RECLAMATION

Managing Water in the West

Calendar Year 2014 Report to the Pecos River Commission

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Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Albuquerque, New Mexico

April 2015

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

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

Cover photo High water at Brantley Reservoir as seen from US 285, courtesy of Michael Sanchez

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Introduction

The Albuquerque Area Office (AAO) of the Bureau of Reclamation (Reclamation) has oversight responsibilities for three 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*; and the *Fort Sumner Project*, which includes the Fort Sumner Diversion Dam. Figure 1 depicts the general location of the Projects on the Pecos River.

Reclamation prepared this Annual Report to the Pecos River Compact Commissioners to convey all required reporting information on the three projects mentioned above. It will also inform the Commission of proposed changes in programs and management activities and strategies that may affect operations, operating conditions, and/or the Compact, including Endangered Species Act (ESA) issues.

An agreement between Reclamation and Carlsbad Irrigation District (CID), finalized on October 2, 1989, provides for CID to operate and maintain Brantley Dam, Avalon Dam, Sumner Dam, and the Pecos River Water Salvage Project. 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. The Pecos River Water Salvage Project was not funded in fiscal year 2014.

The gage data used within this report was downloaded from the United States Geological Service (USGS) web page, http://waterdata.usgs.gov/nm/nwis/dv. The dam tenders recorded and reported the provisional reservoir elevation data to Reclamation on a monthly basis.

