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To: All on Enclosed List

Subject: Bureau of Reclamation's 1996 Report to the Pecos River Commission

Enclosed is your copy of Reclamation's 1996 Report to the Pecos River Commission. This report will be presented at the Pecos River Commission meeting in Fort Stockton, Texas on April 17, 1997. If you have any questions, please contact Chuck Braden, of my staff, at (505) 248-5341.

Sincerely,

Garry M. Rowe
Area Manager

Enclosure

bc: Regional Director, Salt Lake City UT
Attention: UC-100, UC-288

CB-10, EP-100, EP-430

ALB-100, ALB-105, ALB-400, ALB-431, ALB-153

Mr. Hector Villa
Commissioner for the United States
Pecos River Commission
1157 Galloway
El Paso TX 79902

Mr. Colin McMillan
Commissioner for New Mexico
118 West 1st Street
Roswell NM 88201

Mr. Brad Newton
Commissioner for Texas
103 West Callaghan
Fort Stockton TX 79735

Mr. Thomas Turney
New Mexico State Engineer
Bataan Memorial Building, Room 101
P. O. Box 25102
Santa Fe NM 87504-5102

Mr. Herman Settemeyer
Engineer Adviser for Texas
TNRCC
MC157, P. O. Box 13087
Austin TX 78711-3087

Mr. Kirk Kennedy
Engineer Adviser for Texas
TNRCC
MC157, P. O. Box 13087
Austin TX 78711-3087

Mr. Zack Dean
Engineer Adviser for Texas
TNRCC
MC157, P. O. Box 13087
Austin TX 78711-3087

Dr. Neil S. Grigg
Professional Engineer
749 South Lemay, #A3-330
Fort Collins CO 80524-3251

Dr. Bhasher Rao
Engineer Adviser for New Mexico
Bataan Memorial Building
P. O. Box 25102
Santa Fe NM 87504-5102

Mr. Tom Bohl
Legal Adviser for Texas
P. O. Box 12548
Austin TX 78711

Legal Adviser for New Mexico
P. O. Box 25102
Santa Fe NM 87504-5102

Mr. Pat Borland
U. S. Geological Survey, WRD
4501 Indian School Road NE
Suite 200
Albuquerque NM 87110-3929

Mr. Jay Groseclose
New Mexico Interstate Stream Commission
P. O. Box 25102
Santa Fe NM 87504-5102

Mr. Robert Turner
N. M. State Engineer's Office
1900 West Second
Roswell NM 88201

Lt. Colonel Lloyd S. Wagner
District Engineer
U. S. Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque NM 87109

Mr. Tom Davis
Carlsbad Irrigation District
201 South Canal
Carlsbad NM 88220

Mr. J.E. Spitz
Fort Sumner Irrigation District
P. O. Box 374
Fort Sumner NM 88119

Ms. Jennifer Fowler-Propst
U. S. Fish and Wildlife Service
New Mexico Ecological Services
State Office
2105 Osuna NE
Albuquerque NM 87113

