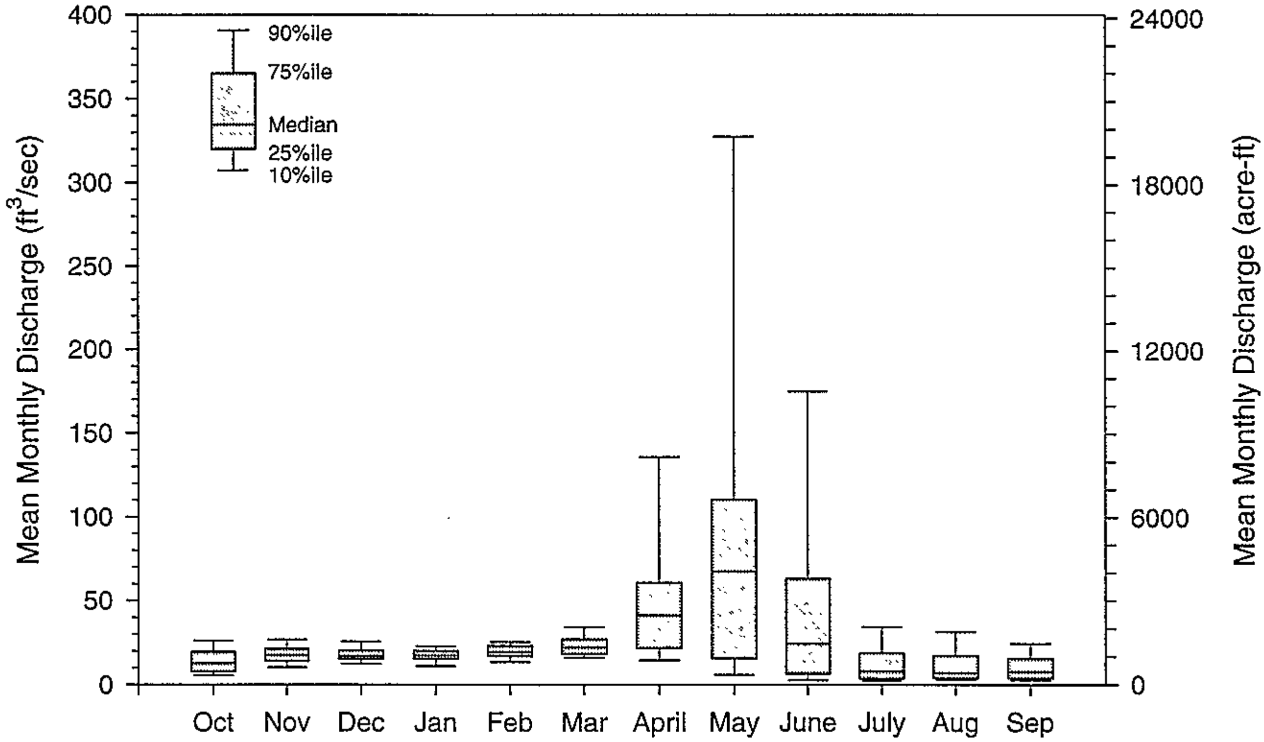


Figure B-99. Station 8275300 Rio Pueblo de Taos near Ranchito
Monthly Discharge 1958-1980



08275500 RIO GRANDE DEL RANCHO NEAR TALPA, NM

No Remarks Available for this Station. In Rancho del Rio Grande Grant, on right bank 1.75 mi downstream from Pot Creek, 3.5 mi upstream from Rio Chiquito, and 3.0 mi south of Talpa. Drainage area approximately 83 mi^2, minor diversions upstream for irrigation (Reiland and Haynes, 1963).

Station Name RIO GRANDE DEL RANCHO NEAR TALPA, NM
Station ID 08275500
State NEW MEXICO
County TAOS
Latitude 36:17:52
Longitude 105:34:55
Elevation 7238.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1952	1994	41	14245	0	21.17	590.00	0.60		
STREAM STAGE FEET	Mean	1974	1982	9	2932	0	0.93	3.28	0.29		

Table B-69. Mean daily streamflow (cfs), station 08275500 Rio Grande del Rancho near Talpa, 1953-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1953	5.14	5.18	5.08	5.00	5.18	6.23	11.12	37.74	44.17	11.88	7.22	3.68	8919
1954	3.87	4.84	4.22	2.78	4.52	8.03	25.53	38.90	15.48	11.78	8.61	4.71	8067
1955	4.10	3.99	3.48	2.06	2.65	4.65	10.75	60.97	63.40	13.03	15.39	8.71	11690
1956	5.50	4.40	4.36	4.92	5.42	7.59	13.17	21.39	9.27	3.14	2.88	1.56	5052
1957	2.12	2.95	2.97	3.33	4.65	5.93	38.35	99.35	132.1	29.16	35.71	24.87	23036
1958	14.25	10.80	10.41	9.19	7.88	10.33	58.00	227.5	78.27	17.97	12.71	10.98	28433
1959	8.45	6.89	6.15	4.94	5.38	6.74	12.92	34.13	16.80	6.52	8.76	5.21	7441
1960	4.79	4.55	3.61	3.95	4.26	9.49	59.33	78.81	44.17	12.70	7.16	5.21	14386
1961	6.39	6.39	6.08	3.94	4.63	8.34	43.13	109.7	38.50	11.73	16.80	21.33	16785
1962	12.81	8.10	6.29	5.52	8.84	11.01	91.87	123.4	29.67	13.42	7.26	8.24	19745
1963	7.66	7.28	5.39	5.79	6.65	12.90	46.97	43.16	13.01	6.17	7.35	7.45	10252
1964	6.16	4.89	4.08	3.34	3.28	5.14	18.34	86.71	31.83	10.51	8.05	7.18	11509
1965	5.65	5.32	5.65	6.57	5.69	5.94	53.30	163.1	86.13	22.81	21.10	11.99	23835
1966	10.01	8.99	8.78	7.65	6.08	13.28	41.77	59.06	23.17	12.09	25.71	9.20	13682
1967	6.65	6.38	5.87	4.05	5.40	10.44	31.27	31.26	19.17	13.00	31.39	24.77	11467
1968	10.19	7.34	5.38	4.77	5.36	6.26	19.65	82.55	43.97	13.13	23.84	10.30	14117
1969	7.86	6.34	5.50	5.93	5.68	6.24	54.80	148.0	61.27	23.13	23.48	10.85	21781
1970	11.07	9.67	6.68	5.72	7.22	7.15	10.23	74.97	22.60	10.60	12.48	7.17	11268
1971	6.03	6.00	5.30	4.79	4.50	6.00	12.11	18.23	10.76	5.80	5.46	5.15	5448
1972	7.53	5.11	4.12	3.48	3.29	7.17	11.10	13.29	8.07	3.32	2.33	2.63	4320
1973	3.05	3.29	3.47	3.25	3.21	5.98	23.58	236.7	145.1	24.94	9.97	7.48	28525
1974	6.85	6.97	5.91	5.64	5.68	9.25	19.30	45.45	14.39	7.12	7.71	4.22	8393
1975	5.24	5.36	4.70	4.35	5.04	7.15	21.02	108.6	60.57	14.32	7.96	15.39	15735
1976	7.68	6.02	6.08	6.01	6.62	10.00	30.90	89.81	35.90	11.35	7.66	5.97	13577
1977	5.49	4.10	4.09	3.45	4.45	5.48	10.11	19.81	7.77	8.40	5.91	4.55	5062
1978	3.64	3.84	3.23	3.59	3.66	6.07	21.43	99.32	46.10	9.21	4.86	2.88	12610
1979	3.99	5.14	4.22	4.32	5.20	10.31	56.27	199.3	170.5	26.84	13.32	8.20	30704
1980	7.36	7.25	6.74	6.94	6.73	7.78	23.74	178.3	137.0	21.26	10.60	7.23	25494
1981	6.55	6.42	6.39	5.03	4.95	5.98	9.61	12.90	6.36	3.96	4.74	3.08	4591
1982	3.54	3.73	3.49	3.79	4.41	6.85	20.69	84.45	52.27	10.54	8.53	9.14	12804
1986	13.47	9.84	8.51	7.76	7.46	10.32	40.53	108.5	100.2	41.90	23.58	14.97	23425
1987	14.19	11.82	8.77	7.75	7.58	10.82	44.93	162.9	75.27	21.06	12.51	8.96	23444
1988	8.28	9.55	9.75	7.57	6.13	7.97	14.35	31.13	23.07	14.73	9.85	9.95	9217

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1989	8.02	5.92	5.59	5.30	9.31	19.10	42.33	44.71	14.24	5.68	4.50	5.12	10252
1990	7.53	5.34	5.36	4.78	4.69	8.05	26.67	48.19	24.70	11.83	10.14	7.00	9947
1991	8.27	8.74	5.09	4.68	5.30	14.86	40.27	148.2	46.57	23.16	27.58	15.40	21153
1992	11.94	9.53	8.80	7.49	6.22	15.48	61.63	111.9	59.90	20.06	13.06	7.41	20189
1993	6.61	7.40	7.63	7.65	7.14	16.39	40.83	118.9	74.63	15.13	14.08	13.03	19943
1994	8.26	8.34	6.73	7.18	6.61	22.9	60.67	264.1	101.2	17.1	11.94	9.65	31865

Table B-70. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08275500 Rio Grande del Rancho near Talpa, 1952-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1210	1170	1209	1209	1101	1209	1170	1209	1170	1209	1209	1170	14245
Avg Day	7.3	6.5	5.7	5.2	5.6	9.2	32.6	94.0	51.0	14.4	12.6	9.0	21.2
Max Day	29	23	15	15	13	50	184	590	359	72	62	60	590
Min Day	1.4	1.4	1.5	0.6	1.5	3	4.2	9.4	3	1.7	1.5	1.2	0.6
# Months	39	39	39	39	39	39	39	39	39	39	39	39	39
SDev Month	3.06	2.18	1.86	1.68	1.51	4.05	19.54	65.52	41.90	8.04	8.13	5.51	10.77
Skew Month	0.72	0.54	0.75	0.39	0.41	1.62	0.83	0.90	1.24	1.22	1.23	1.46	0.50
Min Month	2.12	2.95	2.97	2.06	2.65	4.65	9.61	12.90	6.36	3.14	2.33	1.56	5.96
Max Month	14.25	11.82	10.41	9.19	9.31	22.90	91.87	264.1	170.5	41.90	35.71	24.87	44.01
Exceedences													
1%	18.00	14.00	11.00	10.00	11.00	34.00	151.3	389.7	246.3	47.00	49.73	36.00	202.0
5%	14.00	11.00	10.00	8.40	8.49	21.00	90.00	257.5	175.5	33.00	34.00	21.00	92.00
10%	12.00	10.00	9.00	7.90	7.60	16.00	72.00	193.0	115.0	25.00	25.10	16.00	50.00
20%	9.50	8.30	7.30	7.00	6.80	12.00	46.00	143.0	78.00	20.00	16.00	12.00	22.00
50%	6.60	6.00	5.40	5.00	5.40	7.40	24.00	69.00	32.00	12.00	9.90	7.60	8.00
80%	4.70	4.40	4.00	3.70	4.30	5.60	12.00	29.00	14.00	7.40	5.90	4.40	5.00
90%	3.50	3.80	3.50	3.00	3.50	5.00	9.40	20.00	9.30	5.00	4.50	3.30	4.00
95%	2.90	3.30	3.00	2.50	3.00	4.50	7.30	15.00	6.80	3.50	3.40	2.50	3.30
99%	1.81	2.70	2.50	2.00	2.20	3.90	5.70	11.00	4.44	2.50	1.90	1.40	2.20

Figure B-100. Station 8275500 Rio Grande del Rancho near Talpa
Mean Annual Discharge 1953-1982, 1986-1994

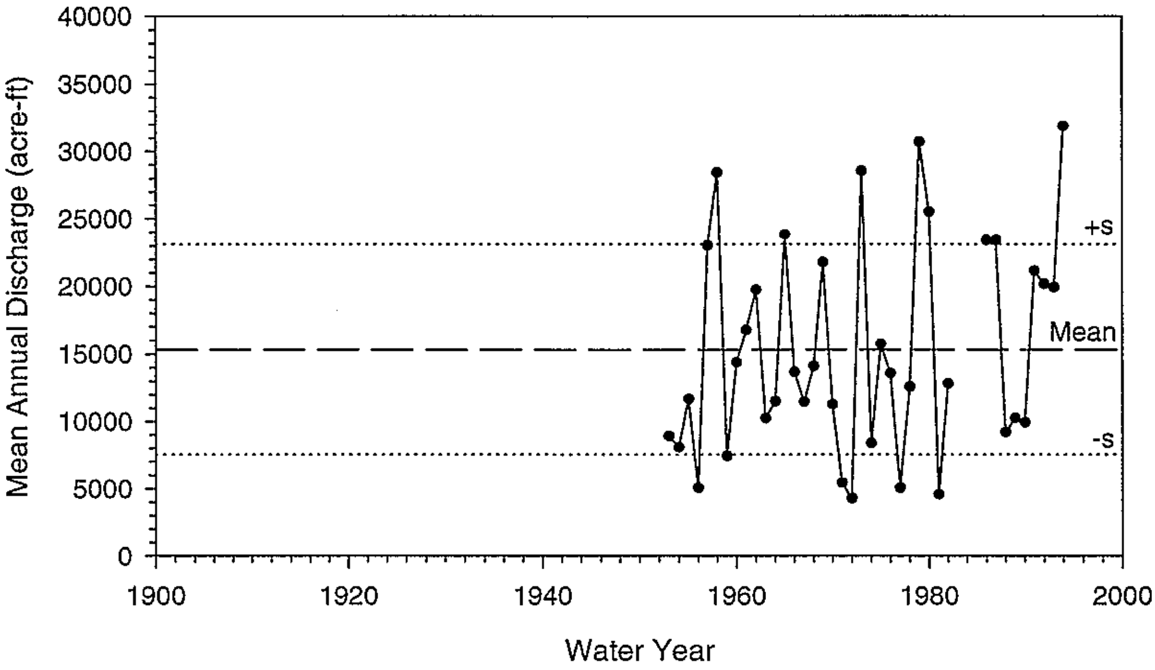


Figure B-101. Station 8275500 Rio Grande del Rancho near Talpa
Mean Monthly Discharge 1953-1982, 1986-1994

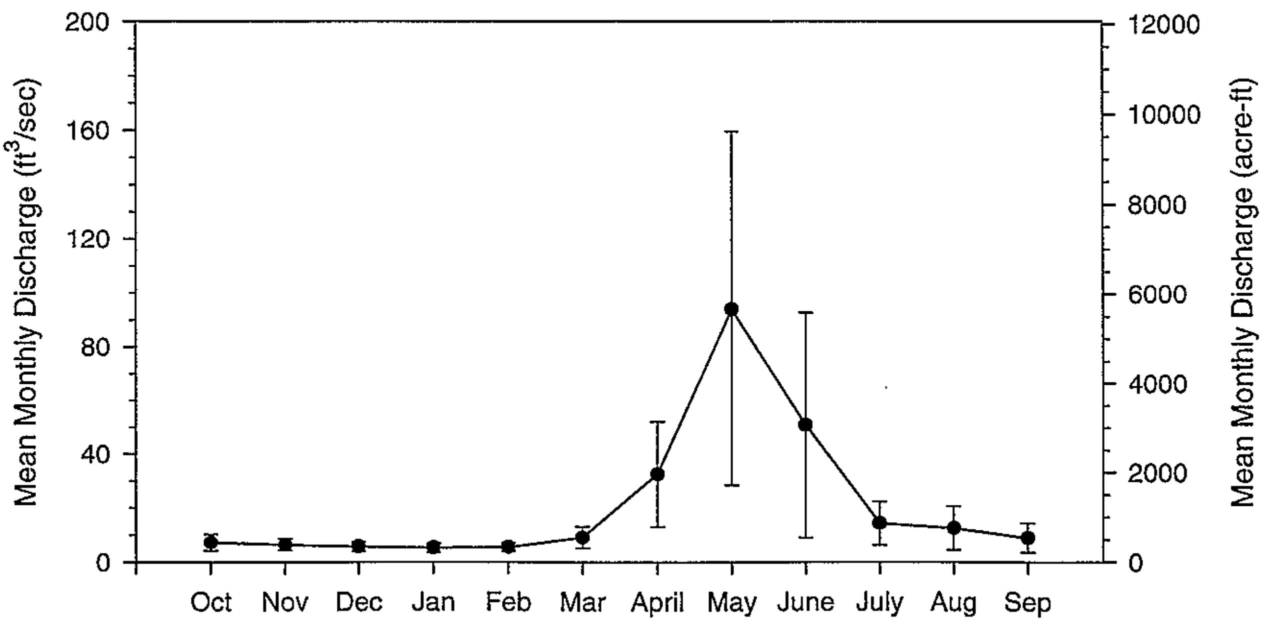
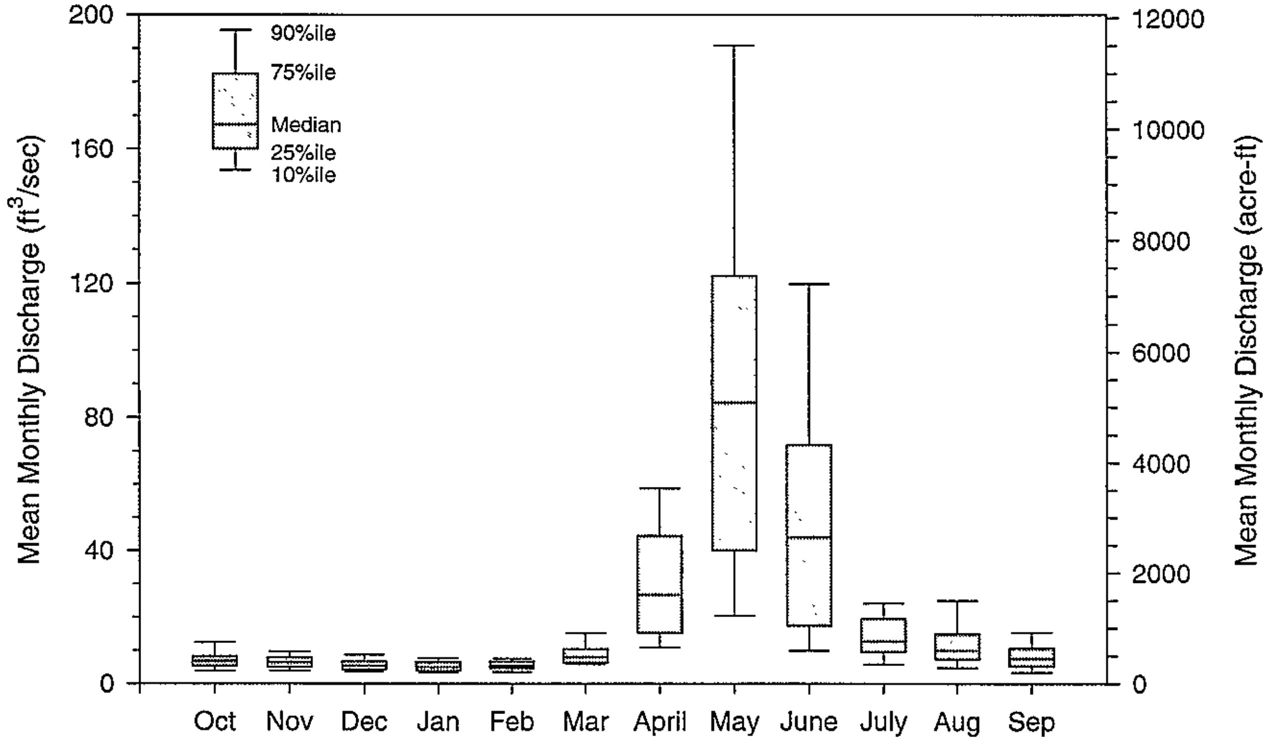


Figure B-102. Station 8275500 Rio Grande del Rancho near Talpa
Monthly Discharge 1953-1982, 1986-1994



08275600 RIO CHIQUITO NEAR TALPA, NM

No Remarks Available for this Station.

