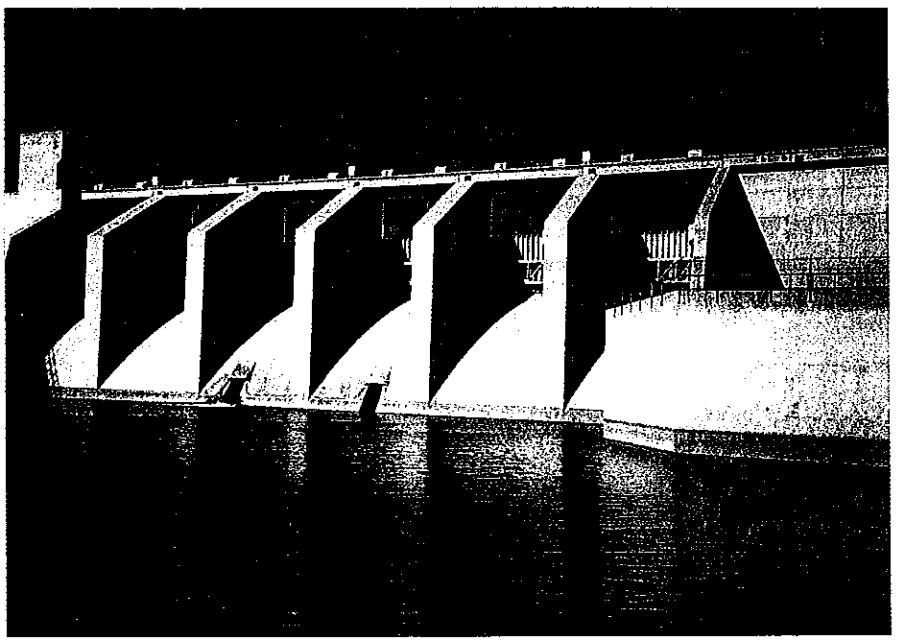
2000 Calendar Year Report to the

Pecos River Commission

NEW MEXICO	*TEXAS*
Colin McMillan	*Julian Thrasher, Jr.*

FEDERAL CHAIRMAN
Hector Villa



UNITED STATES DEPARTMENT of the INTERIOR
BUREAU of RECLAMATION

Upper Colorado Region
Albuquerque Area Office
April 5, 2001

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INTRODUCTION

The Albuquerque Area Office of the Bureau of Reclamation (Reclamation) is responsible for operation, maintenance, and/or oversight of four projects on the Pecos River (Figure 1). These projects are: the *Carlsbad Project*, which includes Sumner, Brantley, and Avalon Dams; the *Pecos River Basin Water Salvage Project*; the *Fort Sumner Project*; and the *Malaga Bend Salinity Alleviation Project*.

Reclamation's Carlsbad Field Office continues to report to the Albuquerque Area Office's Water Resource Management Division. An agreement between Reclamation and Carlsbad Irrigation District (CID), finalized on October 2, 1989, provided for CID to operate and maintain Brantley and Sumner Dams, and the Pecos River Water Salvage Project. This contract was implemented during 1990 and has continued during 2000. Reclamation continues to be responsible for assuring that this work is accomplished in compliance with all applicable agreements, contracts, regulations, compacts, and other related laws.

CARLSBAD PROJECT

Crop Production

As of the printing of this report, the Carlsbad Irrigation District had not submitted a 2000 crop census report.

Reservoir Storage Entitlements

All Carlsbad Project reservoirs (Figure 2) were operated in accordance with the requirements of the Pecos River Compact and Flood Control Criteria of the Corps of Engineers.

The Corps of Engineers (COE) determines area and capacity tables for Santa Rosa Reservoir. Reclamation calculates annual total conservation storage entitlements for the Pecos River reservoirs that are in New Mexico. Table 1 presents the calender year 2000 storage entitlements for the four Pecos River Reservoirs.