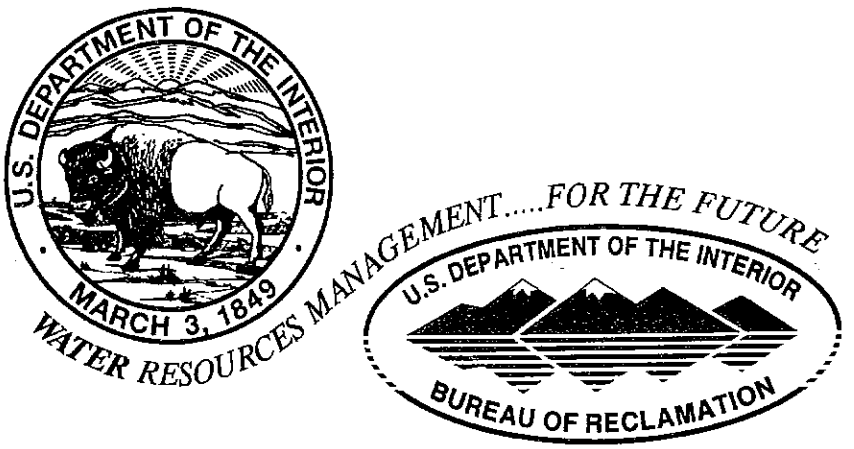
1996 Calendar Year Report to the

Pecos River Commission

NEW MEXICO
Colin McMillan

TEXAS
Brad Newton

FEDERAL CHAIRMAN
Hector Villa



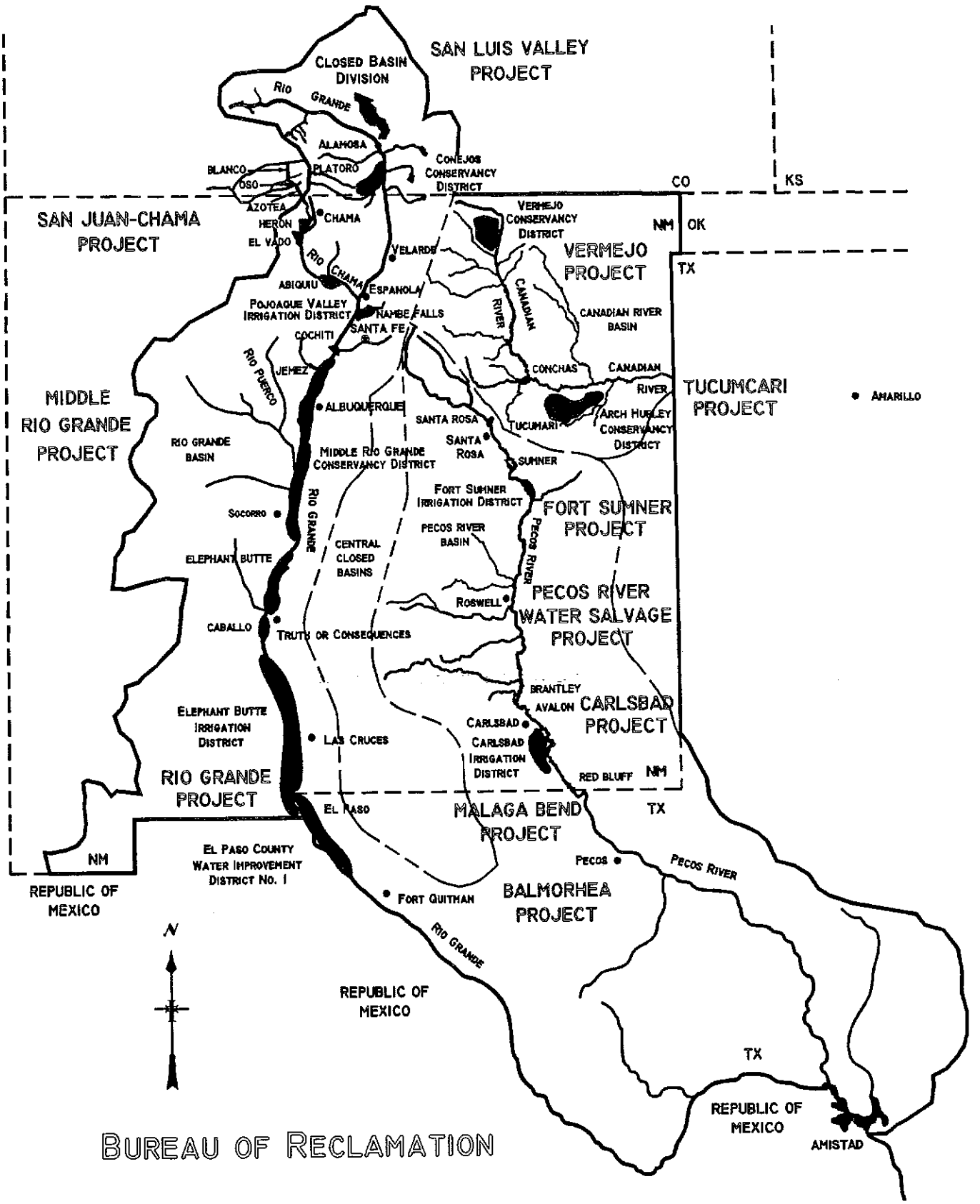
UNITED STATES DEPARTMENT of the INTERIOR