Station Name RIO CHIQUITO NEAR TALPA, NM
Station ID 08275600
State NEW MEXICO
County TAOS
Latitude 36:19:55
Longitude 105:34:42
Elevation 7223.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1957	1980	24	8632	0	8.66	200.00	0.3		
STREAM STAGE FEET	Mean	1974	1980	7	2451	0	1.39	3.16	1.08		

Table B-71. Mean daily streamflow (cfs), station 08275600 Rio Chiquito near Talpa, 1958-1980.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1958	7.15	4.78	4.70	3.39	3.69	3.87	24.12	95.35	26.07	9.55	7.06	5.26	11848
1959	4.67	3.56	3.15	2.80	2.96	3.52	4.88	7.40	4.18	2.29	2.86	1.68	2656
1960	2.00	2.07	1.90	1.95	1.99	3.61	17.06	17.19	9.76	5.44	3.26	2.66	4161
1961	3.11	3.07	2.55	2.13	2.49	4.00	17.88	43.65	12.65	6.61	8.54	7.84	6945
1962	5.31	3.34	2.38	2.26	4.04	4.86	39.20	46.74	11.54	8.17	3.89	4.26	8222
1963	3.13	3.58	2.77	2.19	3.10	5.79	20.47	12.26	5.22	3.02	3.55	3.01	4104
1964	2.60	2.75	1.91	1.46	1.61	2.68	10.93	30.68	12.71	5.53	4.07	3.18	4858
1965	2.36	2.11	2.04	2.40	2.27	2.53	22.91	59.13	30.90	12.99	9.80	5.57	9396
1966	4.71	4.24	3.95	3.77	3.22	5.55	15.70	17.48	7.99	5.30	10.98	5.44	5346
1967	3.96	3.77	3.26	2.00	2.81	4.25	12.28	8.35	5.60	4.63	11.45	9.42	4335
1968	5.17	4.09	3.20	2.85	2.78	3.30	8.79	33.68	11.48	5.75	5.84	4.03	5520
1969	3.32	2.80	2.54	2.61	2.91	3.15	17.15	51.58	15.61	8.67	6.55	4.80	7385
1970	4.45	3.72	3.30	2.75	3.10	2.52	6.91	26.68	9.81	4.58	4.17	3.19	4557
1971	3.67	3.09	2.33	2.39	2.43	2.91	4.37	4.60	2.64	2.37	2.56	1.75	2121
1972	2.63	2.65	2.28	1.75	1.71	3.66	5.15	4.38	2.56	1.33	1.39	1.84	1892
1973	1.78	1.94	2.14	2.15	1.85	2.47	9.38	86.00	43.90	12.46	5.91	4.40	10593
1974	4.02	3.37	3.25	3.06	3.11	4.50	8.10	11.83	4.08	2.55	4.36	2.13	3289
1975	2.73	2.64	1.93	1.91	2.50	3.18	11.19	39.81	17.91	8.06	4.85	6.37	6248
1976	3.93	3.42	3.56	2.80	3.05	4.86	13.88	31.84	9.71	5.87	3.70	2.83	5423
1977	2.67	2.09	2.09	1.61	2.60	2.69	4.75	5.95	2.39	2.40	2.00	1.52	1978
1978	1.58	1.76	1.56	1.59	1.73	2.42	9.49	29.70	9.55	3.38	2.17	1.39	4024
1979	1.79	2.97	2.29	2.37	2.29	3.61	24.09	100.5	86.57	14.55	9.04	5.40	15458
1980	4.66	4.00	3.80	3.54	3.57	4.04	9.24	61.94	46.93	8.87	5.55	4.23	9712

Table B-72. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08275600 Rio Chiquito near Talpa, 1958-1980.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	730	690	713	713	650	744	720	744	720	744	744	720	8632
Avg Day	3.5	3.1	2.7	2.4	2.7	3.6	13.9	36.5	17.7	6.4	5.7	4.2	8.7
Max Day	12	7.8	6.5	6	5.8	19	95	200	200	23	21	18	200
Min Day	1.1	0.7	0.5	0.5	1.0	1.2	2.2	3.3	1.3	0.4	0.3	1.0	0.3
# Months	23	23	23	23	23	24	24	24	24	24	24	24	23
SDev Month	1.37	0.81	0.79	0.63	0.65	0.98	8.17	28.34	19.38	3.63	3.30	2.27	4.77
Skew Month	0.69	0.04	0.74	0.51	0.08	0.70	1.35	0.91	2.31	0.67	0.90	0.82	1.09
Min Month	1.58	1.76	1.56	1.46	1.61	2.42	4.37	4.38	2.39	1.33	1.39	1.39	2.61
Max Month	7.15	4.78	4.70	3.77	4.04	5.79	39.20	100.5	86.57	14.55	13.63	9.42	21.35
Exceedences													
1%	8.01	6.43	5.50	4.40	5.10	9.96	65.00	173.9	114.0	19.56	19.00	13.00	78.00
5%	5.80	4.80	4.50	3.80	4.00	6.74	45.00	100.8	65.00	14.00	14.00	9.20	37.00
10%	5.20	4.30	4.00	3.40	3.60	5.10	30.00	73.00	43.00	12.00	11.00	7.30	17.00
20%	4.60	4.00	3.50	3.04	3.20	4.30	19.00	58.00	23.00	9.40	8.24	5.80	8.90
50%	3.60	3.00	2.50	2.40	2.70	3.20	9.70	30.00	9.80	5.50	4.70	3.70	3.80
80%	2.20	2.30	2.00	1.80	2.00	2.50	4.90	8.10	4.50	2.88	2.70	2.00	2.40
90%	1.90	1.90	1.60	1.50	1.70	2.20	4.20	5.68	2.90	2.10	2.14	1.60	1.90
95%	1.50	1.60	1.50	1.30	1.50	2.00	3.70	4.70	2.30	1.60	1.50	1.30	1.60
99%	1.30	0.99	1.00	0.96	1.10	1.70	2.62	3.70	1.60	1.00	1.04	1.10	1.10

Figure B-103. Station 8275600 Rio Chiquito near Talpa
Mean Annual Discharge 1958-1980

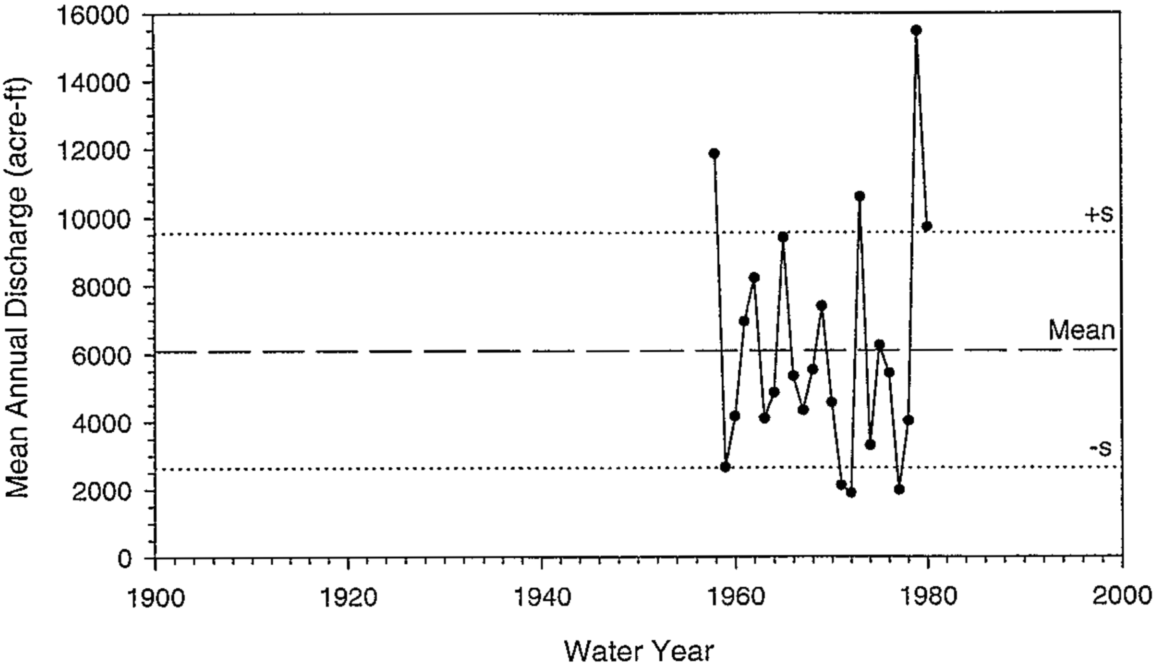


Figure B-104. Station 8275600 Rio Chiquito near Talpa
Mean Monthly Discharge 1958-1980

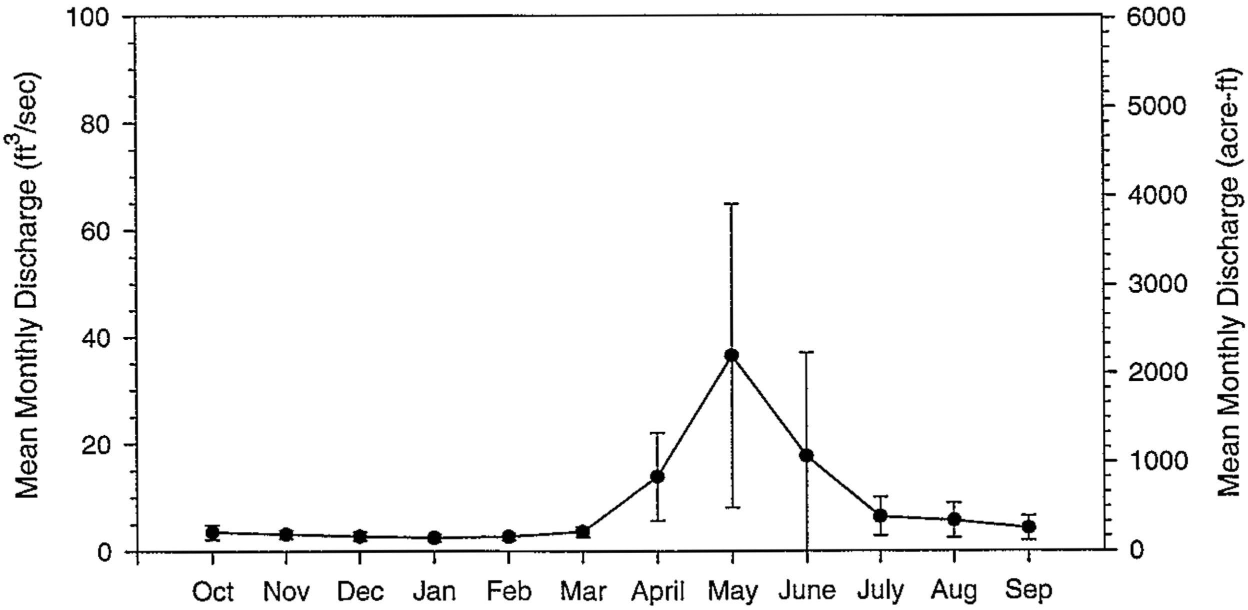
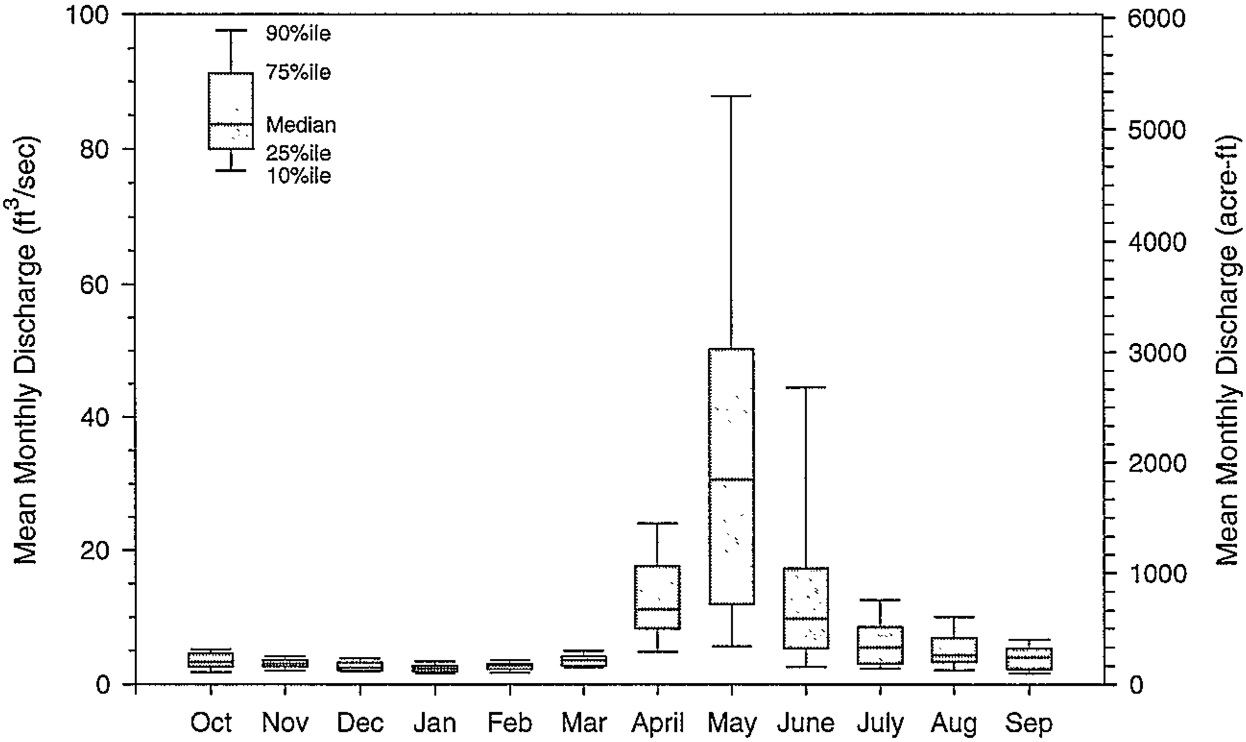


Figure B-105. Station 8275600 Rio Chiquito near Talpa
Monthly Discharge 1958-1980



08276000 RIO PUEBLO DE TAOS AT LOS CORDOVAS, NM

No Remarks Available for this Station. In N ½ of section 23, T.25 N., R.12 E. (projected), in Martinez Grant, on left bank 200 ft downstream from Rio Grande de Ranchos, 0.2 mi downstream from Arroyo Seco, 0.5 mi northeast of Los Cordovas, and 3.5 mi west of Taos. Drainage area 359 mi^2, diversions for irrigation of about 12,000 acres above station (Reiland and Haynes, 1963).

Station Name RIO PUEBLO DE TAOS AT LOS CORDOVAS, NM
Station ID 08276000
State NEW MEXICO
County TAOS
Latitude 36:23:20
Longitude 105:38:00
Elevation 6709.59

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1910	1965	56	19968	0	58.42	1710.00	1.30		

Table B-73. Mean daily streamflow (cfs), station 08276000 Rio Pueblo de Taos at Los Cordovas, 1911-1965.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1911	9.23	15.00	18.77	20.71	23.39	51.71	86.93	237.5	85.73	57.35	23.56	24.30	39664
1912	149.5	66.10	40.00	35.00	37.59	69.97	137.3	580.7	273.3	21.81	8.45	11.93	86835
1913	24.39	31.43	37.45	25.00	28.04	41.74	84.03	72.35	47.10	6.96	8.03	11.92	25216
1914	25.03	26.00	19.39	30.97	27.25	38.61	114.8	405.6	112.6	39.77	27.90	18.33	53792
1915	24.65	24.90	21.55	23.06	29.86	45.13	212.1	474.6	360.6	22.79	17.10	17.07	76902
1916	19.77	27.93	34.42	44.97	56.66	89.19	165.1	412.6	161.0	28.29	30.16	22.80	66114
1917	47.10	33.30	37.35	39.06	35.89	37.26	35.80	103.6	121.3	34.58	10.70	10.87	33009
1918	13.45	24.20	18.16	23.03	27.36	55.90	72.87	154.3	113.5	21.48	15.53	17.20	33633
1919	17.16	22.07	23.61	28.97	47.86	76.32	188.8	413.3	207.0	147.6	51.84	29.73	75948
1920	51.87	47.07	44.68	44.71	56.21	50.77	121.2	597.5	246.0	14.71	17.55	20.07	79496
1921	25.65	36.23	40.71	37.74	41.11	47.39	48.47	148.2	420.0	144.6	130.8	69.57	71815
1922	37.48	46.90	43.94	46.06	47.89	72.58	72.23	50.71	13.61	6.39	7.99	5.77	27205
1923	10.34	21.00	27.03	33.55	35.18	27.39	28.37	111.3	44.50	10.68	20.24	22.07	23642
1924	42.45	44.30	38.94	43.26	48.55	43.03	200.6	314.6	93.60	18.19	13.31	12.05	55146
1925	18.96	26.27	26.52	23.77	36.75	50.81	41.48	10.97	5.14	4.56	3.89	9.92	15545
1927	18.06	22.23	31.65	27.03	29.11	43.13	116.4	164.7	85.07	12.39	11.87	23.20	35297
1928	31.42	25.60	24.58	36.19	49.10	38.61	35.77	243.3	69.36	4.32	7.00	7.50	34650
1929	9.49	22.57	26.61	28.13	30.46	51.32	77.90	206.0	114.9	12.24	56.68	73.07	42864
1930	54.29	43.97	39.61	35.35	45.25	44.06	125.8	82.84	41.88	41.36	37.10	18.33	36772
1931	25.74	32.10	30.61	28.42	37.93	43.26	36.40	35.58	10.48	5.60	7.40	37.19	19878
1932	40.06	33.00	37.77	37.55	72.31	81.00	239.2	355.4	92.90	35.68	27.65	21.73	64855
1933	26.03	33.00	27.19	27.00	31.79	40.23	19.77	57.23	107.0	26.55	12.75	17.53	25657
1934	13.87	22.47	24.94	25.48	31.07	22.68	15.77	14.22	8.68	4.50	5.25	9.92	11929
1935	11.05	18.17	16.52	30.74	25.46	22.42	26.37	221.4	217.7	11.72	18.33	24.40	38895
1936	22.68	26.80	26.52	27.65	30.76	38.87	89.77	152.7	14.91	6.70	18.47	14.63	28454
1937	21.97	28.07	27.42	24.68	40.93	52.84	250.3	386.0	240.3	76.32	21.35	18.33	71770
1938	26.10	26.63	24.45	22.94	31.93	37.61	80.43	180.2	123.3	19.25	7.84	21.87	36359
1939	26.42	25.17	29.23	29.97	31.79	72.00	135.4	101.6	13.07	5.35	8.66	12.28	29629
1940	16.10	20.47	21.81	23.39	29.97	36.00	31.83	80.10	14.66	5.80	6.66	9.35	17879
1941	14.58	24.67	27.87	26.35	42.00	49.77	125.1	913.8	458.3	125.9	32.55	26.97	113340
1942	63.65	74.60	58.65	52.94	52.04	58.68	452.3	1038	479.9	41.45	26.94	40.90	147644
1943	36.13	40.43	39.94	43.32	46.96	53.77	117.9	84.23	18.83	10.35	12.38	10.78	31015