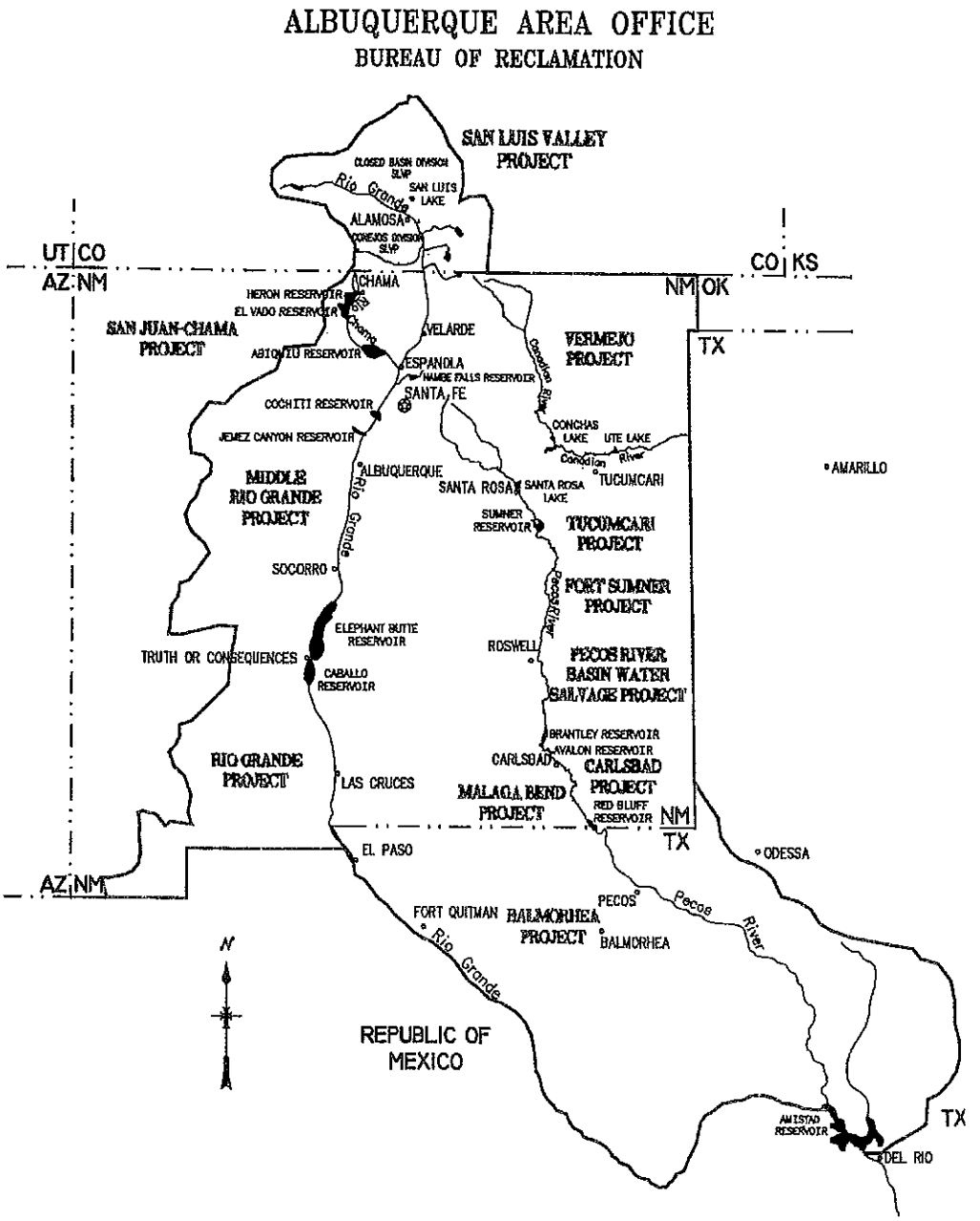

Figure 1. Project map of Reclamation's Albuquerque Area Office.

UNITED STATES
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ALBUQUERQUE AREA OFFICE

BRANTLEY AND CARLSBAD PROJECTS

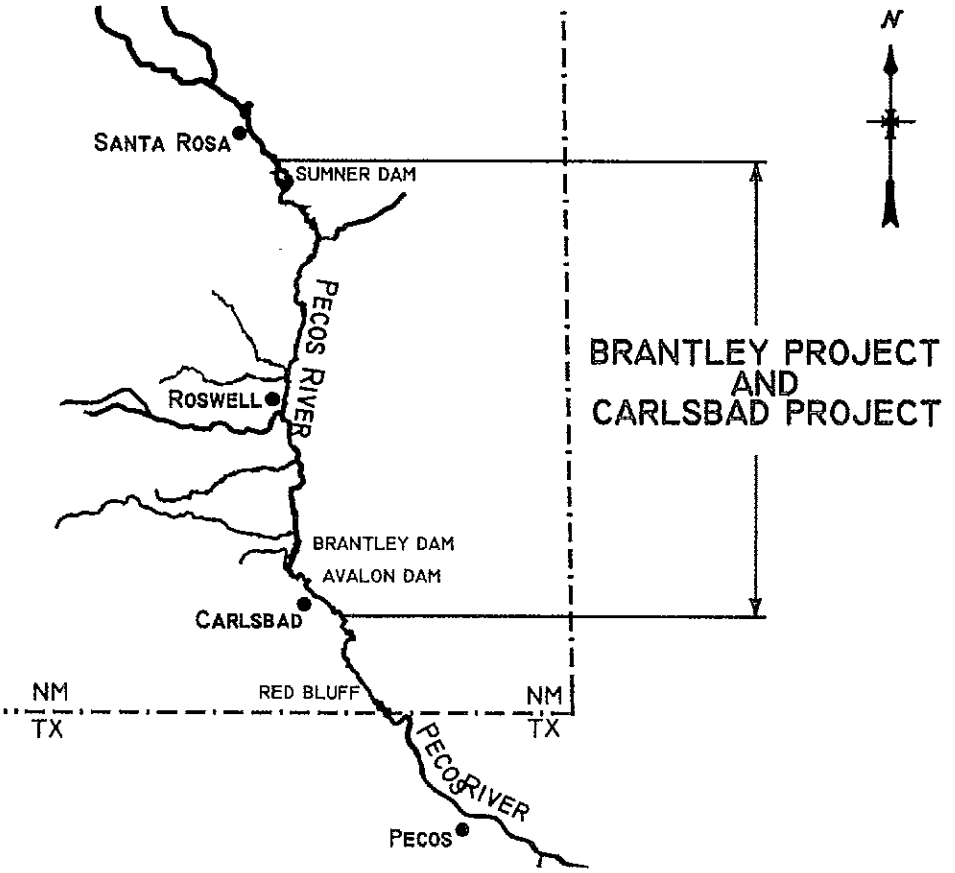

Figure 2. Area map of Brantley and Carlsbad Projects.

Table 1. Year 2000 total conservation entitlement storage for the CID.