BUREAU of RECLAMATION

Upper Colorado Region

Albuquerque Area Office
March 31, 1997

ALBUQUERQUE AREA OFFICE
PROJECTS MAP - OCTOBER 1994



BUREAU OF RECLAMATION

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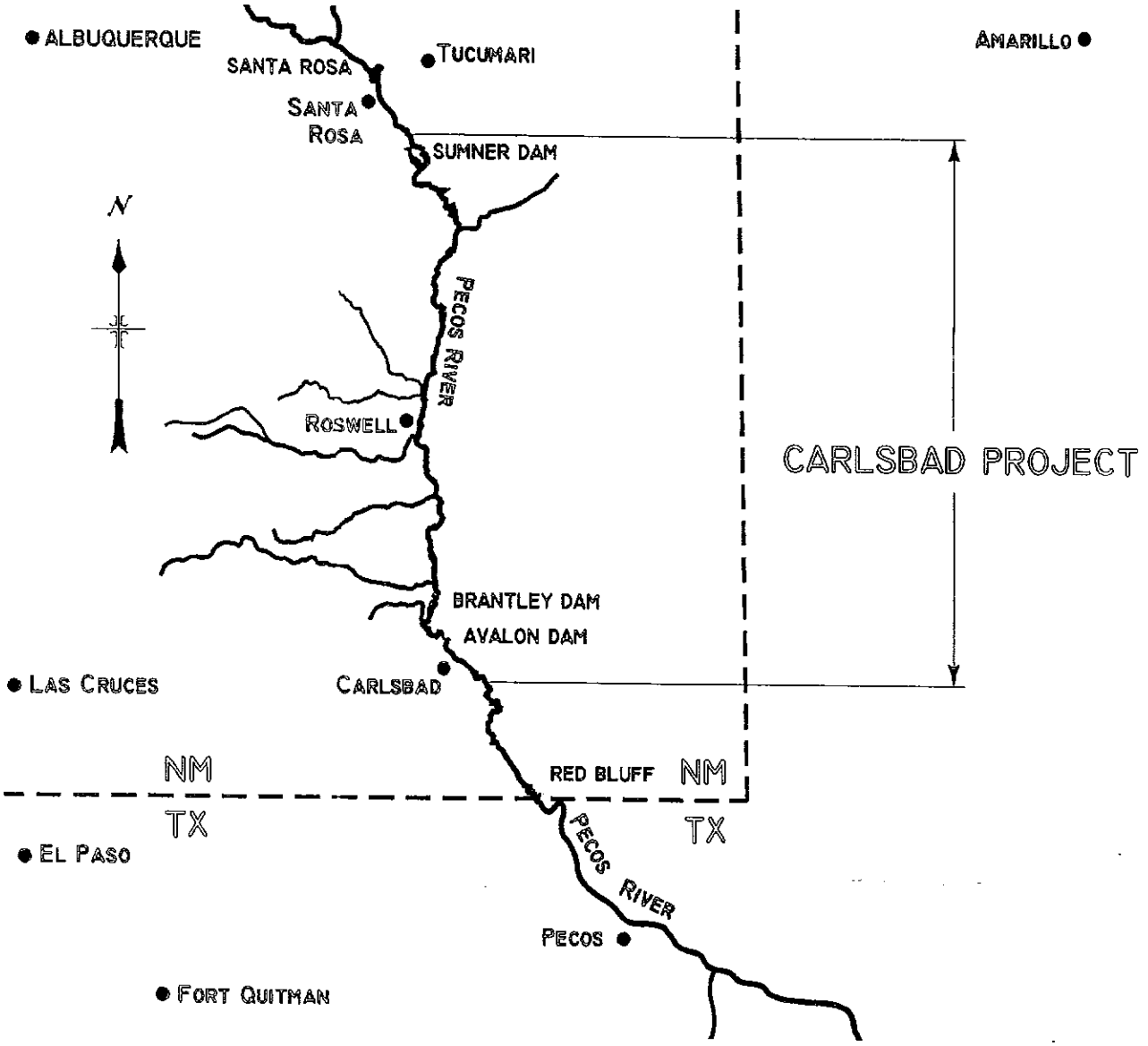

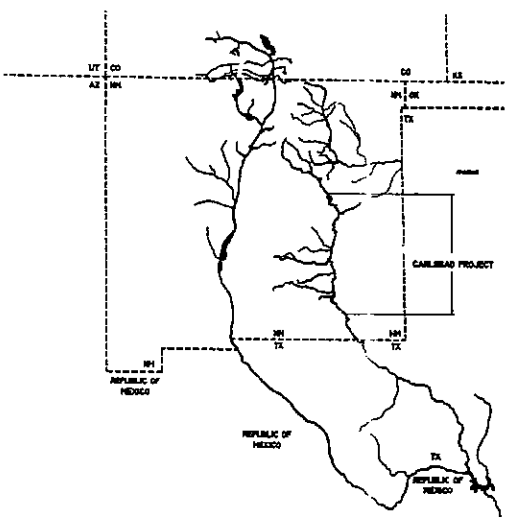

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

ALBUQUERQUE AREA OFFICE

CARLSBAD PROJECT

JANUARY 1995

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SCALE IN MILES

U. S. Bureau of Reclamation
Upper Colorado Region
Albuquerque Area Office
1996 Calendar Year Report to the
Pecos River Commission

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. 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.

In January 1997, Reclamation moved its office in Carlsbad to the Bureau of Land Management building. The new office address and telephone/fax numbers are:

Bureau of Reclamation
P.O. Box 1356
620 East Green
Carlsbad NM 88221-1356

Telephone: (505) 887-6544
Fax: (505) 885-9264

The Carlsbad Office continues to report to the Albuquerque Area Office's Resource Management Division. The El Paso Field Division, which is also under the jurisdiction of the area office, remains the primary point of contact for the Malaga Bend Salinity Alleviation Project and related activities.

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 1996. 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

A total of 88,575 acre-feet (ac-ft) was diverted during 1996 from the Pecos River by CID, as measured at the Carlsbad Main Canal Heading[1].

As reported by CID, the major crops grown were alfalfa hay, cotton, and sorghum. Out of a total irrigable area of 25,055 acres, 17,029 acres were irrigated in 1996. Total gross crop value was $9,525,918, with an average crop value of $592.15 per irrigated acre. The irrigation demand for 1996 was 87,446 ac-ft; 63,712 ac-ft of which was delivered to farms for a total of 3.74 ac-ft delivered per irrigated acre.