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1944	18.32	28.33	27.90	27.19	31.59	45.84	73.70	370.3	163.6	24.50	12.94	13.80	50785
1945	23.58	28.30	35.97	37.16	48.50	48.55	189.1	606.5	192.7	35.35	27.19	17.67	78216
1946	24.74	28.17	26.52	27.35	35.32	41.16	44.63	10.34	4.09	3.75	9.60	8.87	15886
1947	13.11	27.07	23.39	23.42	31.11	38.00	42.80	236.5	28.21	8.34	12.01	10.69	30014
1948	11.14	16.93	24.03	25.61	34.90	36.32	97.27	224.1	124.1	9.94	10.50	9.01	37661
1949	14.29	21.63	26.84	22.74	24.21	33.52	114.3	176.3	106.7	28.23	18.13	12.55	36208
1950	20.84	25.13	21.97	25.23	28.89	34.65	48.87	13.13	12.24	13.97	7.29	7.81	15629
1951	9.71	14.70	15.97	17.58	17.32	19.35	24.87	43.13	10.90	2.30	4.23	5.07	11170
1952	7.67	15.73	20.29	25.23	21.62	30.45	144.9	251.4	167.4	17.55	9.14	8.66	43477
1953	8.31	19.17	23.65	26.29	28.89	27.71	20.18	78.03	63.98	9.58	7.54	6.37	19268
1954	9.57	23.97	22.87	24.74	30.11	28.06	51.07	47.35	8.31	8.24	9.76	5.70	16230
1955	7.47	14.90	14.45	14.61	16.48	23.61	16.19	141.2	58.50	6.91	15.37	12.92	20765
1956	14.74	21.63	26.42	26.45	29.07	29.19	20.93	21.29	7.42	3.56	3.38	2.63	12433
1957	3.90	10.76	15.29	22.10	23.96	24.71	73.33	273.1	324.8	54.26	86.87	58.87	58692
1958	61.55	68.17	54.16	36.74	45.61	46.90	203.2	662.7	201.3	12.68	14.37	21.57	86610
1959	29.19	32.87	32.84	30.87	31.00	29.35	23.03	28.06	10.88	4.57	6.20	5.41	15922
1960	11.00	18.20	21.29	18.84	18.90	43.55	111.8	73.65	40.99	11.35	5.77	4.98	22923
1961	12.43	24.07	25.97	19.29	26.00	30.48	110.3	199.4	54.77	22.52	31.29	38.83	36000
1962	33.58	32.77	27.06	26.61	51.43	40.19	269.4	217.3	28.33	12.12	6.09	8.34	45335
1963	16.55	23.53	26.97	23.55	35.11	50.94	90.97	16.98	7.06	4.10	4.77	5.49	18355
1964	7.89	14.44	19.84	18.58	21.83	24.00	27.03	64.29	17.61	5.22	6.11	6.94	14114
1965	9.71	14.37	23.16	32.81	28.57	26.19	117.1	279.2	213.7	45.45	33.65	34.37	51850

Table B-74. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08276000 Rio Pueblo de Taos at Los Cordovas, 1911-1965.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1674	1620	1674	1705	1526	1674	1650	1705	1650	1705	1705	1680	19968
Avg Day	24.89	28.47	28.61	29.20	35.19	43.27	103.0	229.3	114.1	24.95	19.13	18.17	58.42
Max Day	662	96	100	75	158	165	1070	1710	1160	512	277	277	1710
Min Day	1.9	6.0	8.0	9.5	9.5	14.0	8.0	5.4	1.5	1.3	1.3	1.5	1.3
# Months	54	54	54	55	54	54	55	55	55	55	55	56	54
SDev Month	22.25	13.03	9.32	8.06	11.19	15.52	81.52	222.7	120.9	32.02	21.47	14.87	38.40
Skew Month	3.63	1.85	1.11	0.89	0.91	0.96	1.78	1.72	1.45	2.71	3.41	2.13	1.51
Min Month	3.90	10.76	14.45	14.61	16.48	19.35	15.77	10.34	4.09	2.20	3.38	2.63	15.43
Max Month	149.50	74.60	58.65	52.94	72.31	89.19	452.3	1038	479.9	147.6	130.8	73.07	203.9
Exceedences													
1%	129.00	84.00	61.00	58.00	84.74	118.8	535.5	1179	668.5	214.9	135.0	113.8	572.0
5%	59.00	56.00	48.00	46.00	59.00	84.00	319.0	772.0	448.0	97.50	63.75	46.00	242.0
10%	45.60	46.00	41.60	42.00	51.00	67.60	221.0	534.0	315.0	56.00	40.50	35.00	125.0
20%	32.00	35.00	37.00	36.00	45.00	53.00	146.0	384.0	192.0	31.00	25.00	23.00	55.00
50%	19.00	26.00	26.00	27.00	32.00	39.00	70.00	147.0	49.00	11.00	11.00	13.00	27.00
80%	10.00	19.00	20.00	22.00	25.00	28.00	30.00	37.00	8.40	5.00	6.00	6.70	13.00
90%	8.10	15.00	17.00	19.00	21.00	24.00	21.00	18.00	5.00	3.60	4.50	5.30	7.40
95%	6.70	14.00	15.00	16.00	19.00	21.70	17.00	12.00	3.80	2.80	3.32	4.50	5.10
99%	3.50	10.00	12.00	13.05	15.00	18.00	9.60	7.20	2.55	1.50	2.00	2.50	2.90

Figure B-106. Station 8276000 Rio Pueblo de Taos at Los Cordovas
Mean Annual Discharge 1911-1925, 1927-1965

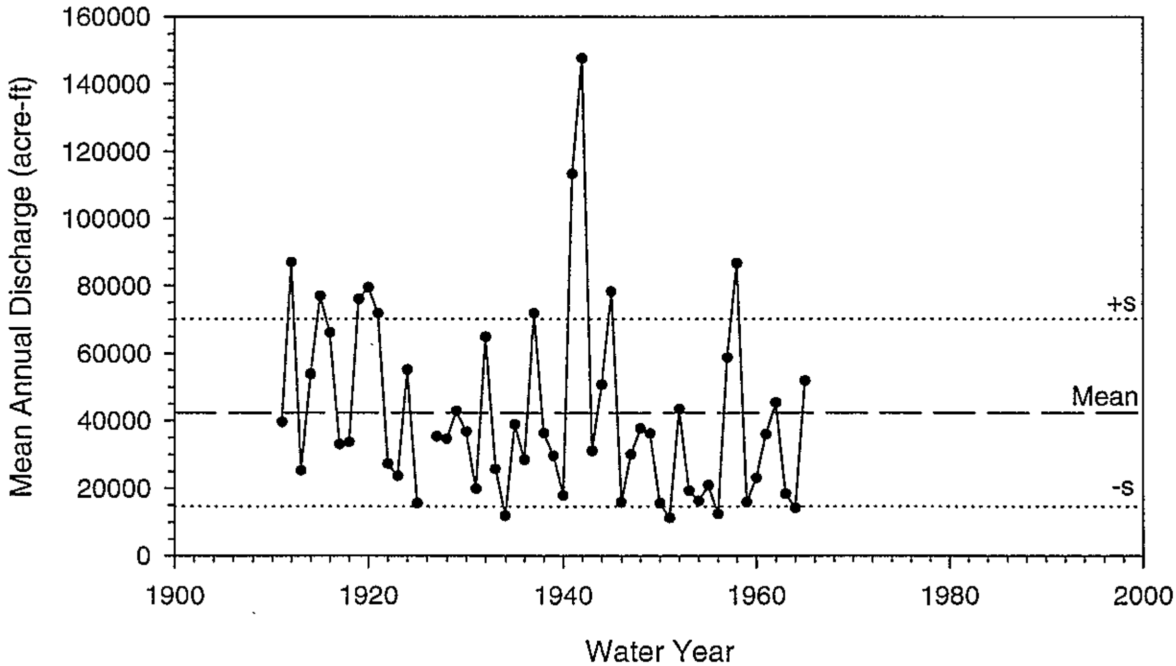


Figure B-107. Station 8276000 Rio Pueblo de Taos at Los Cordovas
Mean Monthly Discharge 1911-1925, 1927-1965

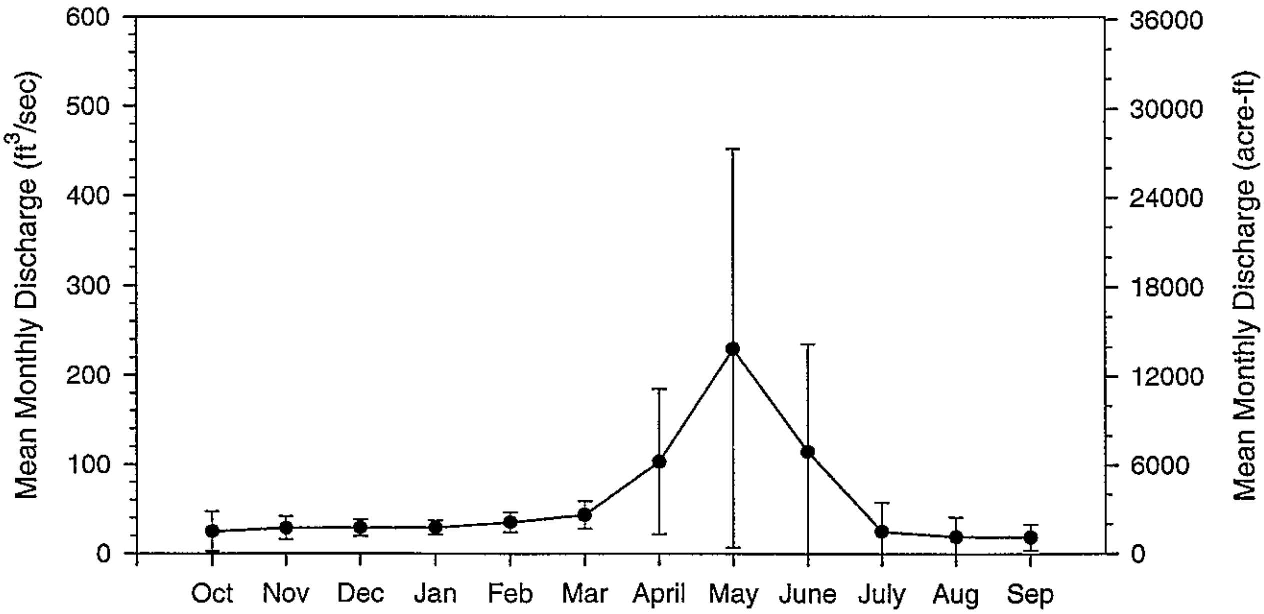
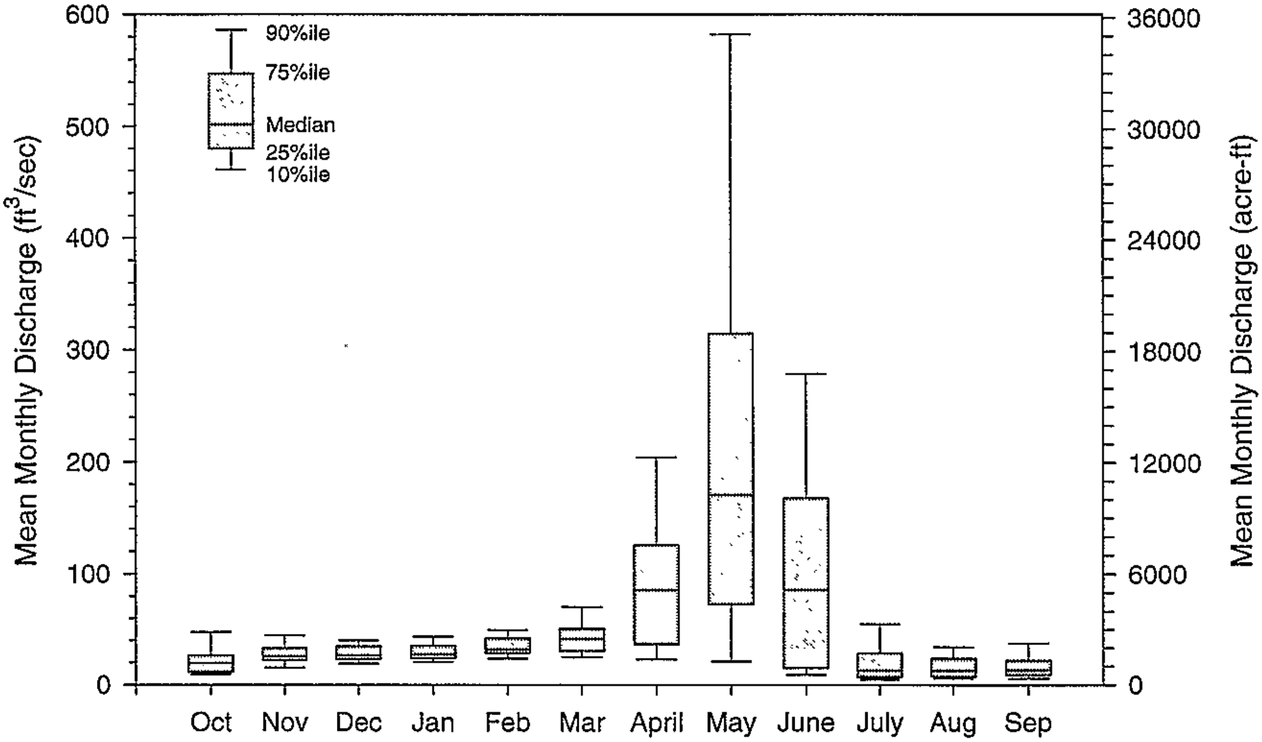


Figure B-108. Station 8276000 Rio Pueblo de Taos at Los Cordovas
Monthly Discharge 1911-1925, 1927-1965



08276300 RIO PUEBLO DE TAOS BELOW LOS CORDOVAS, NM

LOCATION.--Lat 36 22'39", long 105 40'05", Taos County, Hydrologic Unit 13020101, in Gijosa Grant, on left bank 1.9 mi southwest of Los Cordovas, 2.5 mi downstream from Rio Grande del Rancho, and at mile 5.1.

DRAINAGE AREA.--380 mi^2.

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1732: 1957(M). WSP 1923: 1957(P), 1958. WDR NM-81-1: 1979(P).

GAGE.--Water-stage recorder. Elevation of gage is 6,652 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 4, 1984 at site 700 ft downstream at same datum.

REMARKS.--No estimted daily discharges. Records fair. Diversions for irrigation of about 12,000 acres upstream from station, of which about 1,700 acres are irrigated by water from Rio Hondo. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 59.9 ft^3/s, 43,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,380 ft^3/s, Aug. 24, 1957, gage height, 5.80 ft; maximum gage height, 6.00 ft (site then in use), July 30, 1982, from rating curve extended above 900 ft^3/s; minimum, 1.9 ft^3/s, July 31, Aug. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 230 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Mar. 12	0645	260	5.82
May 10	2315	*1,150	*7.04
Apr. 18	2400	542	6.31
June 25	0830	243	5.75

Minimum daily discharge, 22 ft/s, Aug. 27 and Sept. 1-6.

Table B-75. Mean daily streamflow (cfs), station 08276300 Rio Pueblo de Taos below Los Cordovas, 1958-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1958	74.87	71.90	49.06	39.23	44.00	47.29	222.1	695.9	206.7	14.58	16.39	24.13	91306
1959	32.39	34.47	34.03	32.19	32.14	30.61	26.07	27.74	10.76	5.78	10.25	8.09	17146
1960	14.87	23.00	24.74	20.61	22.24	52.74	123.9	82.65	53.27	14.06	6.82	5.73	26798
1961	12.95	25.03	27.23	20.13	26.54	33.19	117.9	205.5	59.40	26.10	35.77	40.23	38096
1962	34.39	33.83	27.87	26.61	53.43	43.32	274.5	221.4	28.53	13.10	6.92	9.33	46539
1963	16.58	24.47	28.71	25.61	36.14	52.32	93.87	19.58	8.26	4.88	6.52	7.02	19439
1964	7.88	14.33	19.32	18.71	23.76	24.58	28.00	64.74	20.15	6.71	7.12	7.76	14664
1965	9.77	16.47	24.61	35.23	29.71	29.97	121.2	289.1	217.5	47.87	37.61	36.97	54139
1966	35.23	38.83	43.77	37.23	35.25	62.42	90.23	69.45	30.27	14.45	44.48	16.93	31324
1967	22.87	27.43	29.52	28.23	32.86	43.61	36.70	14.39	17.75	13.09	64.42	51.80	23069
1968	31.32	31.07	31.65	31.19	33.38	33.16	43.17	136.4	48.41	13.38	52.42	26.07	30964
1969	21.52	28.80	28.42	36.06	36.21	32.74	123.6	282.6	95.23	33.90	40.42	37.30	48212
1970	39.42	41.87	40.81	39.58	40.86	34.16	51.10	113.9	34.13	16.39	15.00	17.10	29250
1971	24.81	29.33	28.90	24.77	28.57	23.90	17.37	7.58	4.69	4.53	7.44	7.37	12580
1972	15.32	23.07	25.06	28.52	25.48	25.13	8.32	5.71	4.76	3.89	4.28	4.26	10455
1973	8.45	14.30	13.48	14.00	21.46	34.10	70.00	607.2	312.9	62.26	17.05	12.61	72095
1974	20.35	22.23	29.52	29.61	29.75	40.87	36.40	33.19	17.99	6.48	12.24	7.80	17267
1975	13.59	20.53	21.52	27.90	29.57	35.32	61.23	186.5	91.23	24.87	12.52	26.70	33337
1976	21.29	27.80	34.68	30.55	40.14	42.10	70.87	129.4	38.06	14.64	12.94	12.93	28695
1977	18.71	22.53	23.77	23.58	33.00	34.23	30.53	13.68	5.38	5.19	8.24	12.35	13878
1978	11.87	16.33	18.29	21.39	24.21	30.39	49.50	140.3	56.37	13.09	7.38	5.98	23895

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1979	10.97	20.80	23.39	23.97	31.57	64.48	245.1	720.2	708.5	113.0	28.06	19.17	121382
1980	21.00	35.83	38.71	40.74	36.41	41.26	101.4	529.1	313.5	36.58	17.84	16.93	74442
1981	19.74	28.57	33.81	31.65	28.25	27.87	18.89	10.10	7.62	5.69	10.64	7.00	13840
1982	9.69	15.37	21.42	25.55	27.36	30.94	44.60	149.8	93.00	26.32	29.35	47.90	31492
1983	38.10	43.67	45.87	38.58	49.96	52.45	169.7	507.7	427.3	99.03	35.16	27.67	92772
1984	28.45	36.77	49.65	34.48	44.55	64.81	241.7	844.4	185.4	32.58	25.48	21.20	97735
1985	36.23	41.77	47.29	47.32	53.96	91.00	301.3	629.2	297.8	50.03	33.06	29.67	100333
1986	49.16	49.00	49.00	44.65	48.25	48.97	137.3	219.5	354.3	100.8	32.87	42.27	70870
1987	58.52	63.93	56.81	47.32	60.32	68.68	230.5	411.9	172.4	30.19	25.58	23.13	75484
1988	28.16	33.20	41.61	39.81	53.07	50.94	44.90	33.00	21.50	14.94	22.87	27.30	24722
1989	31.52	31.57	30.77	26.84	38.64	90.58	108.1	59.13	14.43	7.73	9.90	12.40	27823
1990	26.55	23.80	28.61	26.48	31.57	43.61	95.40	80.35	33.53	19.35	16.61	15.63	26624
1991	21.52	34.13	30.61	32.29	47.93	51.39	152.6	378.7	159.0	33.42	69.61	58.33	64676
1992	40.74	57.10	50.35	45.58	50.03	81.65	283.4	274.6	144.4	24.06	21.19	17.50	65764
1993	18.90	34.17	39.61	46.55	59.04	79.06	151.4	342.5	210.2	34.10	44.81	67.53	68079
1994	41.26	52.67	52.58	45.74	48.93	105.3	439.9	1063	379.7	25.06	18.58	31.70	139608