Reservoir	Entitlement Storage (af)	Minimum Pool (af)	Estimated Sediment Accumulation Since Last Survey (af)	Total Storage (af)	Conservation Elevation (ft)
Santa Rosa	97,633	0	1,767	99,400	4,745.63
Sumner	35,001	2,500	6,267	43,768	4,261.00
Brantley	40,000	2,000	11,862	53,862	3,257.24
Avalon	3,866	600	0	4,466	3,117.40
TOTAL:	176,500				

Operation of the dams on the Pecos River is a joint effort between Reclamation, CID, and the COE. The COE has flood control responsibilities at Sumner Dam when the reservoir gets into the exclusive flood pool (elevation 4261 to 4282 ft; except it is 4267.2 to 4282 ft from November 1 - April 30) and at Brantley Dam when the reservoir elevation is above 3271 ft up to 3283 ft.

The 1999 end-of-year total CID conservation storage in the four Pecos reservoirs (Santa Rosa, Sumner, Brantley and Avalon) was at 76 percent of entitlement. Sumner, Brantley and Avalon reservoirs on the Pecos River were at approximately 69, 35, and 0 percent, respectively, of each reservoir's entitled conservation storage (Figure 3). The March 1, 2000 forecasted snow melt runoff inflow to Santa Rosa Reservoir was approximately 10,000 af or 22 percent of the 30-year average. However, no snow melt runoff inflow spike was observed at the Pecos River Above Santa Rosa gage. Precipitation in the region was below average for the winter, spring and summer months. The below average inflow attributed to the reduced 2000 end-of-year storage. On December 31, 2000 the total CID conservation storage in the four Pecos reservoirs was at 27 percent of entitlement. Sumner, Brantley and Avalon reservoirs were at approximately 57, 36, and 51 percent, respectively, of each reservoir's entitled conservation storage.

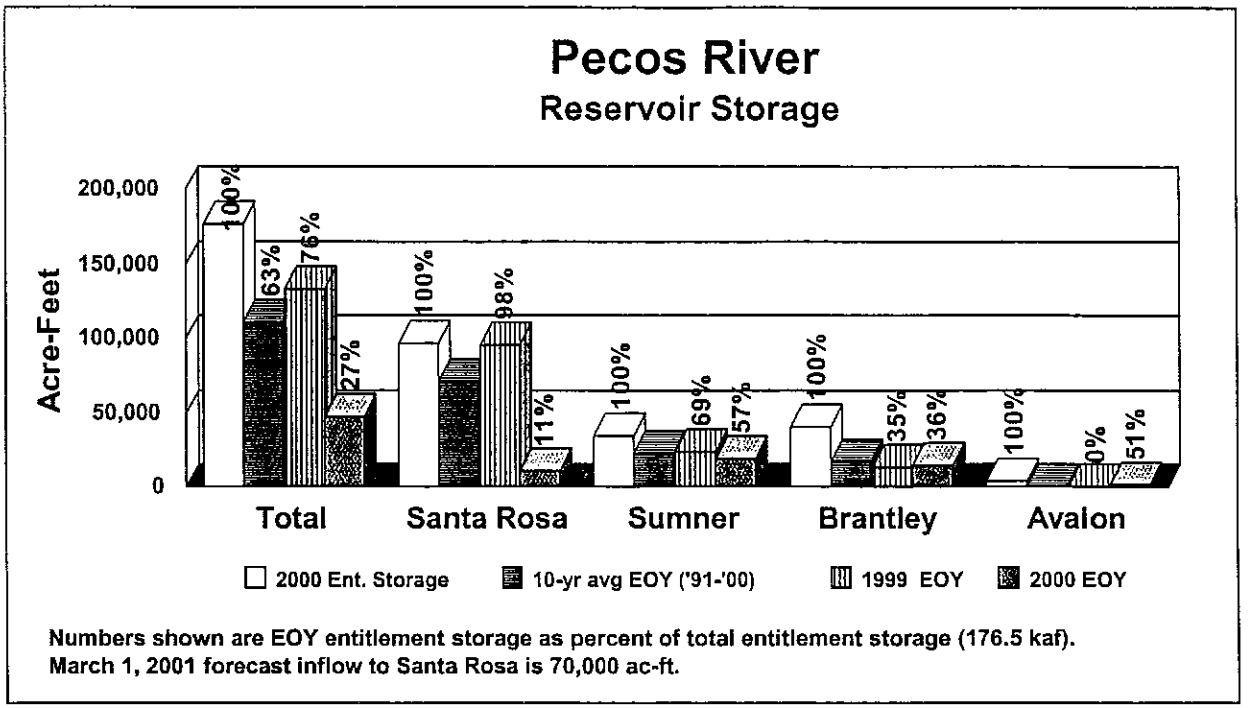

Figure 3. End-of-year Pecos River reservoir entitlement storage volumes.

Sumner Dam

Historical operations of Sumner Dam have been to provide irrigation block releases for CID and to bypass the Fort Sumner Irrigation District (FSID) irrigation allotment (up to 100 cfs of the natural inflow above Sumner Reservoir). Reclamation took over the operation of Sumner Dam on November 12, 1998 to assure compliance with the Endangered Species Act (ESA) and provide low flow bypasses during winter (non-irrigation season) operations for the threatened Pecos bluntnose shiner. This occurred after the CID declined to operate the dam for the threatened fish. The assumption of operations was extended into the irrigation season water operations. Reclamation continues to direct the CID dam tender on gate adjustments and the CID continues to be responsible for all maintenance activities. This operating procedure does not alter the normal operations of Santa Rosa and Brantley Reservoirs for the purpose of delivering water to CID. Current operations of Sumner Dam are for the benefit of CID and FSID, and to target a 30-35 cubic feet per second (cfs) flow in the Pecos River at the near Acme United States Geological Survey (USGS) river gage, about 113 miles downstream of Sumner Dam.