Reservoir Storage Entitlements

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

The very poor water supply conditions did not warrant determination of new storage entitlements in 1996. Early in 1997, a new area and capacity tables was issued by the Corps of Engineers for Santa Rosa Reservoir. In April 1997, a new table will be issued by Reclamation for Avalon Reservoir. Based on the new tables and estimates of sediment deposition for Sumner and Brantley Reservoirs, the following represents 1997 storage entitlements for the four Pecos River Reservoirs:

Reservoir	Total Storage (ac-ft)	Min. Pool + Sed. Pool (ac-ft)	Entitlement Storage (ac-ft)	Entitlement Elevation (ft)
Santa Rosa	95,808	0	95,808	4,744.65
Sumner	43,768	6,942	36,826	4,261.00
Brantley	50,650	10,650	40,000	3,256.43
Avalon	4,466	600	3,866	3,177.40
TOTALS:	194,692	18,192	176,500	

[1] Volume as measured at the Carlsbad Main Canal USGS Gaging Station. Data is provisional and subject to change.

Sumner Dam

On January 1, 1996, Sumner Reservoir was at elevation 4,255.72 feet (ft). The total storage was 30,402 ac-ft, and conservation storage was 24,864 ac-ft. Under a water right permit granted by the State of New Mexico, CID is allowed to store up to an additional 20,000 ac-ft in Sumner Reservoir from November 1 to April 30 each year, provided that the accumulated conservation storage of all four reservoirs on the Pecos River in New Mexico does not exceed 176,500 ac-ft. No additional storage under this water right permit occurred in 1996.

On May 2, a block release to Brantley began. This release was required to begin the irrigation season. The release began on May 2 with a 1285 cubic-feet per second (cfs) flow until May 17, which included 100 cfs for the Fort Sumner Irrigation District (FSID). The release eventually peaked at 1,322 cfs on May 17. The release ended on May 17, when the flows were reduced down to 100 cfs utilized by FSID.

Fort Sumner Irrigation District's irrigation season typically begins March 1 and ends October 31. They are 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 for FSID depending on demand or their available water right. In 1996, FSID began their releases on February 14.

The next Sumner release, excluding the 80 to 100 cfs to FSID, began on June 13 and continued until July 3. This release was made in response to irrigation demand from CID, and was also a block release. This release peaked at 1,240 cfs on June 17. On November 1, the Sumner release for FSID ended for the winter.

Sumner Reservoir ended the year at an elevation of 4,254.85 ft. The total storage was 28,482 ac-ft, and conservation storage was 22,944 ac-ft.

On February 9, 1996, the maximum pool elevation of 4,260.80 ft was reached. The total storage was 37,172 ac-ft, and conservation storage was 31,634 ac-ft. A minimum pool elevation of 4,236.14 ft occurred on July 9. The total storage was 19,907 ac-ft, and conservation storage was 14,369 ac-ft. Sumner Reservoir did not exceed its maximum conservation storage. Actual operations for Sumner Reservoir are shown on Figure 1.

Reclamation's Reassumption of Sumner Dam Operations

On August 21, 1996, Reclamation reassumed the operation of the Sumner Dam from CID. In response to a suit filed by several irrigators serviced by the CID, the New Mexico 5th Judicial court issued a Writ of Mandamus requiring CID to release all "surplus" water in upstream reservoirs (Sumner and Santa Rosa). Reclamation determined that there was no surplus water in the reservoirs and took back the operation of Sumner Reservoir to prevent the release of what water was in storage, pursuant to the terms of contracts between Reclamation and CID, and other applicable provisions of Reclamation law. Reclamation will continue to operate Sumner Dam until the New Mexico Court of Appeals has issued a ruling on the court's ruling.

Brantley Dam

On January 1, 1996, Brantley Reservoir was at elevation 3,248.64 ft. The total storage was 28,826 ac-ft, and conservation storage was 20,309 ac-ft. From January 1 to February 16, a daily release of 20 cfs was made to maintain a wetted channel between Brantley and Avalon for fish populations.

Releases from Brantley during the irrigation season (which is generally from March 1 to October 31) varied from a minimum 1.1 cfs on March 4 to a maximum 764 cfs on May 23, depending on irrigation demand and compact delivery requirements. At times during February and March flows were held below 20 cfs so the Avalon sediment survey could be completed.

After irrigation season, releases were reduced to 20 cfs for an average of eight hours once every 3 to 4 days. The release meets mitigation requirements for fishery flows between Brantley and Avalon. Brantley ended the year at elevation 3,244.55 ft. The total storage was 20,472 ac-ft and conservation storage was 11,955 ac-ft.

The minimum pool elevation occurred on June 14 and was 3,240.11 ft. The total storage was 13,502 ac-ft, and conservation storage was 4,985 ac-ft. The maximum pool elevation occurred on July 6 and was 3,252.79 ft. The total storage was 39,261 ac-ft, and conservation storage was 30,744 ac-ft. Brantley Reservoir did not exceed its conservation storage in 1996. Actual operations for Brantley Reservoir are shown on Figure 2.