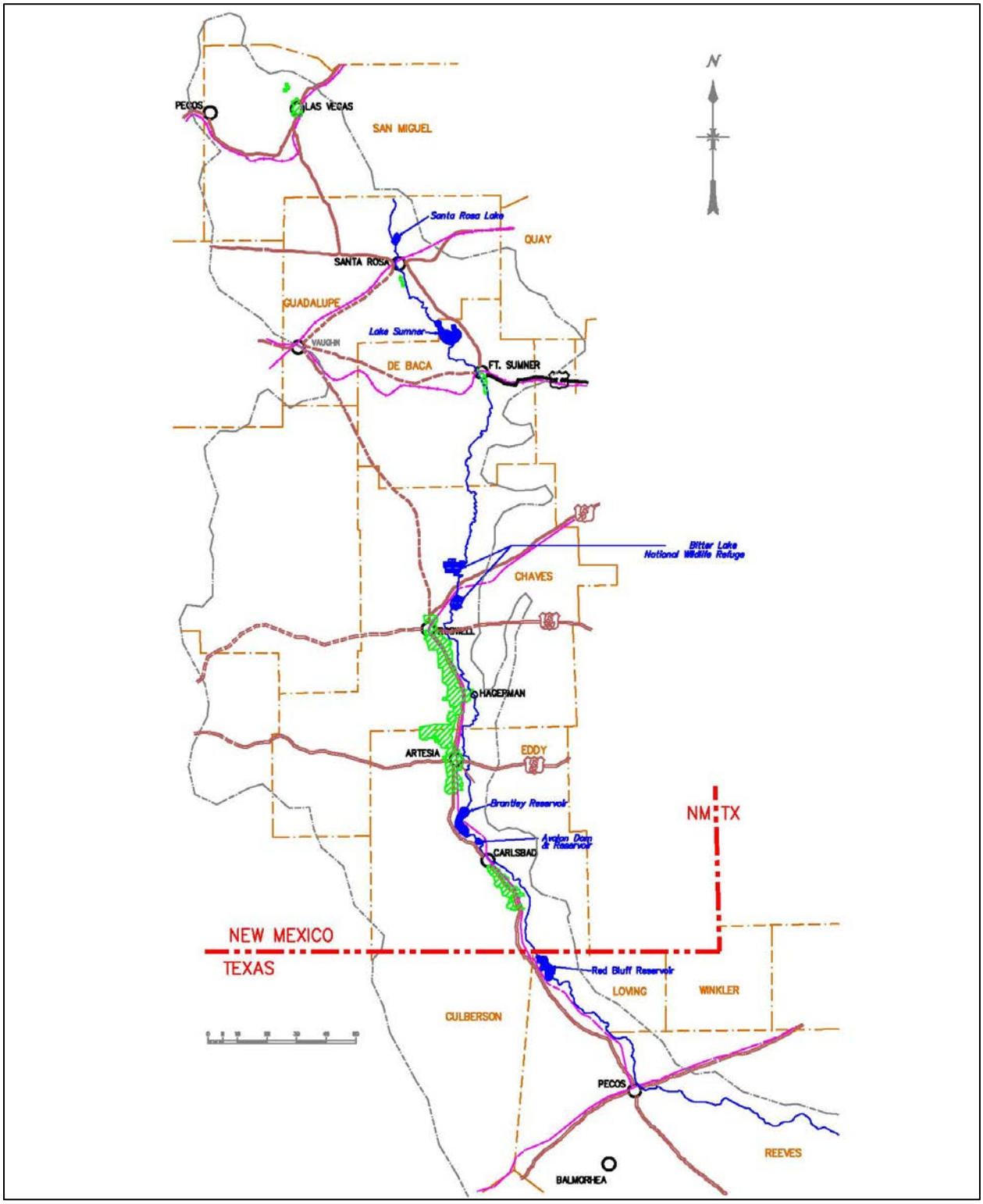

Figure 1: Reclamation's Projects Map on the Pecos River

Pecos Basin Water Accounting

Reclamation, the New Mexico Interstate Stream Commission (NMISC), and Carlsbad Irrigation District (CID) have developed a 5-year Depletions Agreement for ESA water use (2014-2018). This agreement with the related accounting will account for reductions in Carlsbad Project water supply due to modification of Reclamation's Sumner Dam operations, and future increases in Carlsbad Project water supply associated with Reclamation's water acquisitions. As a tool for water management and accounting, Reclamation has constructed an accounting model for the Pecos Basin, using RiverWare® software. Reclamation has proposed this management and accounting model as a replacement for the spreadsheet accounting detailed in the Depletions Agreement.

Carlsbad Project Operations

Reservoir Storage Entitlements

Reclamation operates all Carlsbad Project reservoirs in accordance with the requirements of the Pecos River Compact and U.S. Army Corps of Engineers' (Corps) flood control criteria. Figure 1 depicts the location of the Carlsbad Project storage dams on the Pecos River. Operation of the dams on the Pecos River is a joint effort between Reclamation, CID, and the Corps in coordination with the Fort Sumner Irrigation District (FSID) and the State of New Mexico.

Reclamation calculated annual total conservation storage entitlements for the four Pecos River reservoirs, (Santa Rosa, Sumner, Brantley, and Avalon) that are in New Mexico. Table 1 presents the calendar year 2014 storage entitlements for these Reservoirs. Note that Santa Rosa and Avalon elevations reference a project datum.

The 2014 start-of-year total Carlsbad Project conservation storage in the Pecos River reservoirs was 90 percent of entitlement. Santa Rosa, Sumner, Brantley, and Avalon Reservoirs were at approximately 94, 99, 76, and 52 percent, respectively, of each Reservoir's entitled conservation storage. On December 31, 2014, the total Carlsbad Project entitlement storage in the Reservoirs was 83 percent of entitlement. Santa Rosa, Sumner, Brantley, and Avalon Reservoirs were at approximately 66, 110[1], 100[2], and 67 percent, respectively.

[1] During the winter months, Sumner is allowed to store an additional 20,000 af above the entitlement storage as long as the total entitlement storage is not exceeded in for all four reservoirs.

[2] Actual storage at Brantley was 193 percent of entitlement due to storage of floodwater. Water stored above conservation belongs to New Mexico and Texas and are not considered in the entitlement storage for Carlsbad Project.