Four CID block irrigation releases were completed in calendar year 2000 totaling approximately 119,200 acre-feet (af) (Figure 4). The first CID block release of the 2000

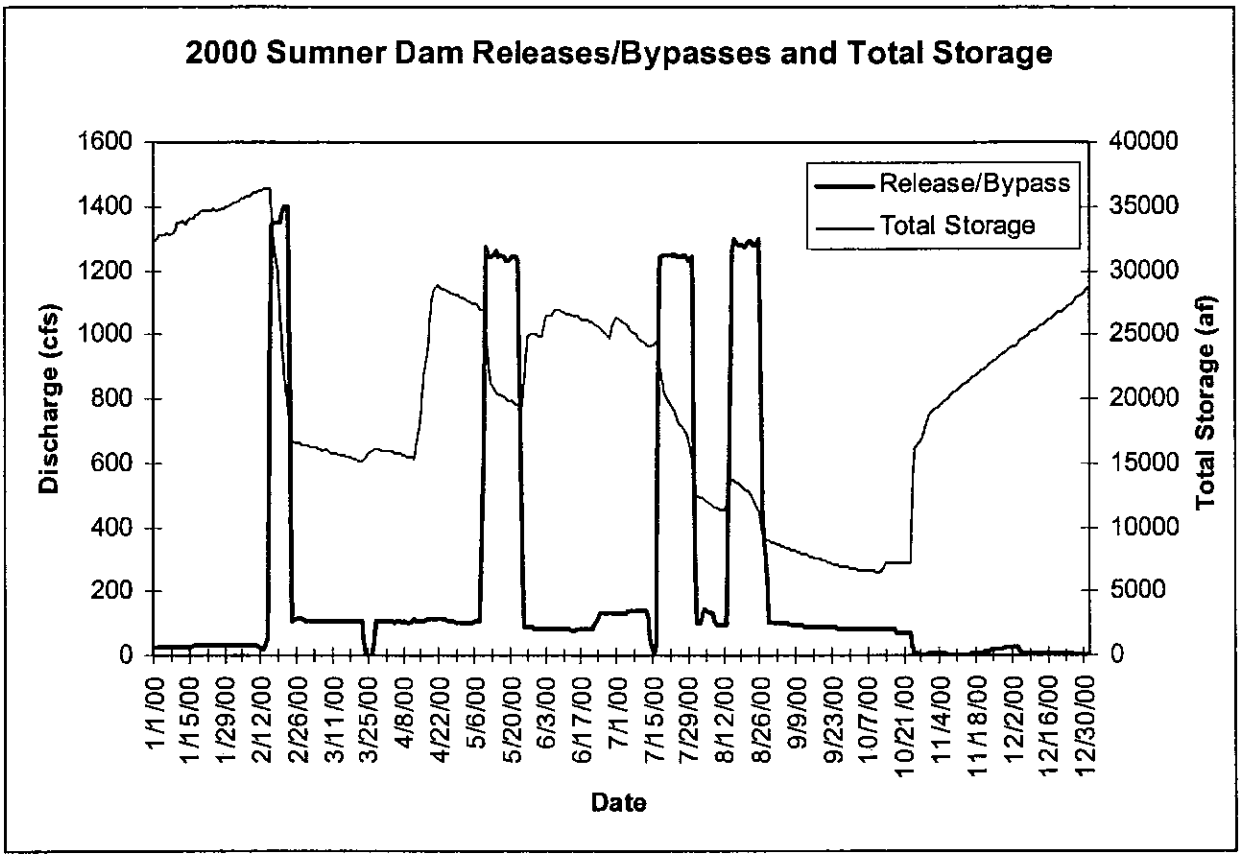

Figure 4. Calendar year 2000 Sumner Dam releases/bypasses and total storage.

irrigation season was initiated on February 15. The irrigation block releases ranged in duration from 9 to 15 days at a discharge of approximately 1,250 to 1,300 cfs (which includes FSID's allotment). FSID began calling for water on Feb 24, 2000 and discontinued irrigating on October 24, 2000. FSID's allotment ranged from 86 to 100 cfs for the year.

Meeting the target flows at the near Acme gage is accomplished by the partial bypass of natural inflows to Sumner reservoir as necessary during the winter months (November through February) and the partial/full bypass of available natural inflows (i.e., inflows above the FSID's allotment) when necessary during the summer irrigation season (March through October). With the cooperation of CID, the timing and/or duration of irrigation block releases have been adjusted when needed to assist in meeting the Acme flow target. Reclamation has committed to replace any additional net depletions that result from these operations, and has leased water from river pumpers to replace the depletions.

Winter 1999/2000 bypasses began on November 9, 1999 and were discontinued on February 14, 2000 at the onset of a CID block release. A total of approximately 4,400 af

were bypassed during the 1999/2000 winter season. A total of approximately 2,050 af were bypassed during the 2000 irrigation season. The additional net depletions attributed to these modified operations are discussed in **Reclamation's Water Offset Program.**

Sumner Reservoir was drawn very low due to the below average snow melt runoff and precipitation inflows and a near full CID allotment (3.1 af/acre). The August block release from Sumner Dam brought the conservation storage down to the minimum pool of 2,500 af on August 28, 2000 (Figure 4). FSID deliveries continued reducing Sumner Reservoir storage to a calculated low of approximately 300 af on October 11, 2000. This is below the minimum pool set by the State of New Mexico to protect FSID water quality. However, the deliveries were made for the benefit of FSID and when FSID raised concerns of going below the minimum pool and the water was available in Santa Rosa Reservoir, additional water was moved down from Santa Rosa Reservoir.