Avalon Dam

Avalon Dam is used to provide hydraulic head for diversion into the Carlsbad Main Canal. On January 1, Avalon Reservoir was at elevation 3,174.3 ft. The total storage was 1,816 ac-ft, and conservation storage was 1,040 ac-ft. Diversion into the Carlsbad Main Canal began on March 4 and continued through October 31. The maximum diversion into the canal was 366 cfs and occurred on April 15 and July 13. Carlsbad Irrigation District diverted a total of 88,575 ac-ft into the Carlsbad Main Canal during 1996. The reservoir reached its maximum level for the year from September 13 to September 22 at elevation 3,176.8 ft. The total storage was 3,795 ac-ft, and conservation storage was 3,019 ac-ft. The minimum pool elevation occurred on August 8 and was 3,171.8 ft. The total storage was 423 af and conservation storage was below the minimum pool of 600 af by 353 af.

From May 22 to June 6, 8,200 ac-ft was released to the Pecos River for delivery to the State of Texas for Pecos River compact purposes as part of the State of New Mexico's lease agreement program with CID. A second release of 6,950 ac-ft for the same purpose took place between July 8 and 22. A third release of 8,490 ac-ft also for the same purpose took place between November 1 and 16. The total release to Texas for 1996 was 23,645 ac-ft. The peak release to the river during these periods was 339 cfs and occurred on October 8.

Avalon Reservoir Sediment Survey

Reclamation was funded by CID to perform a new sediment survey in 1996. The new area and capacity table will be retroactive to January 1, 1997. An apparent difference between elevation-area data from the previous sediment survey in 1979 and 1996 survey was observed. The 1996 areas did not match above the top of conservation elevation of 3,177.4 feet where it is highly unlikely that the data would change between surveys. The apparent difference can be attributed to the tolerances used in the 1996 aerial photogrammetric survey. Initially, the survey was to be performed at 1-foot contour interval accuracy. After several discussions, it was decided that the cost for such accuracy was not warranted. As a result, a decision was made to accept 4-foot contour interval accuracy which requires fewer flight lines and ground control points. The apparent vertical difference between the 1979 and 1996 surveys was about 0.7 feet. The 1996 elevation-area data was therefore shifted 0.7 feet to more accurately represent the physical data.

The corrected 1996 sediment survey data for Avalon Reservoir indicates there has been no volume lost to sediment deposition since 1979. This is reasonable considering Brantley Reservoir is estimated to have a trap efficiency of nearly 90%.

Title Transfer

Negotiations with CID for the transfer of title to lands acquired by the United States for the benefit of the Carlsbad Project in 1905 are proceeding. The district wishes to obtain title to approximately 5,500 acres of land around Brantley and Avalon Reservoirs as well as revenues generated by oil and gas leases from wells located on these lands.

PECOS RIVER BASIN WATER SALVAGE PROJECT

Activities

Under the authority of Public Law 88-594, in 1996 Reclamation continued to control the growth of salt cedar from the Sumner Dam area in New Mexico to the New Mexico-Texas state line. Reclamation continued to contract with CID for the mechanical removal and mowing program. All areas for which easements have been obtained from the land owners were treated at least once during the year.

The New Mexico Interstate Stream Commission continued to support the Pecos River Basin Water Salvage Project by funding Reclamation's program to obtain easements from private land owners. This support is accomplished through a cooperative agreement between the agencies that is renewed annually. In 1996, some landowners who previously declined to participate in the program, signed easements due to language changes in the documents. Only a few easements for significant land areas in DeBaca County remain to be obtained.

Biological Control of Salt Cedar

In 1996, Reclamation did not contribute funding the U.S. Department of Agriculture's (USDA) research program aimed at controlling salt cedar by means of biological agents. Although the research aspect of the program produced encouraging results with the Israeli mealy bug and the China leaf beetle, the USDA encountered difficulties in its

efforts to initiate test releases. The USDA prepared, but did not issue, an Environmental Assessment for National Environmental Policy Act compliance. The agency, however, is in the process of preparing a Biological Opinion which it will submit to the U. S. Fish & Wildlife Service in compliance with the Endangered Species Act. Reclamation is monitoring the activities, but is unsure whether or not the USDA will be able to release the insects.

FORT SUMNER PROJECT

Crop Production

A total of 44,750 acre-feet was diverted during 1996 from the Pecos River by FSID, as measured at the Fort Sumner Main Canal Heading[2].

As reported by FSID, the four major crops grown in 1996 were alfalfa hay, hay, irrigated pasture, and sorghum. Out of a total irrigable area of 6,500 acres, 5,946 acres were irrigated in 1996. Total gross crop value was $1,004,788, with an average crop value of $171.56 per irrigated acre. The irrigation demand for 1996 was 46,669 ac-ft, 32,668 ac-ft of which was delivered to farms for a total of 5.49 ac-ft delivered per irrigated acre.

Fort Sumner Irrigation District Water Management Activities

In December 1996, a final report was submitted to FSID and New Mexico Interstate Stream Commission on the canal lining investigations. In addition, Reclamation awarded a water conservation grant of $10,000 to provide for materials for the district to line a short section of their High Line Canal. As of the end of 1996 some of this work has been completed, but is not finished. A canal seepage ponding test was conducted on the section of High Line canal that was going to be lined in order to quantify how much water would be saved.