Table B-76. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08276300 Rio Pueblo de Taos below Los Cordovas, 1958-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1147	1110	1147	1147	1045	1147	1140	1178	1140	1178	1178	1140	13697
Avg Day	26.2	32.2	33.7	32.1	37.5	48.1	119.6	259.8	137.1	28.2	25.4	23.9	67.5
Max Day	418	111	94	83	128	193	1340	1940	1590	260	250	184	1940
Min Day	5.5	11	10	10	15	15	6.1	4.5	2.7	3.1	2.6	3.2	2.6
# Months	37	37	37	37	37	37	38	38	38	38	38	38	37
SDev Month	14.57	13.56	10.97	8.91	10.89	20.55	98.02	266.1	157.7	27.15	20.35	17.05	46.15
Skew Month	1.31	1.12	0.41	0.15	0.49	1.15	1.33	1.30	1.66	1.86	1.68	1.04	1.01
Min Month	7.88	14.30	13.48	14.00	21.46	23.90	8.32	5.71	4.69	3.89	4.28	4.26	14.47
Max Month	74.87	71.90	56.81	47.32	60.32	105.3	439.9	1063	708.5	113.0	97.87	67.53	192.8
Exceedences													
1%	75.59	84.00	62.00	56.53	78.55	146.5	582.2	1357	874.2	173.2	119.2	105.4	725.2
5%	52.00	60.50	55.00	50.00	61.00	103.0	428.0	895.1	482.0	97.10	80.00	58.00	285.0
10%	44.00	50.00	51.00	46.00	54.00	79.30	299.0	674.2	384.0	62.40	51.20	47.00	133.0
20%	35.00	41.00	45.00	41.00	47.00	62.00	168.0	437.0	238.0	40.00	35.40	36.00	60.00
50%	23.00	30.00	31.00	31.00	35.00	40.00	71.00	149.0	58.00	17.00	18.00	19.00	32.00
80%	13.00	21.00	23.00	23.00	27.00	30.00	33.00	28.00	12.00	6.86	7.90	8.00	17.00
90%	9.50	17.00	20.00	19.00	24.00	27.00	23.00	11.00	6.50	5.00	6.00	6.20	9.90
95%	8.30	14.00	18.00	17.00	22.00	25.00	17.00	8.20	4.80	4.19	5.20	5.00	6.60
99%	6.90	11.10	13.00	14.00	19.00	22.00	6.74	5.38	3.70	3.50	3.50	3.80	4.20

Figure B-109. Station 8276300 Rio Pueblo de Taos below Los Cordovas
Mean Annual Discharge 1958-1994

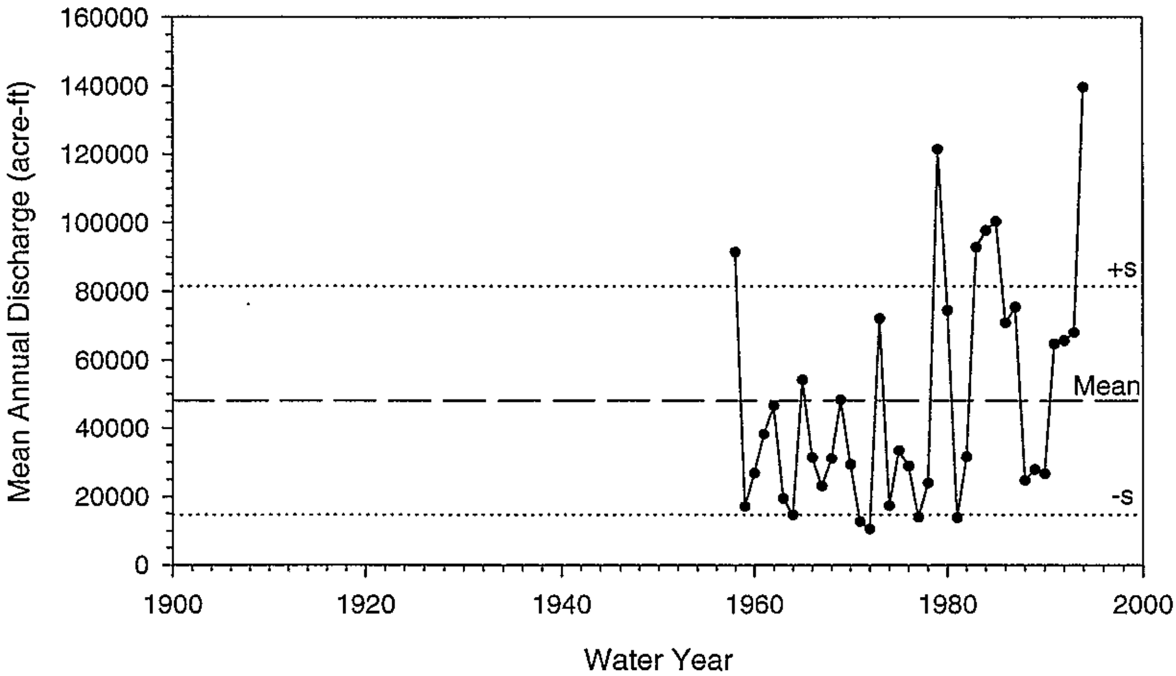


Figure B-110. Station 8276300 Rio Pueblo de Taos below Los Cordovas
Mean Monthly Discharge 1958-1994

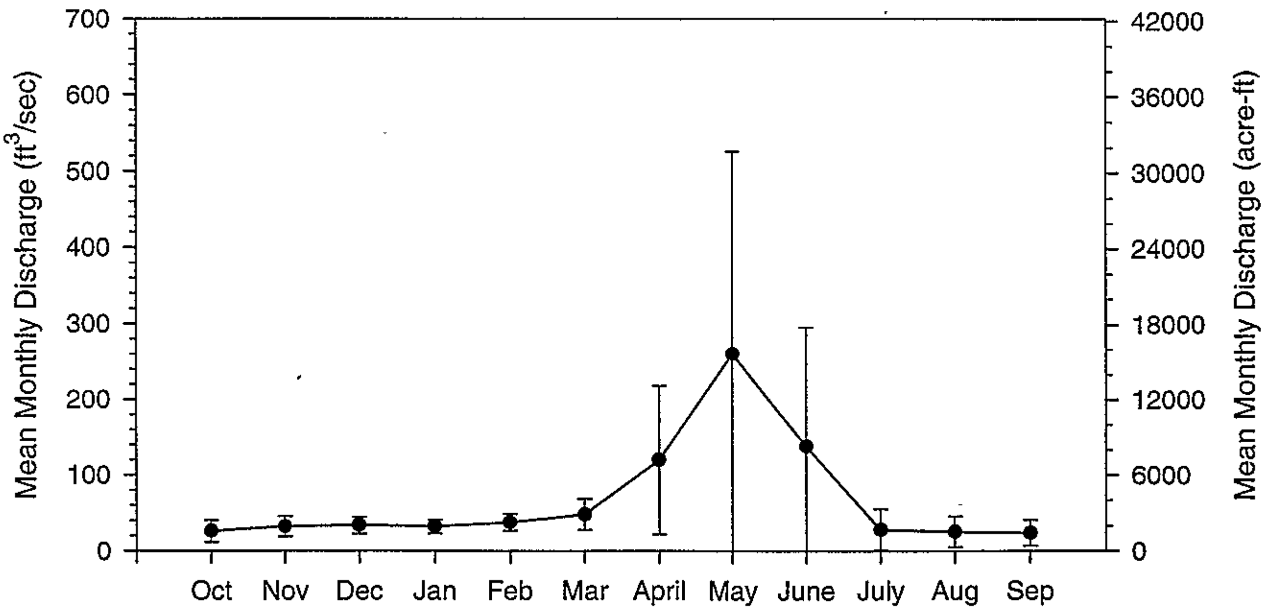
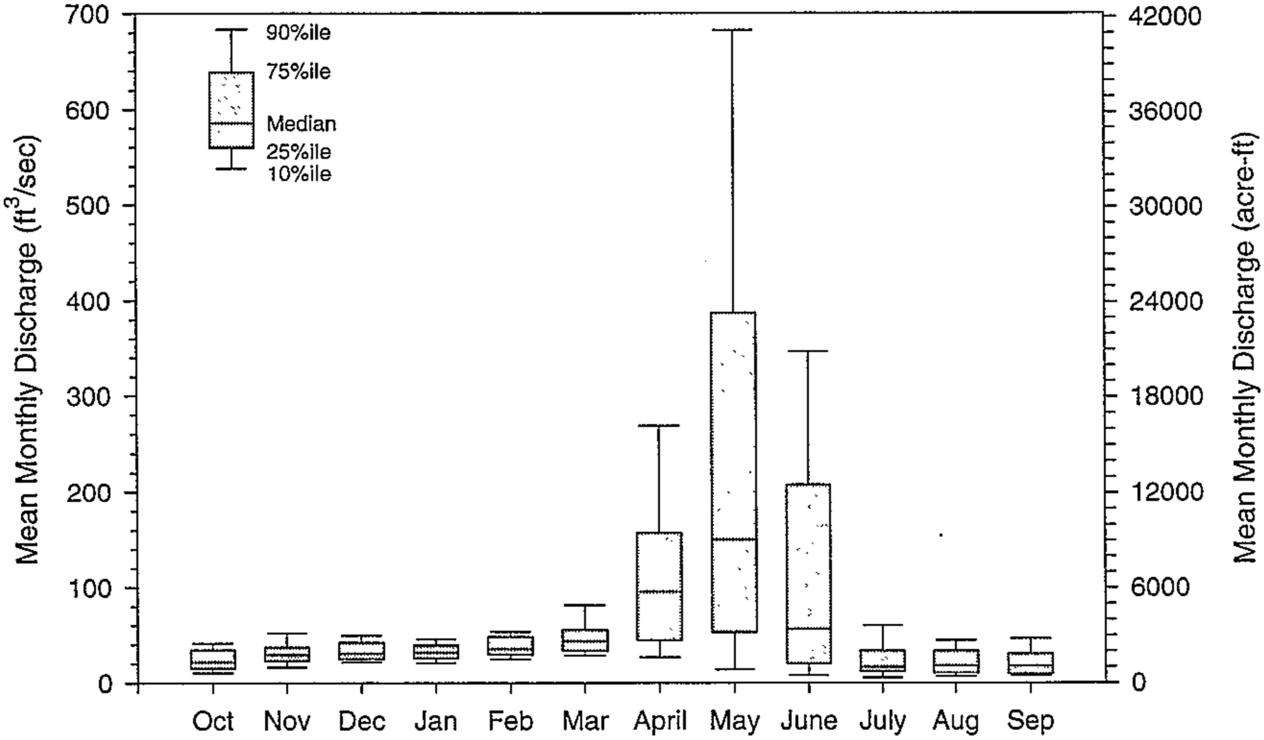


Figure B-111. Station 8276300 Rio Pueblo de Taos below Los Cordovas
Monthly Discharge 1958-1994



08276500 RIO GRANDE BELOW TAOS JUNCTION BRIDGE, NEAR TAOS, NM
(Surveillance network station)

LOCATION. --Lat 36 19'12", long 105 45'14", in NW ¼ of NE ¼ of section 15, T.24 N., R.11 E., Taos County, Hydrologic Unit 13020101, on left bank 1.7 mi downstream from bridge on State Highway 96, 2.0 mi downstream from Rio Pueblo de Taos, 11.8 mi southwest of Taos, and at mile 1,657.7.

DRAINAGE AREA.--9,730 mi^2, approximately, including 2,940 mi^2 in closed basin in San Luis Valley, CO.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1925 to current year. Prior to October 1930 monthly discharge only, published in WSP 1312. Published as "at Taos Junction Bridge, near Taos" prior to 1934.

REVISED RECORDS.--WSP 788: 1934(M). WSP 828: Drainage area. WSP 1392:1931-1932, 1935, 1937, 1945, 1950.

GAGE.--Water-stage recorder. Datum of gage is 6,050.3 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 14, 1934, at bridge 1.7 mi upstream at different datum.

REMARKS.--Estimated daily discharges: July 27-31. Water-discharge records good. Diversions upstream from station for irrigation of about 620,000 acres in Colorado and 30,000 acres in New Mexico.

AVERAGE DISCHARGE.--60 years, 742 ft^3/s, 537,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD. --Maximum discharge, 9,730 ft^3/s, June 7, 1948, gage height, 9.18 ft, and June 22, 1949, gage height, 9.23 ft; minimum, 155 ft^3/s, Sept. 21, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1888, about 14,000 ft^3/s June 19, 1903, from records for Rio Grande at Embudo and estimated inflow. Other floods exceeding 10,000 ft^3/s occurred June 9, 1905, May 28, 1920, and June 16, 1921, from comparison of records for stations near Lobatos and at Embudo.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 10	0530	4,740	7.28
June 1	0215	6,070	7.97
May 11	0800	7,560	8.67
June 14	0945	*7,710	*8.69

Minimum discharge, 245 ft^3/s, Sept. 11.

Table B-77. Mean daily streamflow (cfs), station 08276500 Rio Grande below Taos Junction Bridge, near Taos, 1927-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1927	274.7	467.1	532.9	536.1	600.0	679.3	829.4	2374	2360	2292	481.1	2087	13514
1928	1650	927.1	695.1	665.4	659.8	771.0	544.6	2053	1407	228.8	240.0	220.0	10062
1929	227.6	407.8	427.5	423.5	449.4	645.2	714.9	2295	1927	383.9	1537	1442	10881
1930	1104	842.7	641.5	489.4	717.1	683.9	1076	867.6	834.9	448.3	670.6	324.2	8700
1931	369.2	413.8	491.9	387.4	517.7	721.3	503.7	440.5	284.9	224.4	216.5	337.0	4908
1932	374.5	321.1	493.1	501.2	606.8	819.5	1123	3607	3438	1741	363.9	373.7	13763
1933	354.9	530.8	493.5	474.1	433.0	600.5	378.1	740.8	1742	421.5	252.8	282.9	6705
1934	310.9	393.0	495.7	496.7	630.1	490.7	349.7	374.0	240.2	198.5	209.8	241.7	4431
1935	242.2	243.9	361.0	407.5	374.1	316.4	264.2	1253	3537	1090	407.7	378.2	8875
1936	403.7	467.1	502.6	452.3	545.4	508.0	1300	1915	447.9	218.0	421.4	356.7	7538
1937	444.7	624.0	579.5	485.3	668.6	818.7	2214	4331	2189	730.6	273.8	276.4	13636
1938	302.3	303.6	446.8	447.6	541.4	577.3	1556	3092	3674	860.4	305.0	472.0	12578
1939	750.0	713.8	677.7	542.0	538.8	1151	1228	1238	357.9	215.7	236.2	239.0	7888
1940	247.5	267.2	316.3	398.2	466.5	505.4	344.1	714.5	425.4	226.0	233.2	228.2	4373

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1941	255.6	316.9	464.8	446.4	540.7	816.0	668.4	5993	6007	2945	484.3	427.4	19366
1942	1675	1532	1018	747.6	756.5	867.0	3020	5979	5203	580.6	318.2	369.2	22066
1943	334.3	414.7	582.2	531.4	635.0	607.2	731.3	957.0	620.1	304.1	300.4	297.0	6315
1944	314.7	408.2	461.6	460.3	547.2	759.0	802.0	4803	4008	1350	316.5	258.2	14489
1945	331.2	492.4	531.4	536.8	636.0	607.5	700.6	3147	1502	524.5	329.4	280.0	9619
1946	320.4	477.8	467.4	464.3	485.2	510.1	438.9	376.8	282.9	241.4	249.8	251.2	4566
1947	304.6	524.0	557.2	452.3	550.3	503.8	500.3	1786	760.8	411.3	325.8	397.6	7074
1948	343.9	525.7	536.2	514.2	544.1	841.5	1685	3916	5108	526.0	291.8	244.8	15077
1949	283.5	413.8	493.7	485.8	528.6	649.6	702.3	2012	4862	1841	417.4	329.2	13019
1950	344.5	497.3	541.0	551.9	696.5	508.7	437.2	443.9	585.7	274.4	216.8	234.2	5332
1951	251.8	304.2	423.1	408.0	473.4	376.8	317.1	354.3	293.7	185.9	200.3	208.1	3797
1952	220.5	243.1	342.0	471.8	420.1	494.5	931.2	3292	3053	733.0	799.7	400.5	11401
1953	340.8	409.8	547.1	583.2	642.8	563.0	452.8	523.7	642.3	294.4	242.5	214.6	5457
1954	245.3	320.2	420.7	414.8	501.4	355.2	378.1	425.5	289.2	232.4	222.8	224.7	4030
1955	240.8	248.8	301.3	365.0	380.5	388.3	277.2	563.7	478.6	258.2	293.0	248.2	4044
1956	238.6	278.1	354.5	410.1	409.0	377.9	281.1	378.7	474.0	195.5	184.4	161.0	3743
1957	170.8	223.5	243.1	262.8	290.4	258.6	333.3	1373	3164	2579	1463	760.1	11122
1958	460.5	956.0	666.9	535.1	598.2	624.2	1187	4145	2061	317.7	268.9	260.0	12081
1959	279.7	352.2	440.4	422.4	467.6	435.6	325.3	285.4	244.6	185.4	220.1	191.2	3850
1960	296.6	427.7	429.9	408.5	432.5	701.1	1250	648.7	1096	334.1	226.9	191.7	6444
1961	256.3	391.7	365.3	350.7	425.8	409.9	657.3	1135	695.6	330.2	331.1	334.6	5684
1962	316.9	682.8	511.7	469.0	697.9	618.0	1642	1878	1072	479.3	282.7	269.5	8920
1963	274.2	529.3	415.2	349.1	506.3	555.1	470.3	258.6	221.4	185.5	202.4	196.8	4164
1964	190.2	256.1	244.2	306.4	326.2	404.4	307.0	355.5	255.2	192.7	220.7	197.5	3256
1965	199.0	337.8	270.2	395.0	426.8	528.6	660.9	1890	2871	1561	793.8	539.6	10474
1966	769.5	840.8	649.7	605.0	585.8	903.7	919.5	974.5	681.5	319.3	414.9	246.9	7911
1967	273.9	734.5	479.2	404.5	489.7	482.8	277.3	305.1	619.1	324.2	689.6	386.6	5467
1968	287.3	547.7	441.5	467.7	519.1	721.6	513.8	1140	1786	595.5	1028	328.7	8377
1969	280.3	551.9	445.2	528.5	555.1	626.9	805.2	1528	1669	729.1	568.3	495.6	8783
1970	966.3	1103	736.4	564.0	705.3	732.0	741.3	1325	757.2	417.7	272.2	824.1	9145
1971	635.9	953.3	647.4	583.9	741.6	913.8	520.7	270.9	313.3	317.1	277.3	283.6	6459
1972	570.9	605.5	509.6	484.0	552.4	739.2	345.7	249.2	282.0	204.6	249.5	297.6	5090
1973	338.6	655.1	489.6	458.1	478.8	794.5	768.9	2890	3312	1592	583.3	480.5	12841
1974	596.8	542.3	504.6	486.2	489.0	776.8	493.1	395.0	297.9	190.6	213.4	180.0	5166
1975	221.1	282.7	357.2	376.2	450.2	578.8	659.7	1666	2215	1484	665.5	589.9	9546
1976	447.7	1033	510.6	418.6	548.3	704.8	743.7	1106	1166	503.7	352.4	220.6	7755
1977	272.2	305.7	310.9	304.1	373.6	485.9	318.5	232.9	187.6	217.2	195.8	193.4	3398
1978	190.3	263.0	265.7	336.0	391.2	419.0	313.4	799.2	841.9	588.5	296.2	214.4	4919
1979	387.2	436.7	338.6	351.2	395.4	843.8	1311	3376	5495	2607	910.2	289.0	16741
1980	239.5	311.1	384.7	479.4	553.0	593.8	999.7	3076	3022	951.4	372.5	222.6	11206
1981	212.1	295.5	479.7	423.6	432.6	446.6	249.8	264.6	273.4	260.7	288.2	271.4	3898
1982	382.1	565.1	341.1	386.5	469.8	589.7	593.0	1548	1928	1061	792.0	1059	9715
1983	752.2	686.8	502.5	514.9	668.8	794.7	977.5	1982	3700	1491	461.1	248.8	12780
1984	259.5	294.0	474.6	471.7	491.3	800.5	1373	3292	1863	602.8	383.6	322.5	10629
1985	378.4	692.4	624.6	608.1	618.8	920.2	2907	4946	5381	1217	541.5	349.7	19185
1986	560.3	975.4	830.1	763.8	862.3	975.1	1455	2101	4727	2547	449.9	510.1	16757
1987	884.1	1310	930.5	729.5	864.7	1195	2782	6055	3742	788.5	309.2	290.9	19881
1988	289.0	559.1	558.5	499.0	575.4	814.7	739.3	397.0	409.8	321.0	263.7	294.8	5721
1989	312.8	541.3	539.4	506.2	574.5	1176	1575	824.5	508.3	259.4	247.9	239.3	7305
1990	297.5	281.3	340.9	375.1	425.5	558.2	439.3	889.7	575.6	439.8	364.1	271.0	5258
1991	444.3	580.7	457.1	508.8	591.6	740.5	1586	1961	1450	655.3	585.6	527.3	10088
1992	321.7	514.6	503.1	491.4	545.7	941.2	1740	1109	1009	378.5	390.9	317.0	8262