The USGS collected conductivity and water temperature data on October 5 at the Puerto De Luna and Below Sumner Dam gages. At the Puerto De Luna gage, the concentration of dissolved solids was 2750 parts per million (ppm) at a water temperature of 22.2 C. The concentration of dissolved solids was 1840 ppm at a water temperature of 18.6 C at the Below Sumner Dam gage. The concentration of dissolved solids below Sumner Dam at a calculated storage of 350 af is slightly higher than the estimated concentration (1718 ppm) at a minimum pool of 2,500 af as described in the Findings and Order of the State Engineer of the State of New Mexico dated September 22, 1972 and is less than the pre-Sumner Dam average concentration of dissolved solids (1922 ppm) in the water diverted by FSID as specified in the same Findings and Order.

Observations by the Sumner Dam dam tender indicated that the low storage volume was greater than 300 af and was visually estimated at approximately 4000-6000 af. The discrepancy in reported storage volumes and actual storage volumes is due to the utilization of sediment-inflow relationships and area-capacity tables developed from the most recent reservoir survey in 1989. The accumulated sediment in the reservoir since the survey has apparently been less than the estimated inflow. A new reservoir survey will be completed in early summer 2001. The sediment inflow relationships and area-capacity tables will be updated at that time.

Under a water right permit granted by the State of New Mexico, CID is allowed to store up to an additional 20,000 af in Sumner Reservoir from November 1 to April 30 each year, provided that the conservation storage of all four reservoirs on the Pecos River in New Mexico does not exceed 176,500 af. No additional storage under this water right permit occurred in 2000.

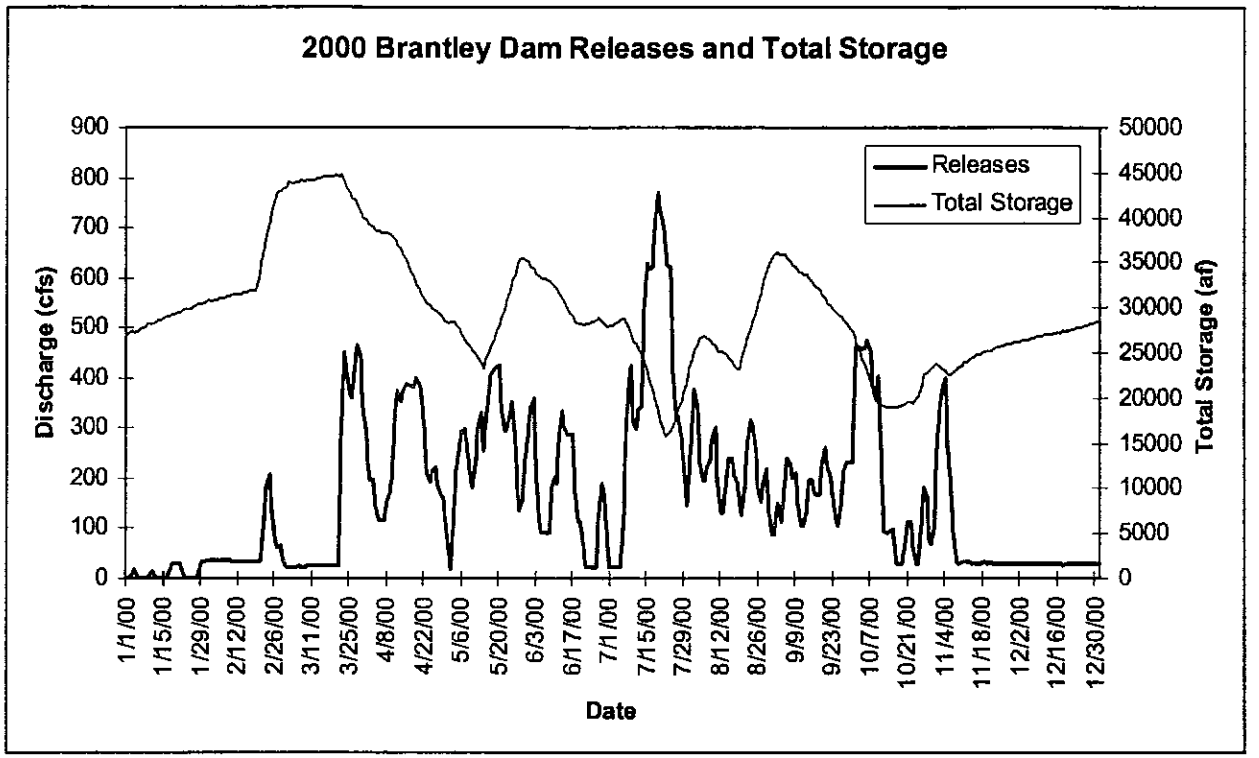

Figure 5. Calendar year 2000 Brantley Dam releases and total storage volumes.

Brantley Dam and Reservoir

During the irrigation season, releases are made from Brantley Dam to Avalon Reservoir at the rate necessary to support the diversion into the CID's main canal, generally between 75 and 350 cfs, as required by irrigation demand (Figure 5). Additionally, Brantley Dam releases are initiated to deliver water contracted by the State of New Mexico to the New Mexico/Texas state line.

The COE has flood operation responsibility once the reservoir rises into the flood pool, as identified by the COE in their Water Control Manuals for Brantley Dam. Even though the top of the conservation or entitlement pool for Brantley Reservoir was 3,257.24 ft for 2000, the COE does not recognize it's flood operations control responsibility to start until the reservoir reaches elevation 3,271 ft which is the projected top of conservation after 100 years of sediment buildup. Therefore Reclamation has flood operation control responsibility below elevation 3271 ft to the top of the entitlement pool, which is adjusted each year for sediment.