[2] Volume as measured at the Fort Sumner Main Canal USGS Gaging Station. Data is provisional and subject to change.

ENVIRONMENTAL COMPLIANCE ACTIVITIES

Endangered Species Program

In 1987, the Pecos bluntnose shiner was listed as a federally threatened species under the Endangered Species Act of 1973 with critical habitat designated in two approx. 60-mile reaches between Fort Sumner and Artesia. In 1989, in an effort to fill the newly-completed Brantley Reservoir, downstream water deliveries for the year were made within an 8-week period between April and early June. This exacerbated intermittency and longterm drying of the river channel during the ensuing summer. As a result, Reclamation consulted with the U.S. Fish and Wildlife Service (Service) and concluded in a biological assessment of Pecos River water operations that deliveries like that of 1989 may affect the continued existence of the Pecos bluntnose shiner. In 1991, the Service issued a biological opinion stating that Reclamation's Pecos River operations were jeopardizing the continued existence of the bluntnose shiner.

The outcome of this consultation was the development of MOU which was signed in January 1992. The MOU's purpose was: (1) to release, monitor, and protect flows of the Pecos River from Santa Rosa Dam to Brantley Reservoir, and (2) to analyze the effects of those flows on native fishes of the Pecos River. The MOU provided the framework for a 5-year research program and established biannual meetings for MOU parties. These meetings provided the forum to discuss Pecos River biological and hydrological issues and to develop flow recommendations for irrigation and research needs. The orignal MOU terminated as of January 1997. A new MOU among Reclamation, CID, Service, New Mexico Department of Game and Fish (NMDGF), and New Mexico State Engineer Office (SEO) was signed in February 1997. It's purpose is to provide additional time (3 years) to extend the relationship among signatories in order to complete the hydrology model, analyze data, write reports, develop management recommendations, and to provide water operations that are not detrimental to the Pecos bluntnose shiner. It also added SEO as a signatory.

Each year, release scenarios from Sumner Dam are planned by MOU signatories. In 1996, releases were "block" not "ramped" and higher than traditional (1,100 cfs) discharges were reached (peak of 1,330 cfs). Releases planned for 1997 will be block, less than 25 days duration, and discharge higher than 1,100 cfs will again be targeted.

The research program funded by Reclamation was designed to (1) determine the biologic and hydrologic needs of the Pecos bluntnose shiner, (2) develop a water

budget model for the Pecos River, and (3) develop operational guidelines for Pecos River operations which will protect, maintain, and assist in recovery of the species and the associated native fish community and efficiently deliver water for consumptive uses. Although monitoring will continue, the data collection phase of the program is complete. Investigations focused on community structure, habitat needs, flow impacts, water quality, hydrology, and life history attributes. A computer hydrology model for evaluating various operational schedules is currently in its final phase of development.

Upcoming results of the investigations and use of the modelling tool will lead to recommendations that can be used for managing Pecos River water operations. Preliminary findings to date indicate that there are certain management strategies that may be important for the conservation of Pecos bluntnose shiner. Since wetted habitat in the reach from 10 miles south of the Chaves County line down to Roswell has been shown to recently support healthy populations that were nonexistent during dry periods in the 1980s, the maintenance of some level of habitat appears to be valuable. The duration of releases also is critical since the Pecos bluntnose shiner is a broadcast spawner and the eggs and larvae become a part of the drift. Long duration releases (greater than approx. 25 days) result in poor population structure in downstream reaches (lack of adult fish). As releases are shortened, the likelihood of transporting eggs/larvae downstream and creating unsustainable populations is less. There is also the possibility that habitat enhancement to provide additional low velocities and augment overall habitat heterogeneity would promote a more even dispersal of eggs/larvae and increase survival to adulthood. Final study results and management recommendations are expected by early 1998.

National Environmental Policy Act (NEPA) Activities

Impacts of Reclamation-supervised water operations on the Pecos bluntnose shiner led Reclamation to evaluate the biology and hydrology of the river system in order to develop ways to efficiently deliver water to downstream users without significant environmental impacts. The Pecos River endangered species research program is expected produce management recommendations that can be incorporated into development of delivery scenarios that will result in a water operations plan that will better serve the agricultural community, other water users, and biological resources. The NEPA process will evaluate the range of contemporary needs on the Pecos River, identify alternative water management strategies (potential modifications to release duration, magnitude, and timing), and develop an implementable water management

plan. Reclamation will reinitiate consultation with the Service and receive a new biological opinion regarding water operations.

Reclamation initiated NEPA compliance for Pecos River water operations with an internal scoping meeting December 2, 1996. Several internal discussions have followed, team members have been scouted and initial cost estimates solicited, and a letter requesting the cooperation of several agencies was sent February 13, 1997. In addition to Pecos River MOU signatories, New Mexico State Parks and Recreation and New Mexico Interstate Stream Commission were requested to serve as cooperators. In March 1997, a team meeting was held as were informal meetings with various stakeholders (irrigation districts, Pecos River Compact Commissioners, etc.). The process is targeted for completion by the end of 1999.