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1993	295.2	412.2	452.2	543.1	687.1	913.9	1084	2625	2432	728.8	468.8	757.7	11400
1994	389.1	526.5	574.8	579.5	636.6	875.5	1147	2846	2126	412.2	248.2	274.0	10635

Table B-78. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08276500 Rio Grande below Taos Junction Bridge, near Taos, 1927-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	2139	1949	2139	2070	2139	2070	2139	2139	2070	2139	2070	2139	25202
Avg Day	476.5	544.3	666.4	885.4	1815	1802	711.8	409.0	376.8	413.1	530.9	494.3	760.6
Max Day	2000	2060	2270	6170	9630	9730	8920	4290	4315	2660	2240	1380	9730
Min Day	238	238	220	214	193	171	167	163	159	159	190	211	159
# Months	69	69	69	69	69	69	69	69	69	69	69	69	69
SDev Month	98.28	117.9	204.8	623.2	1533	1610	677.3	265.1	295.9	288.4	264.5	145.7	371.6
Skew Month	0.66	0.426	0.405	1.66	1.15	0.986	1.79	2.48	3.88	2.85	1.52	1.05	0.858
Min Month	262.8	290.4	258.6	249.8	232.9	187.6	185.4	184.4	161.0	170.8	223.5	243.1	271.2
Max Month	763.8	864.7	1195	3020	6055	6007	2945	1537	2087	1675	1532	1018	1840
Exceedences													
1%	780	933	1460	4405	7837	7610	4132	1752	2266	2077	1453	1080	5340
5%	686	795	1130	2470	5720	5450	2381	943	839	1060	1155	779	2600
10%	605	720	950	1760	4310	4310	1760	735	578	720	910	678	1488
20%	545	645	825	1220	2946	3340	909	497	411	468	692	592	819
50%	470	528	640	640	1240	1110	384	308	280	310	464	484	472
80%	391	436	463	350	392	320	230	232	220	246	292	367	290
90%	354	396	389	300	282	260	198	210	202	220	256	310	242
95%	326	366	336	265	252	225	186	192	188	198	235	264	216
99%	270	295	260	233	221	186	175	174	163	170	215	228	181

Figure B-112. Station 8276500 Rio Grande below Taos Junction Bridge
Mean Annual Discharge 1927-1994

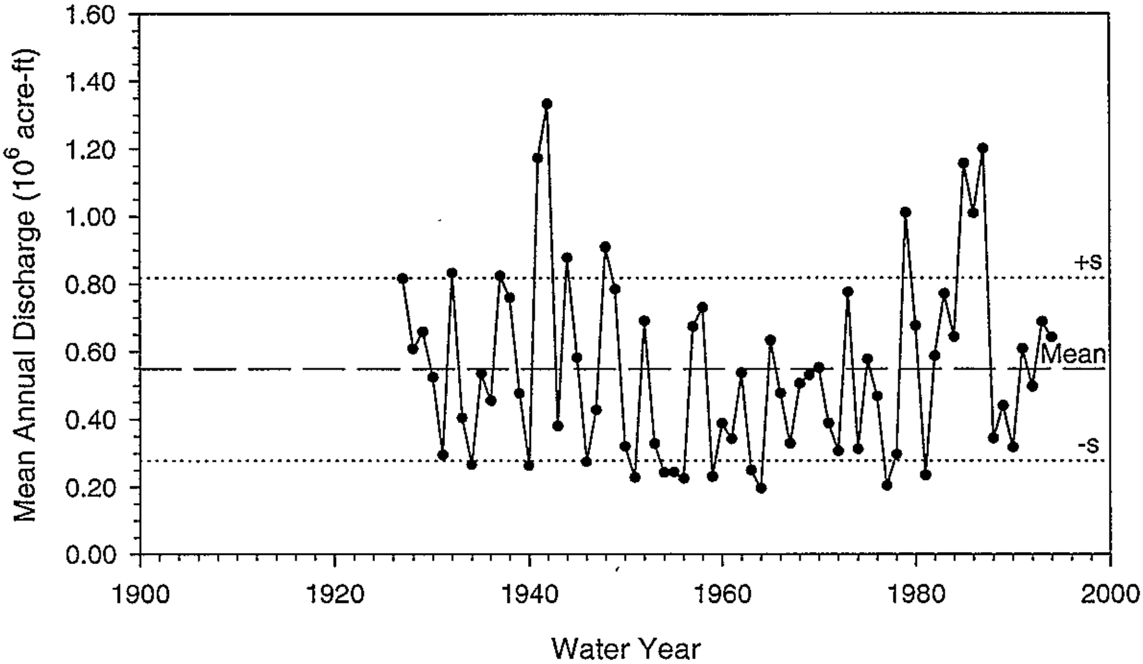


Figure B-113. Station 8276500 Rio Grande below Taos Junction Bridge
Mean Monthly Discharge 1927-1994

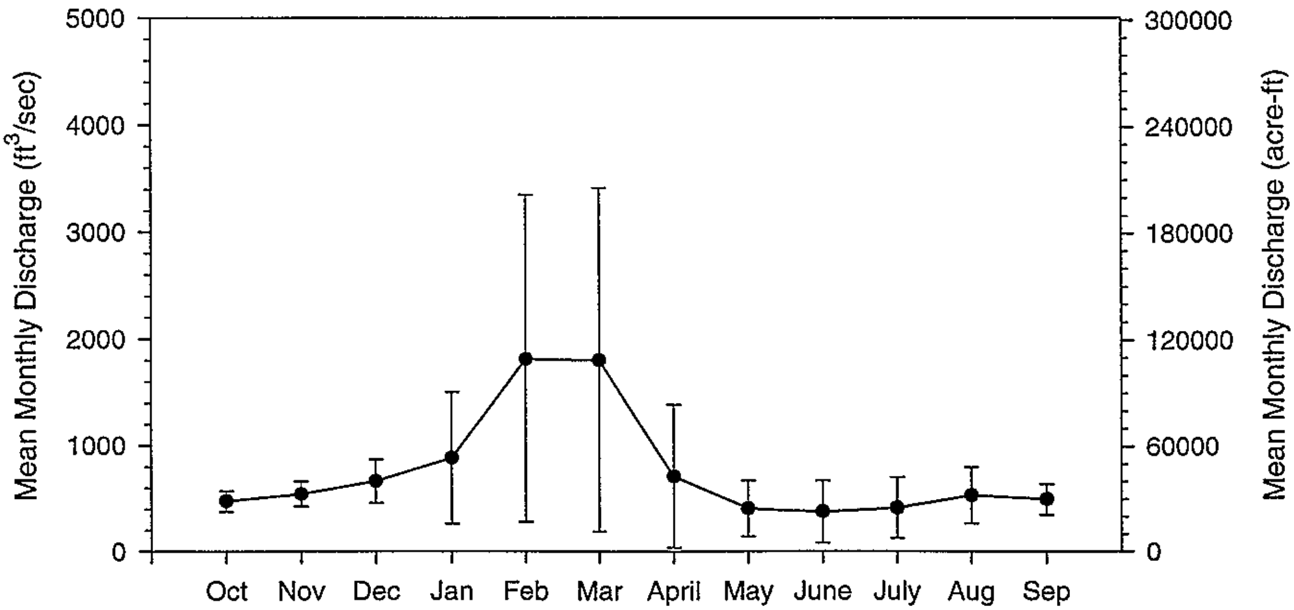
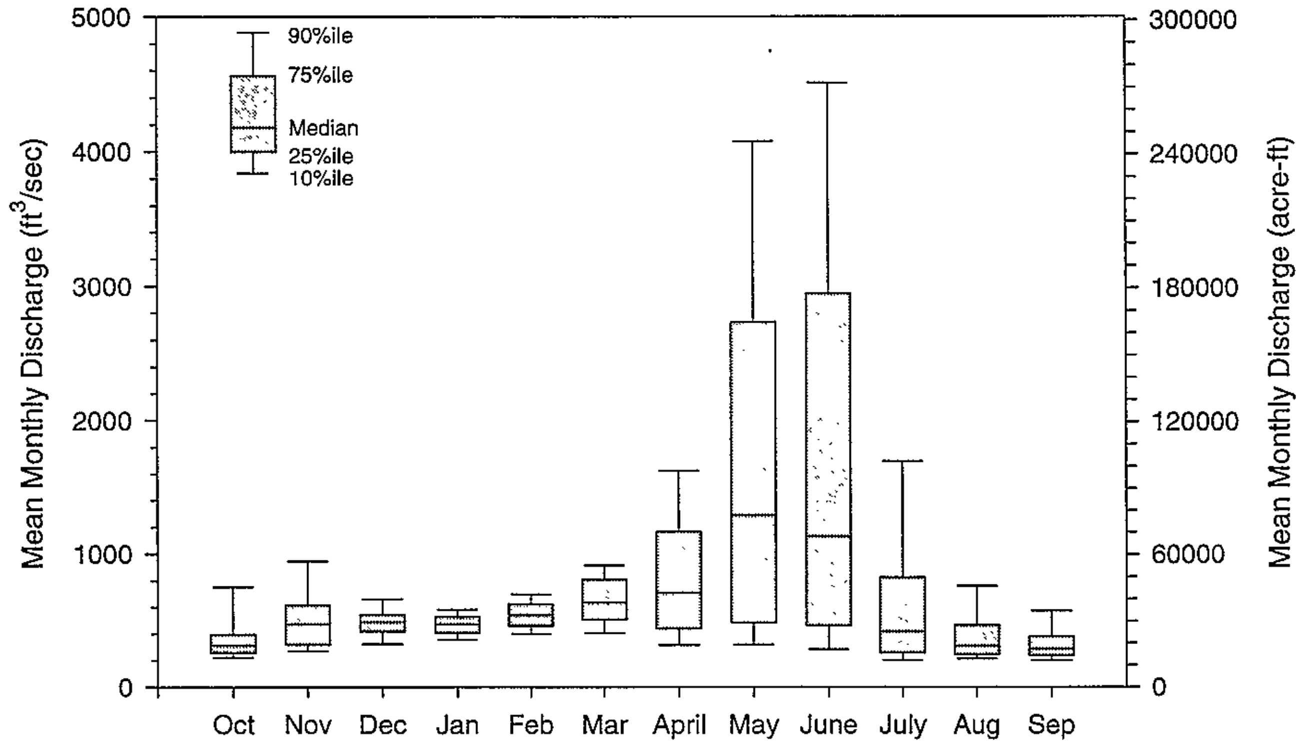


Figure B-114. Station 8276500 Rio Grande below Taos Junction Bridge
Monthly Discharge 1927-1994



08278000 PUEBLO CREEK NEAR PENASCO, NM

No Remarks Available for this Station. In SE ¼ of section 29, T.23 N., R.12 E., 300 ft downstream from headgate of Picuris ditch, 1.5 mi east of Picuris Pueblo, 1.5 mi northeast of Penasco, and 3 mi upstream from Rio Santa Barbara; diversion for irrigation of several hundred acres above station (Reiland and Haynes, 1963).

Station Name	PUEBLO C N PENASCO, NM
Station ID	08278000
State	NEW MEXICO
County	TAOS
Latitude	36:11:40
Longitude	105:41:00
Elevation	7500.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1936	1941	6	2009	0	58.36	1240.00	0.00		

Table B-79. Mean daily streamflow (cfs), station 08278000 Pueblo Creek near Penasco, 1937-1941.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1937	13.94	11.96	9.68	6.32	13.73	23.06	226.2	248.7	138.0	64.61	14.73	14.21	47420
1938	13.48	12.83	10.63	8.65	10.91	15.65	83.77	108.4	41.73	11.37	7.18	25.70	21149
1939	24.06	18.13	13.03	11.61	11.68	40.90	179.3	174.2	32.52	6.75	6.35	10.82	32001
1940	10.25	10.21	10.88	10.26	10.57	33.32	97.27	144.4	34.84	2.73	7.28	8.50	23034
1941	12.71	13.73	13.71	12.90	16.14	28.77	110.4	747.9	381.4	101.1	65.32	28.20	93061

Table B-80. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08278000 Pueblo Creek near Penasco, 1937-1941.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	155	141	155	180	186	180	186	186	180	155	150	155	2009
Avg Day	10.0	12.6	28.3	128.3	259.7	109.0	32.5	18.8	15.9	14.9	13.4	11.6	58.4
Max Day	16	20	94	442	1240	603	192	170	53	68	24	18	1240
Min Day	4	7	10	16	79	3.7	0	1.5	2	7.4	6.7	7	0
# Months	5	5	5	6	6	6	6	6	6	5	5	5	5
SDev Month	2.57	2.33	9.64	60.92	244.00	139.9	40.78	23.04	8.83	5.32	2.96	1.71	41.00
Skew Month	-0.48	1.04	-0.04	1.03	2.25	2.03	1.28	2.34	0.77	1.82	1.17	0.37	1.63
Min Month	6.32	10.57	15.65	72.63	108.40	25.40	2.73	6.35	8.23	10.25	10.21	9.68	29.21
Max Month	12.90	16.14	40.90	226.2	747.90	381.4	101.1	65.32	28.20	24.06	18.13	13.71	128.50
Exceedences													
1%	15.45	20.00	91.25	431.6	1214.0	563.8	178.2	135.6	48.20	58.10	23.50	18.00	690.20
5%	15.00	20.00	71.00	332.0	850.00	439.0	134.4	77.60	34.00	25.50	20.00	16.00	247.10
10%	14.00	18.00	59.00	250.0	726.60	350.0	102.0	50.40	30.00	22.00	18.00	15.00	156.00
20%	12.00	15.80	37.00	188.0	279.00	195.0	69.60	24.80	25.00	17.00	16.00	14.00	81.00
50%	10.00	12.00	21.00	107.0	163.00	49.00	11.00	8.20	12.00	13.00	13.00	11.00	15.00
80%	7.50	9.80	15.00	54.00	110.60	15.00	3.02	4.72	6.30	11.00	11.00	9.50	9.40
90%	6.00	9.00	13.00	31.00	94.00	9.50	1.40	3.62	4.90	10.00	9.30	9.00	6.50
95%	5.00	8.00	11.00	25.00	86.60	7.80	1.00	2.63	3.90	9.22	8.65	8.38	4.40
99%	4.28	7.70	10.55	16.00	81.00	4.50	0.00	1.80	2.72	7.40	7.40	7.91	1.50

08278500 RIO SANTA BARBARA NEAR PENASCO, NM

No Remarks Available for this Station. Previously known as Rio Santa Barbara near Llano, in E ½ of section 26, T.22 N., R.12 E. (projected), in Santa Barbara Grant, on right bank 3.5 mi southwest of Llano and Rodarte, 5.3 mi southeast of Penasco, drainage area approximately 38 mi^2, diversions above station for irrigation of 20 or 30 acres of small fields and meadows (Reiland and Haynes, 1963).