A March/April Sumner Dam irrigation block release was delayed due to sedimentation problems in the Kaiser Channel upstream of Brantley Reservoir. Sediment plugs created

upstream of debris piles reduced the capacity of the channel. Much of the debris is a result of weeds blowing into the channel over the winter months. High storage elevations in Brantley may have also contributed to the sedimentation of the channel due to backwater effects. CID crews cleared the plugs and burned dead weeds on the old McMillan Reservoir lake bed (current floodplain of Kaiser Channel).

The Brantley Reservoir entitlement storage is based on an estimated sediment inflow relationship and topographic survey completed prior to filling the reservoir. A new Brantley Reservoir survey will be completed in early summer 2001. An updated sediment inflow relationship and area-capacity tables will be developed at that time. It is expected that the sediment inflow to Brantley Reservoir is less than currently predicted.

Avalon Dam

Due to a small reservoir capacity and the location of Brantley Dam 6-8 miles upstream, Avalon Dam is used primarily as a diversion dam to meet irrigation demand for the CID. Water is released from Brantley Dam and the small reservoir at Avalon is used to fine tune the releases in to the CID Main Canal (Figure 6). Diversions into the CID Main Canal totaled 90,500 af. Releases for the State of New Mexico and CID lease agreement (see **Carlsbad Irrigation District Water Lease Program**) are also controlled from this dam. Approximately 15,400 af were released from Avalon Dam for state line deliveries between November 1, 1999 and October 31, 2000. Additionally, an approximate 4,800 af of water was released to the Pecos River as part of the dispute settlement regarding the 1997 excess and undelivered allotment water lease between the two agencies. A total of 19,875 af of water was released from Avalon Dam to the Pecos River in 2000.

Carlsbad Irrigation District Title Transfer

On June 26, 2000, Senate Bill 291 titled the Carlsbad Irrigation Project Acquired Land Transfer Act was passed by both houses of Congress and enacted into Public Law 106-220 (U.S.C.114 Stat. 34). Since enacted, Reclamation has moved to complete the title transfer as provided within the act. Draft quitclaim deed, environmental assessment, and cultural resources memorandum of understanding are in their final revisions.

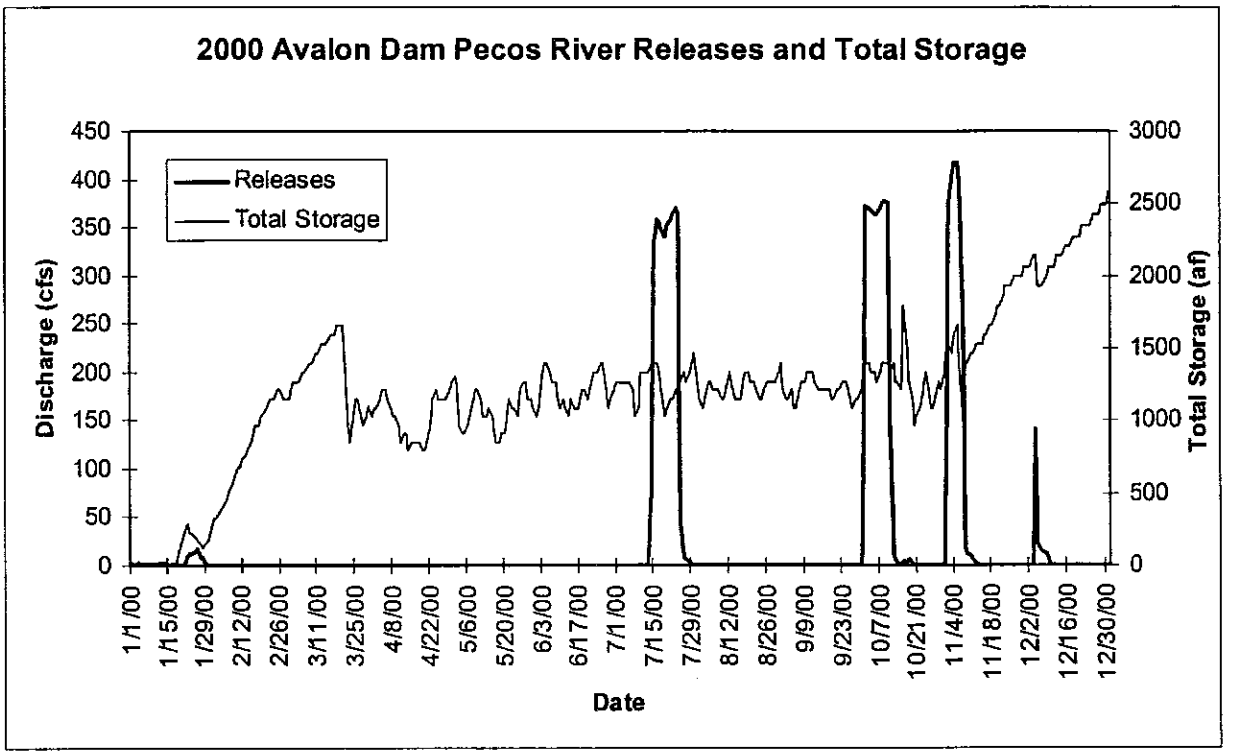

Figure 6. Calendar year 2000 Avalon total storage volumes and Pecos River releases.

FORT SUMNER PROJECT

Crop Production

As reported by the FSID, the crops grown in 2000 were alfalfa hay, other hay, irrigated pasture, cantaloupe, watermelon, honey ball and honeydew melons, oats, nursery, and pecans. Out of a total irrigable area of 6,500 acres, 5,731 acres were irrigated in 2000. Total gross crop value was $2,980,495.