PECOS RIVER ACTIVITIES AND OPERATIONS

Pecos River Model Development

Development of a river simulation computer model continued in 1996. Reclamation is using the PRSYM (Power and Reservoir System Model) framework to develop a Pecos version of the model. The PRSYM development is a joint effort between Reclamation, Tennessee Valley Authority, and CADSWES (Center for Advanced Decision Support for Water and Environmental Systems), an organization based at the University of Colorado in Boulder. Development of the PRSYM model is on-going. During 1996, an initial mean daily flow model was set up using the variable lag-loss routing method in PRSYM. The low flow data obtained from the strip charts have been sent up to FLO Engineering in Colorado for analysis and data reduction for developing an accurate modeling coefficients to calibrate model with existing flow data.

The PRSYM model will enable users to evaluate different flow scenarios for the Pecos River. It will also assist with determining optimum operations which balance CID uses with endangered species needs. The model simulates river flows and reservoir storages. The model does not estimate snowmelt or rainfall runoff into the Pecos Basin nor does it model groundwater. However, such data can be supplied to PRSYM and routed downstream. Current plans are to complete low flow calibration of the model in April 1997. The entire model should be calibrated and ready for use by the end of 1997. Plans are also underway to provide remote PC access to the model which runs on a SUN workstation in the Albuquerque Area Office.

Seven Rivers Farm

To meet mitigation requirements associated with the Brantley Project, a waterfowl management area has been established at the Seven Rivers Farm, located approximately 15 miles northwest of Carlsbad, New Mexico. The property is being managed by the NMDGF.

The waterfowl management area consists of a planned ultimate development of 640 acres that will be farmed to feed migratory waterfowl. Nearby backwater pools from Brantley Reservoir will provide water and resting areas for the seasonal wintering birds. In 1996, additional farming equipment and supplies were purchased and about 240 acres were farmed.

Pecos River Upper Watershed Water Quality Study

Reclamation, in partnership with New Mexico Institute of Mining and Technology, completed a General Investigations Program study of heavy metals contamination loading in and transport from the upper Pecos River Basin. The final report was issued in September 1996. The Service's observations of endangered Bald Eagles feeding on mercury contaminated fish in Fort Sumner Reservoir was the original motivation for the study.

The study focused on loading and transport from the mining district in the watershed's headwaters in the Sangre de Cristo Mountains down to Villanueva. While the findings do confirm suspected heavy metal loading from historic mining activities, it also shows that substantial loading comes from natural sources such as weathered rock and the atmosphere. In fact, the majority of loading for mercury and copper comes from atmospheric deposition in both the wet and dry form. Most of the contaminant load is apparently tied up and drops out with river sediments before reaching Villanueva. Limited data and visual observations suggest that contaminants are transported downstream as pulses when convective storms rip soils and stream sediments lose and wash them downstream during storm peaks.

Roswell Drainage District Technical Investigations

Reclamation through their Technical Assistance to the States program has been assisting the SEO to evaluate ground water levels near Roswell, New Mexico. There is a perception in the Roswell area that ground water levels are rising. Seepage conditions may or may not be expanding, but if artesian head is increasing at a rate of one foot per year as is being reported, it follows that drainage problems would be on the increase. The subsurface drains that were constructed in the early part of the century are deteriorated. Observations made during two Reclamation site visits, one in November 1996, and another trip in February 1997 indicated that there is little visible indication of severely seeped cultivated land. In order to determine if rising ground water levels are actually occurring a monitoring program is being designed for the East Grand Plains Drainage District.

Emergency Management Program

Reclamation's Emergency Management Policies and Directives were finalized in 1996. These policies provide for the safety of the public and protects environmental resources from incidents at Reclamation facilities by (1) taking reasonable and prudent actions necessary to ensure timely notification to potentially affected jurisdictions of such incidents: and (2) defining program needs and requirements essential to maintain self regulation by line managers, be responsive to public safety and satisfy legal requirements during operations or emergency incidents at Reclamation facilities. Work is proceeding on rewriting Emergency Action Plans for Brantley, Avalon, and Sumner Dams that will meet the new policies and directives and which will include initiating conditions, response levels and expected actions.

A security survey at Reclamation dams including Sumner, Brantley, and Avalon was conducted 1996. The basic purpose was to establish a baseline of security information and data at each facility. The three major variables addressed were (1) vulnerability, (2) threat and (3) criticality/consequence. Reclamation will be developing a more comprehensive security program in the future that will address these variables and will establish minimum requirements.

Review of Operations and Maintenance (RO&M) Program

Field examinations of the radial gates at Brantley and Sumner Dams were performed in response to recommendations resulting from investigations into the 1995 gate failure at Folsom Dam near Sacramento, California. A final report is due in 1997.

Safety of Dams (SOD) Program

Reclamation Manual directives for the review and examination program for significant and high hazard dams have been released and implemented. These directives were developed to ensure that reviews and examinations properly assess and evaluate the condition at the dams. These directives will also ensure a consistent Reclamation-wide approach to examinations and reviews. Facility Reviews have combined the focus of the RO&M and the Safety Evaluation of Existing Dams programs into one review and examination process.