Station Name RIO SANTA BARBARA NR PENASCO, NM
Station ID 08278500
State NEW MEXICO
County TAOS
Latitude 36:06:40
Longitude 105:37:55
Elevation 8300.00

Parameter	Statistic	S Yr	E Yr	# Yrs	# Obs	%	Average	Maximum	Minimum	X-Sec Loc	Depth
STREAM FLOW CFS	Mean	1952	1994	10	2983	0	35.35	499.00	3.00		

Table B-81. Mean daily streamflow (cfs), station 08278500 Rio Santa Barbara near Penasco, 1953-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1953	17.03	11.29	9.23	9.01	7.50	12.43	39.53	100.0	122.4	27.90	14.68	8.47	379
1954	7.83	7.48	5.65	4.10	6.57	7.86	49.23	70.94	34.87	21.03	22.32	12.83	251
1955	15.19	9.64	6.18	5.90	5.89	7.47	22.58	85.71	86.07	27.13	57.55	30.00	359
1956	13.16	10.18	7.48	6.09	5.57	9.19	18.60	35.61	17.00	8.13	8.11	4.50	144
1957	4.95	5.13	4.18	5.02	3.93	6.46	44.96	97.77	174.8	62.10	128.8	66.50	605
1993	13.74	13.43	8.15	7.00	7.57	10.49	33.60	130.6	150.0	51.68	61.71	50.03	538
1994	17.16	12.17	10.31	7.12	7.10	14.74	43.50	198.7	206.7	29.71	17.42	19.30	584

Table B-82. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08278500 Rio Santa Barbara near Penasco, 1953-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	248	270	279	248	226	248	240	248	240	248	248	240	2983
Avg Day	13.8	11.6	8.5	6.7	6.7	10.8	40.9	110.6	116.1	34.8	42.7	26.5	35.4
Max Day	29	20	45	11	14	58	156	355	499	95	250	191	499
Min Day	4	4.5	3.5	3	3	4.5	7.5	26	10	6.1	5.8	3.5	3
# Months	8	9	9	8	8	8	8	8	8	8	8	8	7
SDev Month	5.29	4.10	3.09	1.79	1.56	3.85	17.57	52.41	66.13	18.18	39.96	21.55	14.64
Skew Month	-0.51	0.12	0.33	0.20	-0.29	0.75	0.83	0.47	-0.36	0.21	1.67	1.09	-0.33
Min Month	4.95	5.13	4.18	4.10	3.93	6.46	18.60	35.61	17.00	8.13	8.11	4.50	12.00
Max Month	21.42	17.53	13.65	9.19	9.11	17.47	75.27	198.7	206.7	62.10	128.8	66.50	50.52
Exceedences													
1%	27.00	19.30	18.00	10.00	11.00	41.96	138.8	349.1	447.2	85.60	238.8	161.4	245.20
5%	22.60	19.00	15.00	9.80	9.67	21.00	97.00	263.0	249.0	72.00	120.0	88.00	147.90
10%	21.00	18.00	13.00	9.00	8.44	18.00	86.00	204.2	213.0	61.20	98.00	54.00	97.70
20%	19.00	16.00	11.20	8.80	7.80	14.00	65.00	165.0	165.0	54.00	76.40	35.00	52.00
50%	14.00	11.00	8.00	6.60	6.80	8.20	30.00	83.00	118.0	30.00	25.00	19.00	14.50
80%	7.40	7.80	5.96	5.00	5.26	6.86	16.00	52.00	35.00	18.60	15.00	9.00	7.00
90%	5.30	5.50	5.00	4.00	4.50	6.00	13.00	39.00	21.00	9.40	9.24	5.20	5.80
95%	5.00	5.00	4.00	4.00	4.00	5.50	9.00	34.00	14.00	7.16	7.00	4.00	5.00
99%	4.20	5.00	3.50	4.00	3.00	4.75	8.00	29.48	11.00	6.40	6.10	4.00	4.00

08279000 EMBUDO CREEK AT DIXON, NM

LOCATION.--Lat 36 12'39", long 105 54'47" in NE ¼ of SE ¼ of section 19, T.23 N., R.10 E., Rio Arriba County, Hydrologic Unit 13020101, on right bank 750 ft upstream from U.S. Highway 64, 0.5 mi upstream from mouth, 0.5 mi east of Embudo Post Office, and 1.7 mi northwest of Dixon.

DRAINAGE AREA.--305 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to February 1926, October 1926 to September 1955, annual maximum, water years 1956-62, September 1962 to current year. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for July 6-25, 1932, published in WSP 733, and maximum discharges for water years 1931-33, 1935, 1937-38, 1941, are unreliable and should not be used.

REVISED RECORDS.--WSP 1512: 1931-32, 1941, 1947(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 5,858.60 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 30, 1938, at site about 1 mi upstream at different datum. Nov. 30, 1938 to Aug. 1, 1941, at site about 0.9 mi upstream at datum about 59.9 ft higher. Aug. 2, 1941 to Sept. 1, 1971, at site 750 ft downstream at datum 9.10 ft lower. April 1956 to Sept. 21, 1962, crest-stage gage.

REMARKS.--Estimated daily discharges: Aug. 7 to Sept. 5. Water-discharge records good. Diversions upstream from station for irrigation of about 6,500 acres, a small part of which are downstream from gage.

AVERAGE DISCHARGE.--54 years (water years 1924-25, 1927-55, 1963-85), 80.4 ft^3/s, 58,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (SINCE 1941).--Maximum discharge, 4,200 ft^3/s, Aug. 29, 1977, gage height, 7.10 ft, from rating curve extended above 1,600 ft^3/s; maximum gage height, 7.6 ft, Aug. 4, 1967; minimum discharge, 0.06 ft^3/s, June 26, 27, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 28	2145	880	4.33
June 5	0215	*1,210	*4.75
May 10	0445	1,11[illegible]	4.66

Minimum discharge, 18 ft3/s, Jan. 3.

Table B-83. Mean daily streamflow (cfs), station 08279000 Embudo Creek at Dixon, 1924-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1924	86.35	37.43	37.94	39.71	47.24	37.90	302.9	390.1	180.2	35.48	15.00	23.53	74501
1925	30.00	33.83	35.81	25.71	30.50	49.94	72.97	29.03	26.20	40.00	60.00	58.13	29698
1928	42.13	29.50	26.68	22.10	24.45	26.61	50.67	317.6	155.7	13.03	26.29	23.57	45967
1929	29.52	34.97	27.71	25.58	21.07	31.39	95.47	374.0	224.3	62.42	159.8	190.3	77284
1931	33.26	26.93	26.84	26.35	23.14	33.03	110.2	295.1	129.4	36.10	31.58	91.28	52229
1932	91.94	46.23	43.29	36.03	72.72	109.7	367.6	426.7	167.3	49.16	77.61	52.43	93045
1933	58.61	34.67	24.77	28.19	23.43	19.32	33.53	101.8	236.8	51.13	30.52	18.50	39879
1934	27.23	29.23	31.81	27.29	20.82	22.35	37.87	31.55	12.27	5.13	7.74	19.77	16469
1935	21.03	17.73	23.77	34.13	26.68	36.77	153.7	488.0	496.1	85.32	146.9	102.8	98718
1936	65.00	32.77	32.65	29.58	22.34	52.29	225.4	326.6	86.77	55.13	41.10	34.10	60832
1937	50.84	32.37	24.87	25.32	45.96	62.06	367.3	522.3	322.1	203.9	41.74	59.80	106305
1938	44.74	35.60	30.16	26.23	25.57	30.26	130.3	197.4	65.67	27.84	18.58	97.20	44054
1939	65.10	42.43	19.58	19.71	23.11	75.71	269.4	273.9	46.37	9.65	17.01	31.40	54021
1940	32.68	24.70	21.23	19.63	23.86	55.65	156.5	316.0	84.40	12.47	15.26	32.42	48137
1941	45.74	35.80	32.74	26.26	31.00	60.16	187.0	1231	812.7	165.5	117.3	65.47	170452

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1942	115.6	95.47	54.29	38.94	41.79	53.68	504.9	906.3	510.9	56.97	29.52	76.53	150184
1943	46.87	42.10	35.61	32.19	36.82	48.26	164.2	163.9	46.43	26.29	38.68	24.03	42604
1944	23.87	32.90	31.13	30.32	27.45	38.84	105.6	578.2	322.9	52.61	21.55	8.73	77245
1945	31.32	31.53	27.26	29.74	34.79	44.19	223.1	571.3	203.0	32.35	21.71	23.13	77138
1946	31.84	27.37	21.74	22.52	25.11	30.52	138.0	78.81	11.43	6.45	30.39	19.53	26744
1947	37.61	39.20	30.45	31.84	28.61	34.45	74.63	269.6	43.77	8.27	23.05	21.60	39015
1948	22.14	27.50	28.97	25.52	32.21	42.87	254.2	456.5	291.8	25.80	31.58	9.43	75420
1949	19.13	29.40	26.81	28.48	29.54	42.26	155.2	345.5	196.3	74.26	65.52	37.83	63569
1950	29.94	24.23	19.81	21.97	26.29	22.35	27.20	9.56	5.49	2.98	2.71	2.79	11735
1951	3.09	4.18	9.75	12.00	14.95	15.51	17.59	43.23	16.22	0.86	11.67	4.24	9253
1952	4.35	14.65	27.03	40.06	23.55	43.13	193.8	376.9	337.0	62.82	30.61	38.17	71999
1953	25.65	28.50	30.71	31.71	25.57	38.06	73.73	218.2	201.6	23.66	5.13	3.30	42638
1954	7.87	23.06	18.05	21.97	23.21	29.13	65.73	81.97	12.06	13.84	19.07	10.01	19685
1955	17.57	17.80	15.74	19.90	19.18	26.97	38.73	201.6	118.8	19.88	110.6	32.40	38775
1963	26.39	35.60	30.10	25.19	35.86	71.06	163.4	63.10	18.32	4.95	6.20	11.54	29567
1964	14.15	23.10	21.94	17.68	15.79	30.03	71.13	175.9	55.02	14.75	11.67	12.50	28094
1965	13.55	19.47	26.52	31.87	26.61	33.77	200.0	357.4	331.3	107.4	106.5	68.43	79950
1966	52.77	48.33	41.39	29.94	29.21	55.65	117.9	110.2	68.10	25.61	75.74	21.37	40897
1967	21.39	25.77	30.19	26.13	25.29	31.45	46.17	12.51	15.88	9.20	133.5	49.40	25825
1968	24.71	25.53	32.19	27.35	31.59	34.74	74.27	238.1	156.4	32.48	165.9	28.83	52869
1969	15.42	25.87	30.45	30.26	27.75	35.16	160.6	329.2	183.5	46.32	45.81	63.13	60062
1970	51.39	54.33	38.94	27.26	30.61	28.77	68.47	172.9	73.10	46.52	40.87	25.40	39872
1971	31.55	31.17	20.23	25.42	28.04	27.90	23.43	17.42	8.99	9.61	39.16	25.36	17382
1972	46.32	45.23	39.03	29.42	28.38	34.61	13.28	8.94	26.29	10.81	14.55	24.13	19352
1973	25.77	46.50	38.71	31.81	32.36	52.23	194.8	835.3	526.9	160.1	28.61	25.93	121146
1974	28.32	30.23	31.90	31.94	30.96	41.23	41.80	70.35	22.98	8.56	9.09	6.43	21368
1975	19.46	29.07	29.55	27.87	26.14	39.84	88.37	280.9	205.9	72.52	26.29	123.4	58559
1976	46.68	34.70	34.94	29.32	33.34	43.03	100.0	177.8	90.63	23.61	22.09	19.00	39600
1977	27.58	26.33	24.84	23.00	24.29	22.90	32.43	40.42	13.43	12.06	38.13	36.77	19449
1978	15.39	29.83	24.32	21.35	21.79	30.77	47.8	211.9	123.3	21.1	7.85	5.12	33926
1979	9.74	30.97	29.52	25.13	30.14	52.03	226.2	534.1	744.9	155.1	64.19	21.87	116084
1980	23.58	33.27	30.26	29.71	32.72	36.29	152.0	560.5	456.6	56.97	22.94	13.96	87587
1981	19.23	28.37	28.39	22.45	19.82	18.90	22.53	17.00	6.75	6.15	32.40	15.47	14338
1982	16.74	19.80	21.42	22.74	24.79	32.23	44.17	182.4	143.2	36.45	64.16	88.50	42098
1983	56.71	50.47	32.97	32.39	34.75	56.90	160.1	466.8	500.6	165.1	99.84	39.40	102589
1984	36.58	31.73	40.84	35.42	34.31	61.77	236.8	815.0	276.9	46.68	34.77	18.83	101337
1985	52.06	46.83	46.84	42.23	42.46	112.5	373.6	673.6	589.9	89.68	54.32	45.83	131071
1986	79.74	54.83	37.35	32.90	33.50	46.19	123.5	279.3	429.8	139.5	41.97	56.97	81830
1987	55.48	53.73	40.97	33.87	39.79	62.87	234.8	534.7	368.2	35.06	43.71	32.07	92795
1988	24.71	36.53	33.23	28.45	31.55	29.58	44.87	95.26	90.90	101.8	119.8	128.7	46276
1989	60.19	45.43	37.03	34.16	41.79	129.0	182.8	95.42	24.05	18.15	14.90	23.20	42622
1990	50.94	32.40	24.48	27.48	26.39	49.23	151.6	185.9	105.1	62.06	49.10	38.33	48568
1991	62.29	65.97	41.32	35.58	41.89	60.61	213.7	454.3	221.5	132.9	222.4	122.0	101473
1992	52.35	61.43	53.71	42.13	42.14	90.00	365.8	489.9	295.7	67.81	46.10	24.77	98604
1993	25.65	36.63	37.26	40.84	41.25	86.10	157.2	434.1	310.8	46.81	116.1	113.2	87436
1994	39.81	45.93	36.74	31.94	35.14	90.06	283.1	766.3	353.0	26.71	30.16	32.03	107263

Table B-84. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08279000 Embudo Creek at Dixon, 1924-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	1922	1860	1922	1922	1752	1922	1860	1922	1860	1922	1922	1860	22646
Avg Day	37.93	35.36	31.16	28.65	30.36	46.42	148.1	315.7	198.3	49.79	49.89	42.23	84.66
Max Day	229	138	116	130	175	247	1130	2590	1840	650	492	492	2590
Min Day	1.9	2.2	5.0	9.0	8.0	7.0	6.1	4.3	0.2	0.2	0.2	1.9	0.2
# Months	62	62	62	62	62	62	62	62	62	62	62	62	61
SDev Month	22.64	13.97	8.65	6.16	9.05	23.24	106.2	253.0	189.8	47.40	46.11	37.15	49.95
Skew Month	1.11	1.45	0.38	0.15	1.83	1.62	1.06	1.19	1.27	1.53	1.71	1.77	0.80
Min Month	3.09	4.18	9.75	12.00	14.95	15.51	13.28	8.94	5.49	0.86	2.71	2.79	12.78
Max Month	115.6	95.47	54.29	42.23	72.72	129.0	504.9	1231	812.7	203.9	222.4	190.3	235.50
Exceedences													
1%	135.0	91.40	64.00	50.00	76.00	162.8	630.4	1260	875.0	343.4	283.8	234.0	740.00
5%	83.90	62.00	50.00	41.00	47.00	110.9	432.0	907.7	680.0	154.0	169.9	134.0	375.00
10%	67.00	54.00	45.00	38.00	42.00	78.00	346.0	668.2	550.0	115.0	118.0	96.00	213.00
20%	54.00	45.00	40.00	34.60	37.00	60.00	237.0	498.0	358.0	77.00	74.00	62.00	91.00
50%	32.00	32.00	30.00	29.00	29.00	37.00	100.0	257.0	118.0	30.00	31.00	26.00	35.00
80%	18.00	25.00	22.00	22.00	22.00	27.00	43.00	77.00	20.00	8.90	11.00	13.00	21.00
90%	13.00	20.00	18.00	20.00	20.00	22.00	28.00	29.20	10.00	5.90	7.10	7.50	13.00
95%	6.40	16.00	15.00	16.00	17.00	19.00	21.00	14.00	6.40	4.20	4.62	4.60	8.03
99%	3.10	5.44	9.77	11.00	13.00	14.00	11.60	7.32	2.86	0.80	1.97	2.50	3.10

Figure B-115. Station 8279000 Embudo Creek at Dixon
Mean Annual Discharge, 1924-1925, 1928-1929, 1931-1955, 1963-1994

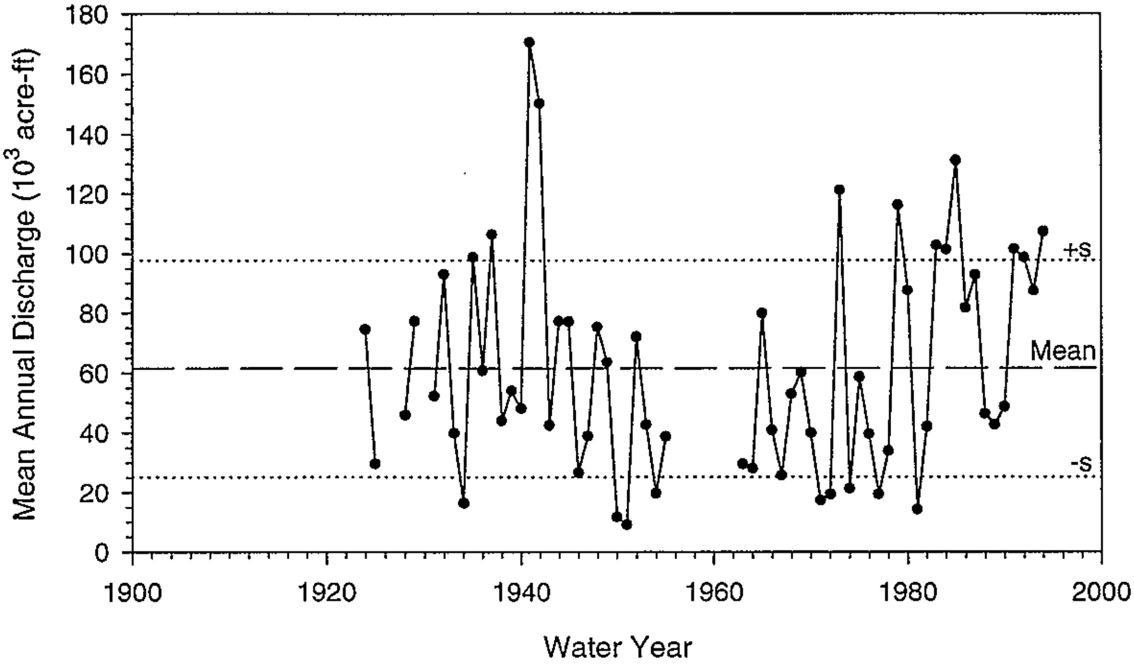


Figure B-116. Station 8279000 Embudo Creek at Dixon
Mean Monthly Discharge, 1924-1925, 1928-1929, 1931-1955, 1963-1994