The average crop value per irrigated acre is $520.07. Of the total water diverted, 32,056 af was delivered to farms, for a total of 5.59 af delivered per irrigated acre.

Forbearance Program

The FSID and the United States executed contracts providing that the district forbear irrigation of approximately 1,738 acres of land for specified period of time in exchange for payment by the United States to the district of $500,000. The program was initiated due to extreme drought conditions and the existence of a threatened species in the Pecos River, the Pecos bluntnose shiner.

Operations

The irrigation season for FSID typically begins March 1 and ends October 31. FSID is also allowed to divert for a two-week period during the winter, which is usually just prior to the March 1 irrigation season. During irrigation season, 80 to 100 cfs is usually released from Sumner Reservoir depending on demand or their available water right. FSID began calling for water on February 24, 2000 and discontinued irrigating on October 24, 2000. FSID's allotment ranged from 86 to 100 cfs for the year (Figure 7). A total of 44,220 af were diverted into the FSID Main Canal

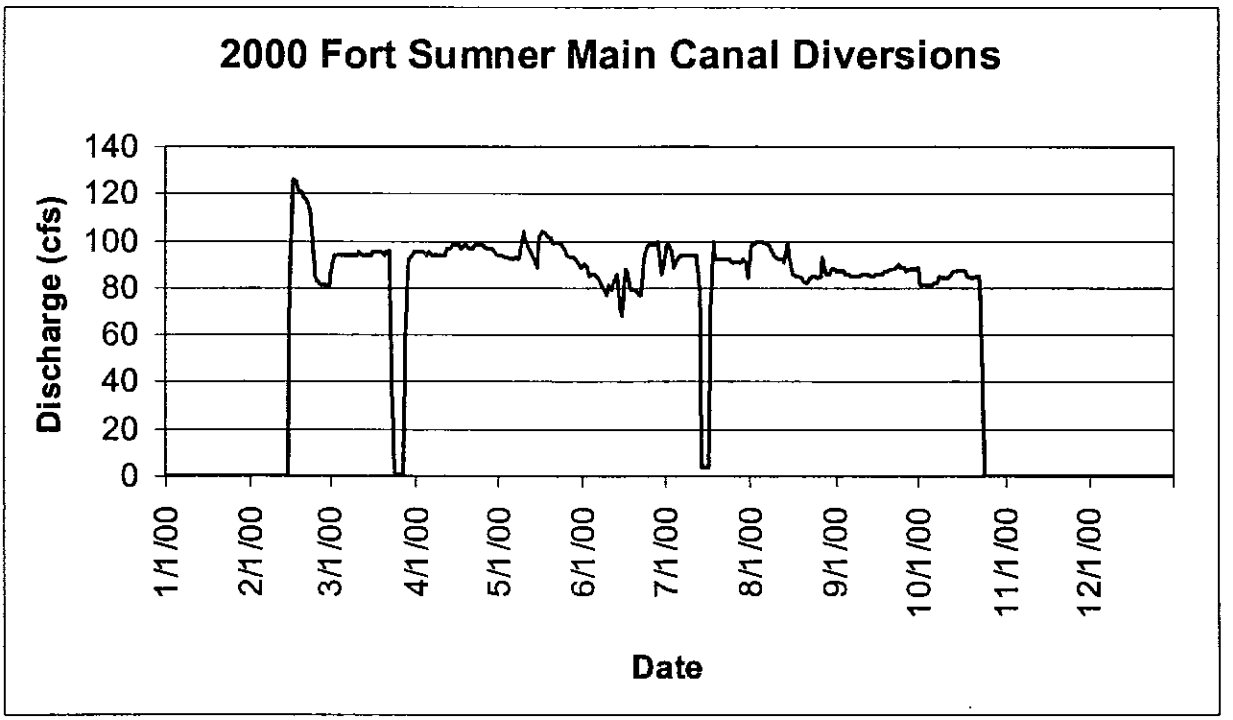

Figure 7. Fort Sumner Irrigation District 2000 diversions.

ENVIRONMENTAL COMPLIANCE ACTIVITIES

Forest Guardians v. United States Army Corps of Engineers, et al.

On May 21, a complaint for declaratory, mandatory and injunctive relief was filed in United States District Court by the Forest Guardians. In Forest Guardians v. United States Army Corps of Engineers, et al., Civ. No. 00-746, Reclamation is named, with the COE, in the complaint which states that the federal defendants have failed to comply with ESA consultation requirements and have operated the reservoirs without completing consultation for the Pecos bluntnose shiner. Reclamation, COE, Forest Guardians, and the State of New Mexico (as defendant-intervenors) subsequently entered into mediation discussions on this action. Participants in the mediation discussions also include FWS, CID, and FSID.

Endangered Species Program for Water Operations

During 2000, coordination continued among Memorandum of Understanding (MOU) signatories (Reclamation, CID, FWS, New Mexico Office of the State Engineer (OSE), and New Mexico Department of Game and Fish (NMDGF) to discuss water operations and modifications for ESA compliance. The signatories are working on a revised MOU that will add the New Mexico Interstate Stream Commission (NMISC) as a signatory and remove the OSE.

Water operations during the year included bypassing a portion of Sumner Lake inflows as needed to target an average flow of 35 cfs at the near Acme gage and modifying block releases to the Carlsbad Irrigation District. Block irrigation releases from Sumner Reservoir did not last longer than 15 days and were timed to avoid a portion of the Pecos bluntnose shiner peak summer spawning period. Consultation with the Fish and Wildlife Service is ongoing. Reclamation has submitted separate biological assessments for winter operations and irrigation season operations.