Periodic Facility Reviews will be conducted at Sumner, Brantley, and Avalon Dams in 1997.

Pecos River Stream Adjudication

The Pecos River General Stream Adjudication (State Engineer v L.T. Lewis) is on-going in the 5th Judicial District Court in Chavez County. Reclamation is involved in this case as record title holder of the water rights for the Carlsbad Project. It is expected that this adjudication will continue into the foreseeable future.

MALAGA BEND SALINITY ALLEVIATION PROJECT

The State of Texas has expressed renewed interest in reviving the project with the salt brine to be used by a commercial salt processor. The state has made inquires of Reclamation requesting information on the process and involvement that Reclamation would have if the project was started again. Preliminary response centers upon the proposed right-of-way to be used. The use of federal right-of-way would require that NEPA requirements be met. If no Reclamation right-of way is used, Reclamation would have no requirement to be involved unless requested by the State of Texas to provide technical assistance.

Figure 1

1996 Sumner Elevation, Storage, and Releases

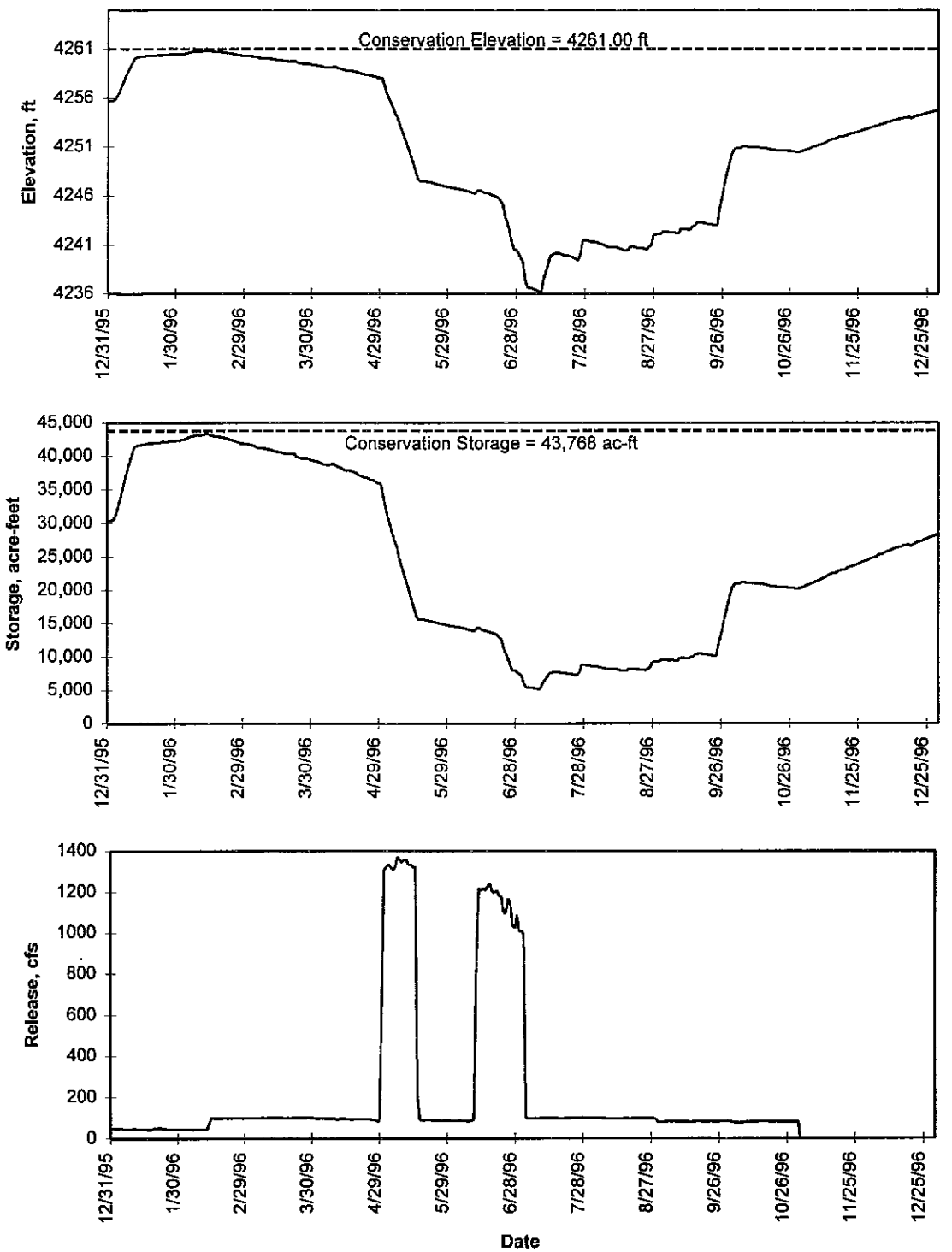

Figure 2

1996 Brantley Elevation, Storage, and Releases