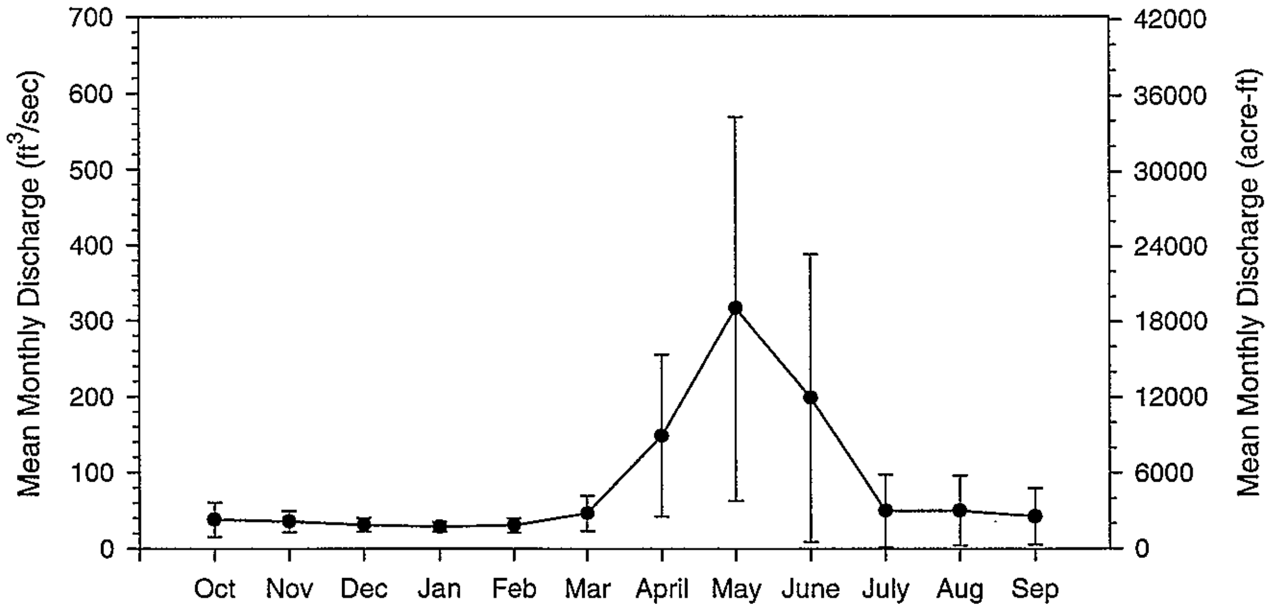
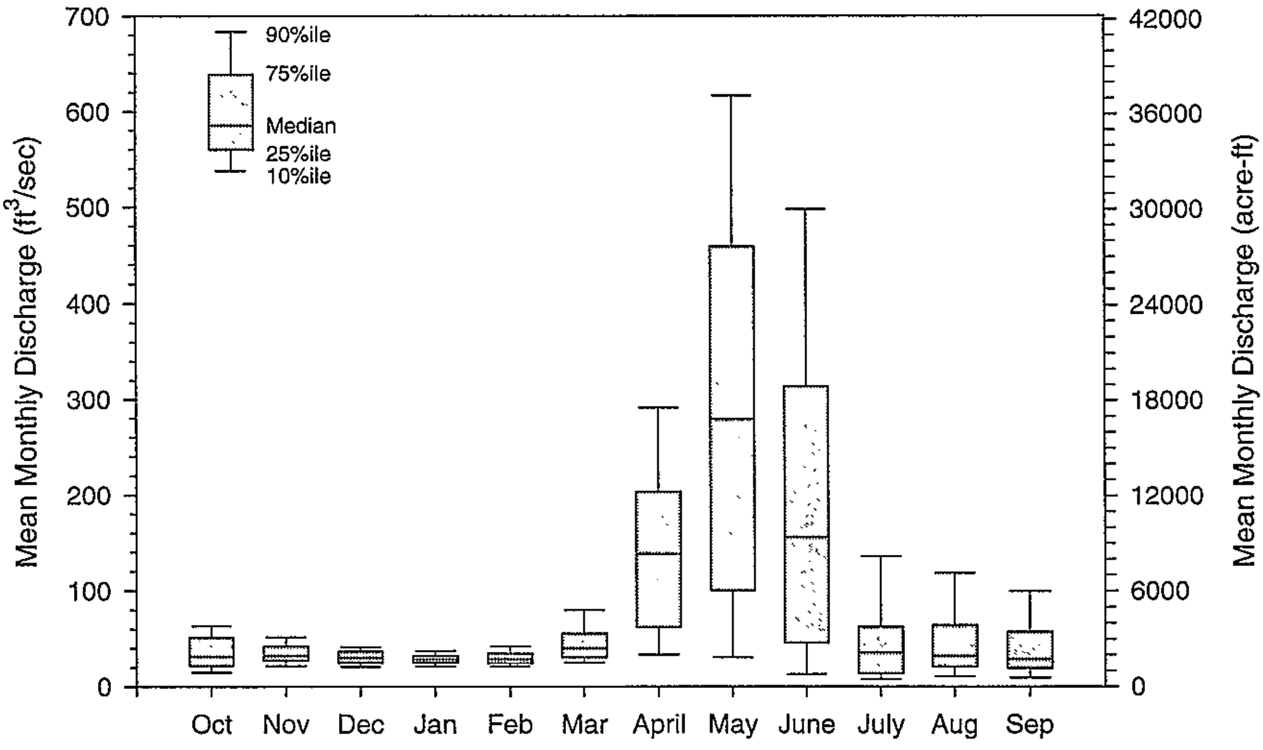


Figure B-117. Station 8279000 Embudo Creek at Dixon
Monthly Discharge, 1924-1925, 1928-1929, 1931-1955, 1963-1994



08279500 RIO GRANDE AT EMBUDO, NM

LOCATION.--Lat 36 12'20", long 105 57'49", in SW ¼ of SW ¼ of section 23, T.23 N., R.9 E., Rio Arriba County, Hydrologic Unit 13020101, on right bank 0.2 mi downstream from bridge at Embudo, 2.8 mi downstream from Embudo Creek, and at mile 1,643.1.

DRAINAGE AREA.--10,400 mi^2, approximately, including 2,940 mi^2 in closed basin in San Luis Valley, CO.

PERIOD OF RECORD.--January 1889 to current year. Monthly discharge only for some periods, published in WSP 1312. Figures of daily discharge for Oct. 4 to Nov. 30, 1896, published in WSP 358, are unreliable and should not be used.

REVISED RECORDS.--WSP 358: 1900-1902. WSP 828: Drainage area. WSP 878:1915-16. WSP 1512: 1892-99, 1904, 1916, 1931-32, 1939, 1944-45, 1950. WSP 1712: 1903(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 5,789.14 ft above National Geodetic Vertical Datum of 1929. Jan. 1 to Feb. 28, 1889, non-recording gage 1.2 mi upstream at different datum. March 1889 to December 1903, non-recording gage 1,300 ft upstream at different datum. September 1912 to June 1914, water-stage recorder on downstream end of bridge pier at site 200 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Diversions upstream from station for irrigation about 620,000 acres in Colorado and 40,000 acres in New Mexico. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1890-1930), 1,238 ft^3/s, 896,900 acre-ft/yr. 55 years (water years 1931-85), 807 ft^3/s, 584,700 acre-ft/yr, subsequent to upstream development.

EXTREMES FOR PERIOD OF RECORD (1889-1903 AND SINCE 1911).--Maximum discharge, 16,200 ft^3/ June 19, 1903, gage height, about 15.9 ft; minimum daily, 130 ft^3/s, June 30, 1902. A flood of about 14,000 ft^3/s occurred betweem May 20 and June 10, 1905, from a comparison of records for Lobatos and Otowi Bridge. Another major flood occurred Sept. 29 or 30, 1904.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft3/s)	Gage height (ft)
Apr. 20	0415	5,000	8.65
June 14	1130	8,160	11.38
May 11	0600	*8,420	*11.60

Minimum discharge, 291 ft3/s, Sept. 9 ,10.

Table B-85. Mean daily streamflow (cfs), station 08279500 Rio Grande at Embudo, 1890-1994.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1890	283.10	365.8	542.2	437.4	553.0	701.2	2083	4960	4141	1591	814.2	546.0	1028939
1891	559.30	616.8	647.4	586.5	611.2	917.1	2373	5937	5040	2356	932.4	468.8	1273535
1892	1682	782.9	553.4	498.5	589.7	1051	2979	4889	3147	619.1	245.2	202.5	1042382
1893	257.50	378.7	387.0	391.7	485.7	578.9	1436	3118	2533	278.1	286.8	348.4	632169
1895	472.40	400.1	443.5	475.1	492.2	759.3	2541	2679	3021	1335	1080	636.1	865385
1896	494.10	610.5	521.4	538.7	556.2	964.2	1807	1614	371.0	301.8	218.2	229.0	496505
1897	356.10	395.0	414.4	373.5	407.7	643.2	1798	5443	4621	1274	338.4	344.3	992295
1898	1538	1136	551.3	488.5	471.4	695.1	2240	2146	3480	2566	433.1	286.7	968797
1899	283.10	356.6	338.6	368.3	480.7	761.4	1090	955.7	298.1	296.9	236.3	309.2	348148
1900	355.80	535.2	478.2	453.2	474.4	628.0	466.7	2413	2440	280.9	172.7	247.9	539923
1901	251.80	323.6	353.6	342.9	466.0	518.2	651.6	3126	1725	404.4	451.2	359.3	542920
1902	331.00	356.7	424.5	429.7	462.3	531.8	661.3	797.9	440.3	158.1	246.5	228.3	305545
1903	230.60	230.8	264.2	316.6	375.2	787.7	986.7	2574	8974	1506	333.6	347.5	1017653
1913	483.60	564.1	439.9	387.3	449.8	660.9	1351	1418	1315	288.7	269.6	306.8	478191

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1914	717.90	698.9	417.7	473.6	551.9	762.6	1283	3185	3830	1512	1194	1151	953026
1915	1135	721.5	514.5	463.9	519.3	685.8	1718	3720	4138	1093	745.0	474.6	962328
1916	484.70	501.2	502.2	504.5	648.4	1104	1603	4590	3023	1015	1742	694.8	993771
1917	1888	1335	731.9	611.2	610.3	755.0	1234	2747	5902	3466	552.6	387.9	1222124
1918	417.70	597.8	570.2	447.8	501.7	734.2	553.3	1207	1517	697.1	240.5	553.5	484847
1919	373.10	443.3	460.6	430.0	426.8	749.5	2818	5688	2377	1230	743.6	344.7	974590
1920	593.40	692.0	712.3	594.0	728.7	767.9	1046	6340	8602	2450	600.4	548.2	1429772
1921	602.40	784.0	608.1	632.4	649.3	1072	723.5	2279	7742	1737	1522	1050	1168665
1922	640.1	722.1	680.7	612.1	651.5	785.7	842.1	3839	4703	933.6	297.8	277.7	904552
1923	294.1	481.1	505.3	531.0	521.7	533.9	666.8	2912	3337	768.6	981.4	1277	773112
1924	1753	1218	901.6	646.7	786.4	1015	3773	6576	2471	533.2	302.0	291.0	1226098
1925	384.6	480.1	485.0	475.0	660.0	916.7	946.8	797.3	498.2	358.4	537.4	608.5	430558
1926	752.7	776.2	793.5	640.0	700.0	960.0	1280	3200	3100	655.5	316.5	308.3	814010
1927	301.0	501.6	594.7	566.2	618.4	722.8	886.9	2636	2482	2419	545.5	2254	877465
1928	1697	881.3	657.4	668.6	647.5	815.7	717.6	2594	1665	237.3	267.0	260.9	672235
1929	269.3	474.3	479.3	461.2	514.1	697.5	837.1	2635	2084	466.2	1645	1614	735735
1930	1235	913.8	723.5	579.8	757.1	773.8	1266	1001	954.6	504.7	744.1	368.5	592468
1931	422.5	492.9	495.5	466.8	585.2	775.3	636.2	753.9	434.9	264.3	257.5	420.2	361825
1932	431.3	384.7	544.3	487.0	595.7	892.1	1474	4054	3524	1765	407.0	409.0	905314
1933	376.8	544.7	537.4	479.2	468.5	679.2	385.7	841.8	1984	452.9	272.4	330.9	442922
1934	335.0	392.5	519.7	536.1	701.6	517.2	383.8	380.4	249.3	208.8	220.3	251.8	282066
1935	255.8	257.9	375.3	443.7	413.9	331.1	384.5	1813	4176	1157	553.5	512.6	643297
1936	474.8	503.6	563.2	531.0	587.0	565.2	1570	2153	518.3	251.5	475.8	446.8	521742
1937	515.2	695.4	623.1	526.6	678.8	880.2	2435	4469	2547	836.8	282.0	300.4	893469
1938	341.5	350.4	492.2	481.5	572.7	640.3	1622	3121	3748	875.0	336.3	530.5	790378
1939	826.8	760.0	679.2	589.3	560.9	1132	1436	1505	394.3	217.9	257.1	279.1	522073
1940	288.9	310.0	371.4	423.2	490.1	583.2	496.8	1005	524.7	241.7	234.7	263.2	315677
1941	312.3	355.6	485.7	465.5	602.9	866.8	862.5	7228	6837	3054	599.4	477.0	1341228
1942	1795	1611	1052	799.4	802.6	897.2	3544	7185	5781	657.2	344.9	424.2	1503324
1943	363.9	437.3	607.7	568.5	682.6	645.4	887.3	1084	665.4	346.8	332.1	325.3	418454
1944	356.0	443.4	481.1	483.1	557.8	790.7	947.1	5329	4383	1409	325.5	255.9	953858
1945	372.9	530.8	552.7	570.0	684.5	684.4	959.3	3831	1723	571.6	359.4	305.8	674677
1946	355.1	519.1	499.0	487.5	515.6	545.6	604.7	471.1	291.6	253.0	302.2	273.4	308268
1947	335.4	603.4	606.3	510.4	578.6	550.4	591.6	2095	787.4	418.2	361.4	410.1	474375
1948	382.7	566.7	568.8	547.1	612.8	889.1	1969	4438	5329	584.4	322.1	253.4	992522
1949	300.2	448.7	528.0	516.6	562.2	698.5	875.0	2382	5101	1969	498.3	372.3	859477
1950	381.9	540.0	588.0	588.6	729.1	553.8	470.0	470.0	591.0	298.3	227.5	240.7	341188
1951	269.4	322.2	427.5	437.5	502.6	419.6	346.5	408.2	322.4	203.6	222.4	216.0	246583
1952	223.1	269.7	387.2	525.9	450.9	559.4	1067	3697	3481	876.5	856.1	446.6	776396
1953	366.1	446.6	587.0	615.1	661.1	603.5	519.1	747.4	845.5	331.9	257.2	220.2	373301
1954	259.1	346.9	456.2	441.8	536.6	394.7	455.4	527.2	295.1	252.2	249.5	232.4	267609
1955	259.5	273.1	326.8	386.3	405.5	405.0	292.2	784.4	609.9	272.8	398.0	282.6	283446
1956	252.8	305.7	392.9	452.1	449.6	413.7	297.5	396.6	492.9	195.8	185.6	170.5	241112
1957	181.5	243.4	269.4	300.2	323.0	285.5	471.4	1598	3545	2687	1699	845.0	753370
1958	511.7	1018	718.2	570.2	653.5	675.7	1525	5074	2505	358.8	302.2	318.0	860449
1959	295.7	371.6	452.5	429.6	481.1	436.5	334.9	411.7	301.9	216.7	276.9	205.5	253873
1960	337.3	445.2	472.9	437.9	467.1	773.3	1387	805.0	1185	335.3	236.9	210.7	426984
1961	300.6	443.3	400.7	377.2	461.1	474.8	831.8	1389	828.3	360.5	440.3	459.2	408245
1962	386.6	731.5	553.6	515.3	754.5	694.2	1985	2188	1096	491.1	288.4	266.8	599279
1963	292.8	564.9	442.0	374.0	552.2	642.8	640.7	311.1	233.1	188.0	214.5	217.7	280808
1964	212.4	285.0	271.1	329.6	353.6	428.7	367.9	513.1	308.4	220.5	233.2	216.7	225534
1965	216.9	360.3	310.6	444.6	468.6	564.9	867.3	2227	3274	1663	896.9	613.7	719243

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Annual Discharge (Acre-Ft)
1966	832.0	883.7	699.8	641.7	616.0	989.4	1067	1113	770.5	344.9	510.7	267.3	527559
1967	285.1	777.7	528.4	439.2	528.3	530.0	358.7	344.7	648.5	341.6	859.3	437.9	366253
1968	302.0	582.5	481.1	492.8	553.4	760.1	594.6	1384	1976	608.2	1195	356.1	560705
1969	299.7	574.0	481.4	568.3	585.8	663.1	961.3	1888	1877	749.2	615.3	524.8	590536
1970	978.9	1147	779.3	596.9	729.9	735.3	822.5	1517	814.9	450.2	299.1	812.4	583928
1971	640.7	933.8	642.5	591.1	743.0	909.4	536.4	283.3	299.7	307.3	305.0	307.1	391083
1972	634.4	660.2	541.9	501.7	570.8	758.0	347.6	248.9	311.4	220.0	258.5	317.8	323617
1973	352.9	686.1	509.1	470.1	496.3	813.0	974.5	3740	3708	1705	600.3	489.2	879729
1974	605.9	553.5	515.2	493.3	501.3	813.5	550.7	473.1	335.9	205.3	213.1	190.9	328992
1975	242.5	300.8	361.5	372.5	443.6	630.2	776.3	1865	2292	1503	683.2	720.7	615883
1976	491.7	1031	540.5	443.2	581.7	760.4	857.3	1252	1225	521.4	389.0	242.6	502427
1977	292.1	338.2	337.6	326.3	400.6	509.2	351.9	271.2	199.1	222.7	224.6	230.4	223138
1978	211.7	275.6	281.3	348.2	404.3	447.9	371.9	1017	971.2	604.2	294.3	208.9	328244
1979	362.7	461.9	386.1	391.2	440.8	935.5	1520	3866	6181	2750	1056	318.5	1128502
1980	265.3	355.2	431.8	525.2	594.6	636.5	1136	3598	3445	1025	428.5	254.0	766754
1981	240.4	332.2	528.3	449.9	454.1	468.3	273.6	283.6	274.3	266.3	329.8	284.3	252318
1982	393.5	574.1	371.9	403.2	482.4	618.7	625.1	1689	2022	1068	821.2	1132	615732
1983	839.9	773.1	568.8	558.0	714.1	870.3	1154	2333	4013	1620	558.5	281.2	861688
1984	289.2	329.3	524.1	505.2	523.0	837.8	1558	3925	2161	664.5	445.3	359.1	733463
1985	441.4	734.0	663.9	644.2	677.9	1084	3288	5773	5871	1264	624.3	421.8	1296714
1986	656.1	992.0	853.8	786.8	882.3	1006	1597	2338	5106	2718	489.1	570.0	1084826
1987	927.6	1338	956.1	752.5	887.7	1254	2953	6650	4136	888.1	346.4	305.8	1292928
1988	296.3	589.1	595.0	545.4	611.4	843.5	776.5	491.2	518.4	411.0	378.4	434.5	390858
1989	378.4	572.1	562.4	533.7	606.8	1290	1695	835.5	513.8	290.4	263.0	257.1	469853
1990	358.8	321.8	384.8	417.8	471.3	612.5	600.4	1091	675.8	499.6	409.3	302.9	371325
1991	499.1	630.9	494.5	557.5	640.4	770.8	1657	2228	1543	758.0	777.7	633.2	675383
1992	388.6	584.4	558.1	561.5	611.9	1046	2140	1617	1320	470.7	440.5	348.8	607898
1993	331.1	458.4	521.1	598.6	745.2	997.5	1232	2926	2575	730.6	568.0	844.2	755724
1994	411.7	565.9	605.7	608.2	655.5	975.9	1417	3438	2378	426.9	288.3	326.8	730668

Table B-86. Daily streamflow statistics, period statistics, and exceedances (cfs) for station 08279500 Rio Grande at Embudo, 1890-1994.