Monitoring of the Pecos bluntnose shiner continued during 2000. Currently, the Pecos bluntnose shiner population appears to be stable.

National Environmental Policy Act (NEPA) Activities for Water Operations

During early 2000, Reclamation determined that it would be appropriate to invite the New Mexico Interstate Stream Commission (NMISC) to serve as a joint lead agency in the preparation of a Programmatic Environmental Impact Statement (PEIS) for Pecos River Water Operations/Management. The purpose of and need for this PEIS is to comply with the ESA and the Pecos River Compact and Amended Decree, and no not impair the Carlsbad Project water supply and state line deliveries. The PEIS Team and technical Working Groups are comprised of representatives from Reclamation, the NMISC, CID,

represent losses of river flows due to evaporation, seepage, and evapotranspiration. A new methodology was developed for computing loss coefficients from daily gage data from USGS stream gages.

As part of the current water operations NEPA process for the Pecos River, a hydrology/water operations work group was established to continue studying processes in the Pecos basin that affect water supply and river flows. Work in 2000 by this team included participation by representatives from the NMISC, OSE, COE, CID, Pecos Valley Artesian Conservancy District (PVACD), and FWS. This team has been closely involved with all enhancements made to the Pecos River water operations model during 2000 including the work completed to improve loss coefficients.

Reclamation has continued to contract Tetra Tech, Inc. to assist with the development of the model. During January of 2000, Tetra Tech submitted a draft hydrology report for the Pecos River that presents discussion of analyses of process occurring in the Pecos basin. This report includes thorough discussion of the analyses completed through 1999 and all the methods developed to simulate processes in the Pecos River RiverWare model.

In addition to model enhancements, work was completed toward development of a "side inflow" model that is essentially the full simulation model with input inflows that are developed using historical data. To develop a model simulation to represent the "No Action" alternative for the NEPA process, studies of No Action operations continued. As part of this effort, an algorithm was developed for determining the diversion from Avalon Reservoir by CID. To simulate water acquisition options in the water operations model, Reclamation worked with the New Mexico Office of the State Engineer to discuss how groundwater models for the Roswell Basin and the Carlsbad area could be linked to the RiverWare model. The coordination with OSE and NMISC also included review of methodologies for simulating Pecos River operations from Avalon Dam to the New Mexico-Texas state-line.

The Pecos River RiverWare model will be used to analyze alternatives for the current NEPA process to assess the effects of changing operations to provide flow in critical habitat areas for the Pecos bluntnose shiner. Rulesets will be developed within RiverWare for each alternative and the output from the rulebased simulations will be used to study the effects of the changed operations. The output will be used to assess the effect of changing operations on several affected resources. The model is now being used to monitor the effects of current real-time operations.

Roswell Drainage District Technical Investigations

A Memorandum of Understanding was signed in May 1997 to establish commitments between OSE for data analysis, the PVACD for monitoring of the wells, and Reclamation for well installation and data analysis.

Reclamation's Technical Service Center drillers installed 33 observation wells during 1997. These wells in addition to a few existing dairy wells are being monitored through 2002. Data collection is being performed by the PVACD and transmitted to the OSE and Reclamation for analysis.

An interim report for 2000 was prepared by Reclamation. This report reveals that, compared to the interim report of 1999, the number of wells with increasing water levels has decreased sharply (71%). The number of wells where water levels were unchanged increased about 15%, and the number of wells with lower groundwater levels increased by 133%.

The total precipitation of 4.02 inches through October 11, 2000, near Artesia, is far behind the 80-year mean annual precipitation of 13.63 inches for Roswell FAA Airport and supports the apparent decrease in most groundwater levels in the District. However, the limited temporal distribution of measurements for 2000 is not sufficiently representative to make conclusions about groundwater level changes.

Continued monitoring of the wells to determine long term trends is recommended, although the number of measurements per year may now be reduced.

Emergency Management Program

No work was done in 2000 relating to Reclamation's Emergency Management Program for the projects in the Pecos River Basin.

Review of Operations and Maintenance Program

Field examinations of the radial gates, outlet works access tunnel and other features at Sumner Dam were performed by Reclamation's Technical Service Center and personnel from Reclamation Albuquerque Area Office in June, 2000 as a follow up of the Comprehensive Facility Review (CFR) process. An evaluation was completed on the recommendation made regarding concerns of the cracking of the grout that embeds the trunnion anchors on the radial gates, possibly from corrosion of the anchors. It was determined that the grout cracked because there was corrosion on the anchor block at the interface with the grout. This corrosion will be removed when the radial gates are repaired.

A monitoring program was started for the concrete cracking in the access tunnel at Sumner Dam. This program will assess if any testing of the concrete is to be performed.

The sinkholes downstream of the left end of Brantley Dam are being monitored visually and includes yearly surveying.

Facility Review Program

There were Comprehensive Facility Review (CFR) started on Sumner, Brantley, and Avalon Dams in 1999. The CFR concluded with reports in early 2000 for all the dams. Operation and maintenance (O&M) recommendations will be discussed with the CID for scheduling and completion.

Safety of Dams Program

The modification to Avalon Dam to correct an identified Safety of Dams deficiency is proceeding. The specifications and drawings for the erosion protection to be placed on the right side of and downstream of Spillway No. 1 along the toe of the dam has been completed, and a construction contract is expected to be awarded in late 2001 or early 2002.

Pecos River Stream Adjudication

The Pecos River General Stream Adjudication (State Engineer v. L.T. Lewis) is ongoing in the 5th Judicial District Court in Chavez County, New Mexico. Reclamation is involved in this case as record title holder of the water rights for the Carlsbad Project.