Table 1: Pecos River Reservoir Storage Entitlements for 2014

Reservoir	Entitlement Storage (af)	Minimum Pool (af)	Total Estimated Sediment Accumulation (af)	Total Conservation Storage (af)	Conservation Elevation (feet)
Santa Rosa	***98,110***	0	6,226	104,336	4,746.94
Sumner	***34,524***	2,500	551	37,575	4,260.88 (NAVD88)
Brantley	***40,000***	2,000	57	42,057	3,256.12 (NAVD88)
Avalon	***3,866***	600	0	4,466	3,117.40
TOTAL:	***176,500***				

The National Resource Conservation Service's June 1, 2014, most probable snowmelt runoff forecast predicted approximately 8,500 acre-feet (af) of inflow into Santa Rosa Reservoir, or 15 percent of the 30-year average. The actual March through July inflow to Santa Rosa Reservoir was just above 12,300 af, approximately 22 percent of the 30-year average.

Santa Rosa Reservoir Sediment Accumulation

The Corps calculated the sediment accumulation for Santa Rosa Reservoir. The most recent sediment survey was performed in 1996. The area-capacity table was retroactive to January 1, 1997. Table 2 is an annual tabulation of estimated deposition since January 1, 1997. The estimated sediment deposition since the last sediment survey was 6,226 af.

Table 2: Estimated Sediment Accumulation for 2014 Santa Rosa Storage Entitlement

Calendar Year	**Sediment Accumulation (af)**
1997	760
1998	475
1999	532
2000	537
2001	327
2002	89
2003	81
2004	341
2005	711
2006	375
2007	264
2008	316
2009	252
2010	487
2011	49
2012	97
2013	533
Total	***6,226***

Sumner Reservoir Sediment Accumulation

The basis of the estimated sediment accumulation calculations for Sumner Reservoir is the ratio of total sediment deposition to total inflow during the period between the May 1989 and May 2001 sediment surveys. Inflow to Sumner Reservoir was measured at the USGS gage, Pecos River near Puerto De Luna, NM (PDL). The total sediment deposition during this period was the difference in the content between the 1989 and 2001 surveys at the top of conservation pool, elevation 4,262.88 feet (NAVD 88 vertical datum, 4261.00 feet referencing local vertical datum). Reclamation reduced the maximum conservation pool elevation in Sumner Reservoir at the request of the Carlsbad Irrigation District by two feet to 4260.88 ft (NAVD 88) or 4259.0 ft (NGVD 29).

The total sediment deposition divided by the total inflow obtained an average ratio of sediment deposition to inflow during this period. To estimate sediment deposition in a given period, calendar year inflow is multiplied by this ratio. Table 3 shows an annual tabulation of the inflow and estimated sediment accumulation since June 1, 2001. The estimated sediment deposition since the last sediment survey was 551 af. Reclamation conducted a new sediment survey in March of 2013 and it will be implemented when finalized.

Table 3 Estimated Sediment Accumulation for 2014 Sumner Storage Entitlement

Calendar Year	Inflow (af)	Sediment Accumulation (af)
6-12/2001	68,140	29
2002	74,938	31
2003	77,328	32
2004	110,815	47
2005	121,739	51
2006	123,937	52
2007	120,331	51
2008	135,632	57
2009	108,464	46
2010	121,238	51
2011	86,281	36
2012	71,006	30
2013	90,603	38
Total		***551***

Brantley Reservoir Sediment Accumulation

The basis of the estimated sediment accumulation calculations for Brantley Reservoir is the ratio of total sediment deposition to total inflow during the period between the May 2001 and March 2013 sediment surveys. Inflow to Brantley Reservoir is measured at the USGS gage, Pecos River near Lakewood, NM (Kaiser Channel). The total sediment deposition during this period was the difference in the content between the 2001 and 2013 surveys at the top of the designated conservation pool, elevation 3,272.6 feet (NAVD 88 vertical datum, 3271.00 feet referencing local vertical datum). Total sediment deposition divided by the total inflow yields an average ratio of sediment deposition to inflow during this period.

Annual sediment deposition since the 2013 survey is estimated by multiplying this ratio by the calendar year inflow. Table 4 shows estimated inflow and sediment accumulation since April 1, 2013. The estimated sediment deposition since the last sediment survey was 57 af.