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
# Days	3007	2910	3007	3038	2767	3007	2880	2976	2880	2976	2976	2910	-30202
Avg Day	502.1	573.6	523.4	497.7	563.0	727.5	1177	2454	2395	853.4	496.2	434.0	930.6
Max Day	3350	2320	1390	2070	1940	2140	6790	12600	15860	8300	4440	4620	15860
Min Day	170	205	218	255	254	230	231	208	130	140	150	150	130
# Months	97	97	97	98	98	97	96	96	96	96	96	97	95
SDev Month	373.2	266.7	145.5	100.9	118.7	207.4	777.2	1823	2034	760.4	341.6	310.3	440.6
Skew Month	2.39	1.46	0.926	0.417	0.348	0.242	1.28	0.837	1.08	1.53	1.94	3.27	0.535
Min Month	181.5	230.8	264.2	280.0	290.0	280.0	273.6	248.9	199.1	158.1	172.7	170.5	308.2
Max Month	1888	1611	1052	799.4	887.7	1290	3773	7228	8974	3466	1742	2254	2077

	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Year
Exceedences													
1%	2359	1470	1059	803.0	943.0	1589	5002	9235	9960	4830	2252	2197	6510
5%	1435	1220	824.0	676.0	823.7	1210	3395	6712	6880	2752	1282	978.0	3480
10%	865.9	925.0	717.3	632.0	742.6	1030	2440	5410	5300	2010	944.4	713.0	2009
20%	591.8	744.0	624.6	583.4	662.0	891.6	1610	4036	4120	1250	651.8	520.0	1000
50%	362.0	510.0	511.0	488.0	545.0	704.0	846.0	1800	1690	466.0	351.0	325.0	535.0
80%	275.0	336.0	395.0	408.0	452.0	520.0	465.0	638.2	440.0	254.0	245.0	241.0	331.0
90%	244.0	290.0	339.7	366.0	410.0	440.0	367.0	384.0	284.0	213.0	215.0	212.0	268.0
95%	220.0	260.0	290.0	330.0	380.0	367.4	324.0	301.0	240.0	196.0	194.0	202.0	230.0
99%	194.0	226.0	246.0	280.0	290.0	280.0	265.0	243.8	193.8	174.0	172.0	172.0	190.0

Figure B-118. Station 8279500 Rio Grande at Embudo
Mean Annual Discharge, 1890-1893, 1895-1903, 1913-1994

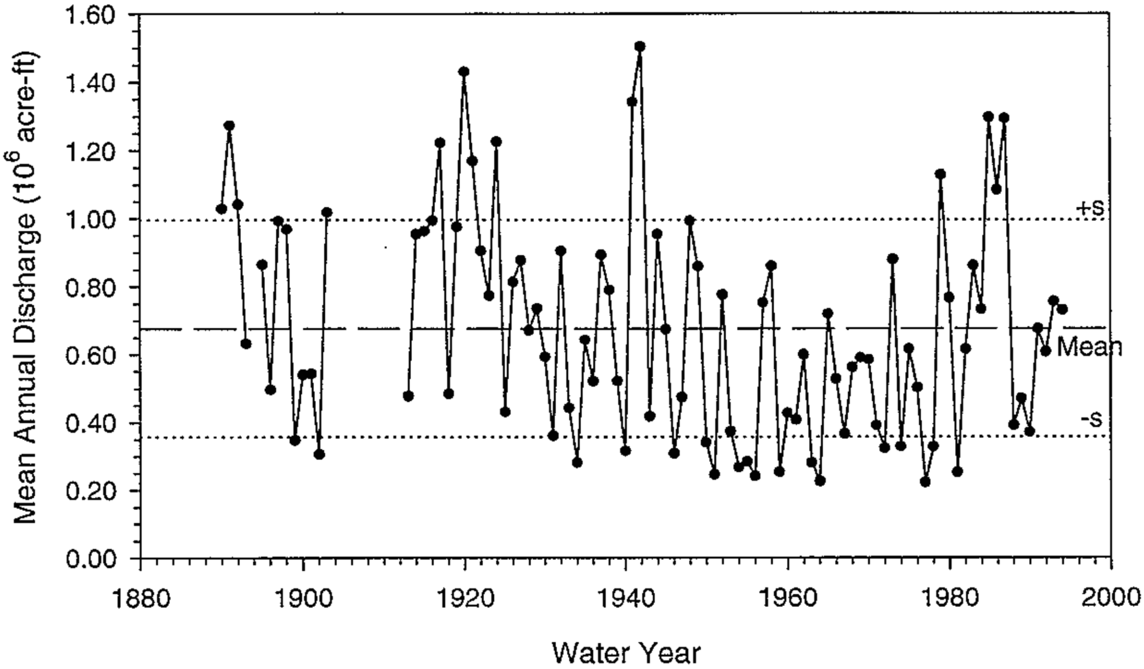


Figure B-119. Station 8279500 Rio Grande at Embudo
Mean Monthly Discharge, 1890-1893, 1895-1903, 1913-1994

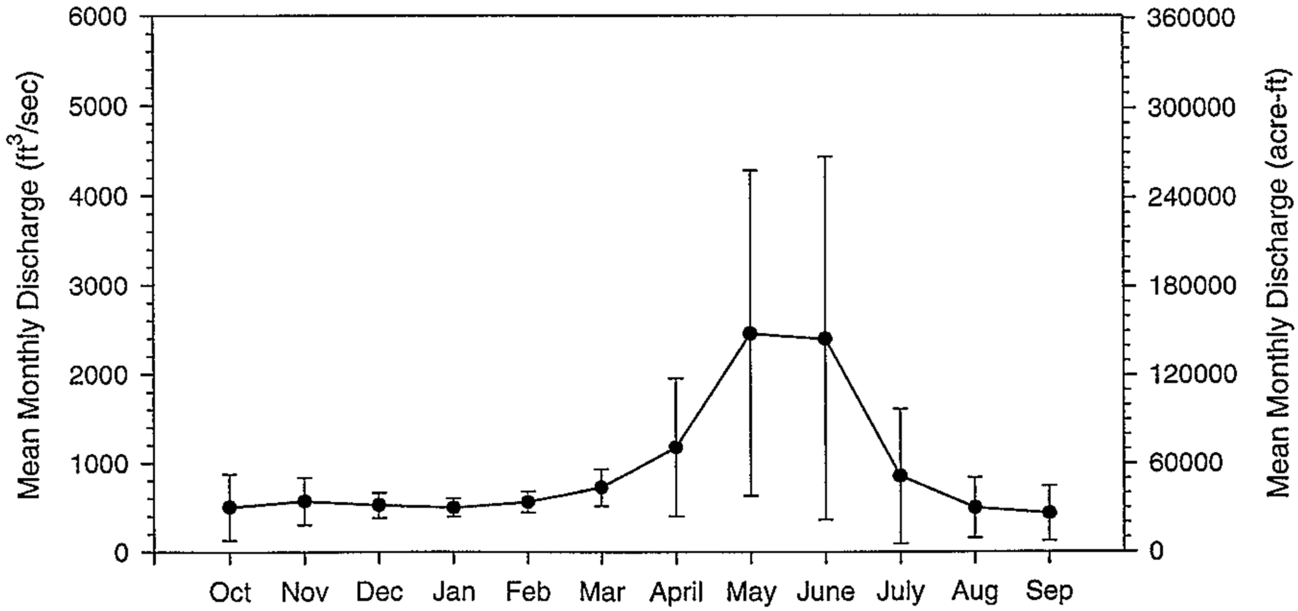
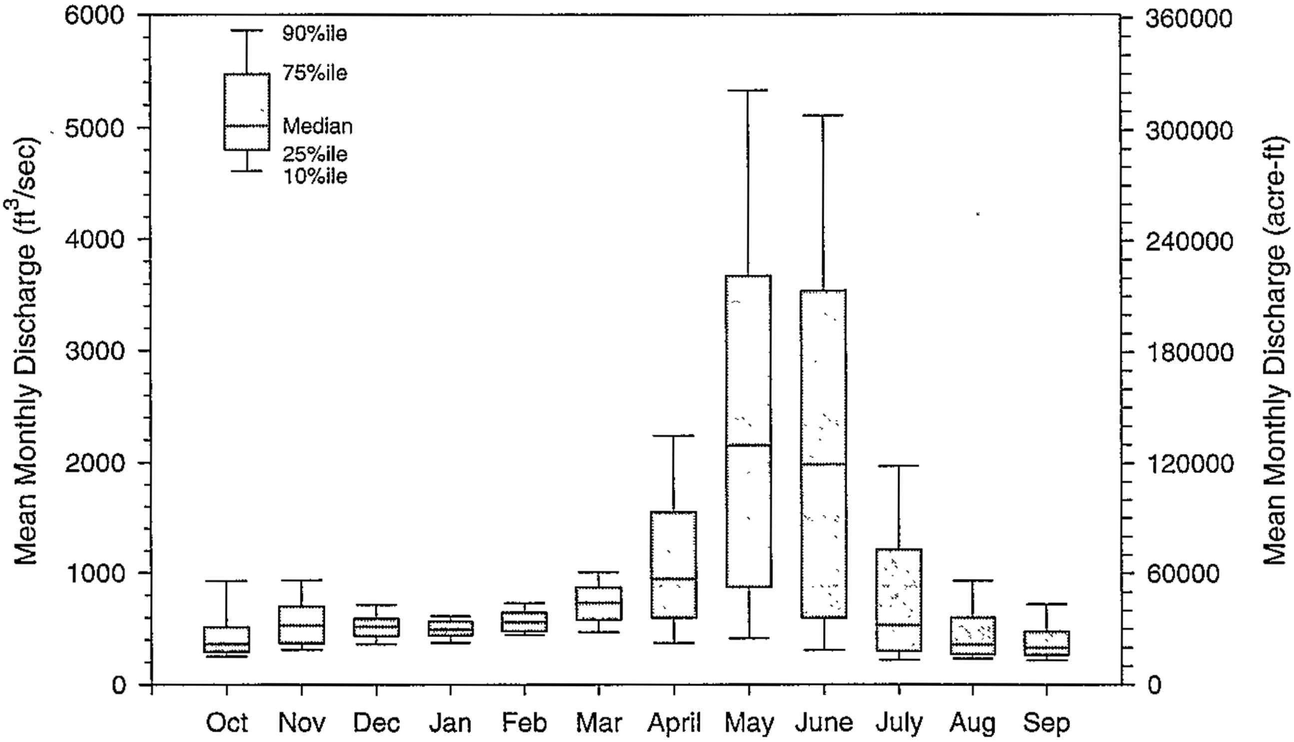


Figure B-120. Station 8279500 Rio Grande at Embudo
Monthly Discharge, 1890-1893, 1895-1903, 1913-1994



APPENDIX C

Statistical Summaries and Methods of Analysis for Streamflow Data

Techniques for summarizing and analyzing streamflow data rely primarily on statistical methods. When determining how to appropriately analyze any collection of data, the first consideration should be the characteristics of the data themselves. Streamflow data typically have the following common statistical characteristics (Helsel and Hirsch, 1995):

1. A lower bound of zero. No negative values are possible
2. The presence of "outliers", observations considerably higher or lower than most of the data, which occur infrequently or regularly. Outliers on the high side, such as flood events, are most common.
3. A positively skewed (non-normal) distribution, for example a lognormal distribution. A skewed distribution is expected when outlying values occur in only one direction.
4. Seasonal patterns. Values tend to be higher or lower in certain seasons of the year.
5. Autocorrelation. Consecutive observations, for example of daily mean discharge, tend to be strongly correlated with each other. High values tend to follow high values and low values tend to follow low values.
6. Dependence on other uncontrolled variables. Values for stream discharge may strongly covary with other basin characteristics such as drainage area, slope, elevation, and vegetation index.

Methods for analysis of streamflow data, both simple summarization methods and more complex statistical methods, should recognize these characteristics, as well as the objectives of the analysis.

2.3.2.1 Statistical Summaries. The first step in analyzing any data is to describe and summarize those data so as to convey characteristics of the location (measure of the center) of the data, its spread or variability, its symmetry, and perhaps estimates of extreme values such as some large or small percentile. Standard statistical summaries of streamflow data apply classical measures of sample characteristics, including the mean, standard deviation, minimum and maximum values, coefficient of variation, and skew of the data, to groupings of monthly and annual stream discharges.

These classical measures, specifically the mean and standard deviation, are also the most sensitive and least resistant measures of average stream discharge and its variability, in that they are strongly influenced by outlying or extreme events. A large magnitude flood event which may occur with a return period of 100 or 50 years will significantly increase the mean streamflow value. Furthermore, because the standard deviation is computed using the squares of deviations of data from the mean, outliers influence its magnitude even more so than for the mean itself. When this strong influence of a few observations is desirable, the mean and standard deviation are appropriate measures. If a more resistant measure of the central value is desired, the median, or 50th percentile $P_{.50}$, is more appropriate. The median is only minimally affected by the magnitude of a single extreme observation. The interquartile range (IQR) is the most commonly-used resistant measure of spread or variability. It measures the range of the central 50 percent of the data, and is not influenced at all by the 25 percent on either end.

Streamflow data typically show a positive skew, meaning that the data are not symmetric around the mean, rather extreme values (high discharges) extend the right tail of the distribution. When data are positively skewed, the mean exceeds more than 50 percent of the data and the standard deviation is inflated by data in the tail. Other than providing the necessary parameters for frequency analysis, tables summarizing streamflow statistics which include only the mean and standard deviation or variance are of limited value for characterizing streamflow data, as those data typically have a positive skew. Summary tables which include the median and other percentiles have far greater applicability to skewed data. The classical measure of skewness, the coefficient of skewness, is also influenced by extreme events. An otherwise symmetric distribution having one outlier will produce a large measure of skewness. The more resistant measure of skewness is the quartile skew coefficient, qs, which uses the central 50 percent of the data.

2.3.2.2 Frequency Analysis. Frequency analysis, which uses population sample data to estimate the recurrence or probability of magnitudes of hydrologic variables, is the statistical method most frequently used in describing and analyzing precipitation and streamflow data such as rainfall depths and intensities, peak annual discharge, flood flows, low-flow durations, and the like. A frequency curve is a cumulative distribution curve which relates the magnitude of a hydrologic variable, such as stream discharge for some period of record, to its frequency of occurrence. The curve is an estimate of the population or true frequency curve; it will differ from the true curve because the sample size, or period of record, is never completely representative of the full time series.

The "frequency" of a stream discharge value derived from a probability curve cumulated from the high end is the probability that a specific discharge value will be exceeded in any given year. The reciprocal of this exceedance frequency is the return period, in years. If cumulated from the low end, the frequency gives the probability that a discharge will <u>not</u> be exceeded. Standard practice is to provide exceedance probability rather than non-exceedance; however, either can be derived depending on the objective. As a general rule, frequency analysis is cautioned when working with records shorter than 10 years, or when estimating frequencies of events beyond two times the period of record.

Frequency distributions can be symmetric, for example the normal distribution. However as mentioned above, asymmetric distributions with a positive skew are characteristic of streamflow data. The most common cumulative distributions used in hydrologic analysis include the normal distribution, the lognormal distribution, the type I extreme-value (Gumbel) distribution, the type III extreme-value (Weibull) distribution, and the log Pearson type III distribution.

Frequency curves are uniquely characteristic of specific basins and curves for different sites will vary depending on basin characteristics such as size, topography, surface geology and climate, as well as chance variation due to sampling. Distributions of annual minimum flows, for example, are known to be highly dependent on basin characteristics. Frequency curves of peak annual flows are used in the design of bridge works and for flood-plain zoning. Frequency curves of annual low flows are used in evaluating water availability for irrigation, maintenance of minimum channel discharges, and the waste dilution capacity of a stream. Frequency curves of annual mean flows are used in studies of the carryover of annual storage. Technical methods specific to high-flow investigations, low-flow investigations, and regional frequency analyses are covered in more detail in the following sections.

> *High Flow Investigations.* Investigations into the magnitude and probable frequency of recurrence of floods and peak flows is integral to the proper location and design of highway and water structures, and to flood zoning and emergency awareness. The standard method of investigation is the use of discharge frequency curves, which give the exceedance probability or recurrence interval for discharges of a given magnitude.

Discharge curves are derived from instantaneous or momentary peak rates of flow. In general, the concern is with floods not exceeding 50- to 100-year recurrence intervals, as these satisfy the needs of most engineering studies. The frequency distributions most commonly applied to high flow investigations are the log normal, Gumbel type I extreme value, and the log Pearson type III distributions.

Two treatment methods for flood data are in common use. The most widely used data set for frequency analysis in high flow investigations is the annual flood series, which ranks the highest instantaneous flow rate at a given gaging station for each year of the flow record. In order to have a representative sample there ought to be at least 30 to 40 years of record in the data series. A reliable analysis requires that all data in the series be gathered under similar conditions. Regulation of stream flow by manmade structures that alter flood flows results in a non-homogeneous series, and the analysis should be limited to the period before or after the change, depending on the purpose (e.g. a study of natural conditions versus forecast of future conditions).

Because the annual series is sometimes criticized on the basis that the second highest flood in some years will exceed annual floods that are included in the series, the partial duration series, which ranks all floods above some arbitrary base flow value, is used as a substitute. The two series give nearly the same recurrence intervals for larger floods, but the partial duration series gives higher flows for shorter recurrence intervals (less than 10 years), and thus should not be used to determine the frequency of rare events.

Low Flow Investigations. Low-flow investigations are an integral part of determining the adequacy of stream flow to fulfill the water demand of multiple users. The investigations also provide parameters for local and regional water balances, form a basis for forecasting seasonal low flows, and provide indicators and quantification of surface water and ground water exchange. Because these applications are significant issues in a regional water plan, methods of low flow investigations are summarized in some detail. A stream's low flow characteristics are described through the use of frequency curves of annual or seasonal minimum discharge, and duration curves.

Low-Flow or "Drought" Frequency Curves. If "drought" can be defined in specific terms for specific projects, a drought frequency curve or low-flow frequency curve can be analyzed in the same manner as a flood frequency curve, using either an annual data series or a partial duration series. A family of generalized frequency curves of low flow can be constructed by determining the annual low flows or minimum discharges each year during periods of various lengths. Typically, curves are constructed for periods of 1, 3, 7, 14, 30, 60, 90, 120, and 183 days using simple graphic methods, or by fitting theoretical frequency distributions. The distributions commonly applied to low-flow analyses are the Gumbel type I extreme-value distribution, the log normal distribution, the Weibull type III extreme-value distribution, and the log Pearson type III distribution. The standard approach is to rely on a graphical curve and/or a log Pearson type III distribution curve. The generalized curves indicate at what recurrence intervals stream flow would be inadequate to meet demand, either under existing conditions, or under conditions of added storage.

Most low-flow frequency curves for perennial streams are a smooth curve concave upward on a log-probability plot. The probability distribution (shape of the curve) for a specific site will depend on the distribution of precipitation over the basin in space and time, on the temperature regime which controls snow storage and evapotranspiration, and on soil and geologic characteristics which control stream base flow and ground-water accretion. Atypical curves usually result from unique geologic characteristics in the basin that affect base flow.

Annual minimums of most streams in the Taos region occur in late summer-fall or during winter. Annual frequency curves for these streams are suitable for problems where water demand is constant throughout the year. But in Taos County where water demand is also seasonal, then a seasonal or calendar month flow frequency curve should be used. For example, a frequency curve for the May-September irrigation season would provide information needed to allocate water for irrigation; a September-October frequency curve would describe the most critically low period of flow.

The reliability of low-flow frequency curves based on natural flows depends largely on the length of record. The period of record needs to be representative of long-term flow characteristics, and should include a period covering a substantial drought. In general, the analysis provides a good prediction tool for average low flows, but because of the few cases of long-period drought in short records, the procedure should not be used to define recurrence intervals greater than the period of record. Development plans which utilize low flows of a stream commonly rely on low flows with a recurrence interval of not more than 20 years. One needs more than 20 years of record to accurately define a 20-year recurrence interval. If such a record is not available, one of the methods of extending records in time may be applicable.

Flow Duration Curves. A flow duration curve, which shows the percentage of time that flow is equal to or less than various rates during the period of study, is a useful tool for describing and predicting the availability and variability of sustained natural streamflow. (The same data may be plotted to show percentage of time that various flows were equaled or exceeded.) A duration curve is constructed by counting the days, months, or years with flow in various class intervals, and plotting discharge versus the percent of time the flow rate is equal to or less than the indicated values. As the distribution of low flows is controlled primarily by the geology of the basin, the lower end of the duration curve is a valuable tool for studying the low-flow characteristics of a stream, particularly base flow characteristics, and the effect of geology on interactions between ground water and surface water.

The reliability and usefulness of flow duration curves depends on both the length and consistency of the data record. The data should include complete years of record, not necessarily consecutive, but for which the physical conditions in the basin such as artificial storage, diversions, and other manmade influences, were essentially the same. As with other frequency curves, the minimum record length should not be less than 10 years. The main defect of the flow duration curve is that it does not present flow in a natural sequence. Therefore it is not possible to tell whether the lowest flows occurred in consecutive periods or were scattered throughout the record. Duration curves are most useful for preliminary studies and comparisons between streams.