Table 4: Estimated Sediment Accumulation for 2014 Brantley Storage Entitlement

Calendar Year	Inflow (af)	Sediment Accumulation (af)
4-12/2013	74,801	57
Total		***57***

Sumner Dam and Reservoir

Sumner Dam Operations

Operations at Sumner Dam collect available natural inflow above FSID's allotted direct diversion water right, contingent on bypass water not being required. Bypasses are required to meet the 35 cubic feet per second (cfs) target at the USGS gage, Pecos River below Taiban Creek near Fort Sumner, or to maintain continuous flow in the river as targeted by the 10-year Biological Opinion (10-year BO) (2006-2016, Cons. #22420-2006-F0096) implemented in 2006 for the Pecos bluntnose shiner (shiner). FSID has a direct diversion right of up to 100 cfs of the natural inflow into Sumner Reservoir as calculated by the New Mexico Office of the State Engineer (NMOSE) in their two-week average inflow calculation.

Stored Carlsbad Project water is released as a block. The duration of block releases is restricted to a maximum of 15 contiguous days, and the cumulative annual duration of all block releases is restricted to a maximum of 65 days annually. Scheduled block releases should have a minimum of 14 days between releases, and block releases should avoid the six-week period around August 1. These restrictions are in accordance with the 10-year BO. CID schedules block releases in cooperation with Reclamation to alleviate river intermittency as long as this scheduling does not constitute a wasteful use of water due to excessive net losses accrued during transit, or due to excessively high net downstream reservoir evaporation. Reclamation directs the CID dam tender

on gate adjustments and CID is responsible for all maintenance activities. This operating procedure does not alter the normal operations of Avalon and Brantley Reservoirs for delivering water to CID.

Under a water right permit granted by the State of New Mexico, the Carlsbad Project is allowed to store up to 20,000 af above its storage entitlement in Sumner Reservoir from November 1 to April 30 each year, provided that the entitled conservation storage of all four reservoirs on the Pecos River in New Mexico does not exceed 176,500 af. An additional 3,896 af were in storage under this water right permit on December 31, 2013.

During 2014, Reclamation stored 3,220 af in Sumner Reservoir to provide releases to achieve target flows at the Taiban gage and avoid intermittency in the river. This water was stored and released under the Carlsbad Project Water Supply Management Agreement between the United States and CID. The 3,220 af that was stored was composed of 720 af of Fish Conservation Pool (FCP) water and 2,500 af FSID forbearance water. The FCP was acquired by pumping 540 af of water directly into Brantley Reservoir. The forbearance water was acquired through the Contract between the United States and FSID (Contract No. 08-WC-40-292; FSID Forbearance Agreement Pool). Of the FCP, 17 af were released on July 27 and 28, and the remainder was released between November 3 and 30. Releases of forbearance water began on December 1 and continued until the end of the year, with a total of 1,388 af released. The remaining forbearance (1,112 af) reverted to Project water on December 31, 2014.

Sumner Reservoir began 2014 with 37,344 af in total storage. Total storage peaked on July 30 at 47,507 af. The first block release was initiated on April 24 and terminated on May 8 at an average rate 1,393 cfs, for a total release of 41,783 af. The second release began June 24 and terminated on July 3 for a total of 23,962 af released. A third release of 16,654 af, from July 29 to August 6, discharged excess floodwater stored during heavy rains and brought Sumner back down to permitted conservation storage. Sumner Reservoir's lowest total storage occurred on July 1 at 25,511 af. Sumner Reservoir ended the year with 41,471 af in storage. Figure 2 depicts Sumner Reservoir's total storage, bypasses, and releases.

A total of 1,206 af was bypassed for ESA related purposes during the non-irrigation season, between January 1 and February 12, at an average rate of 14.1 cfs. All 720 af of the FCP was released, as well as 1,388 af from the FSID Forbearance Agreement Pool for ESA related purposes. Additional water for ESA was acquired under a fallowing agreement with FSID and is discussed under the FSID operations section. The section on Reclamation's water offset program discusses the effects of these modified operations on the Carlsbad Project.

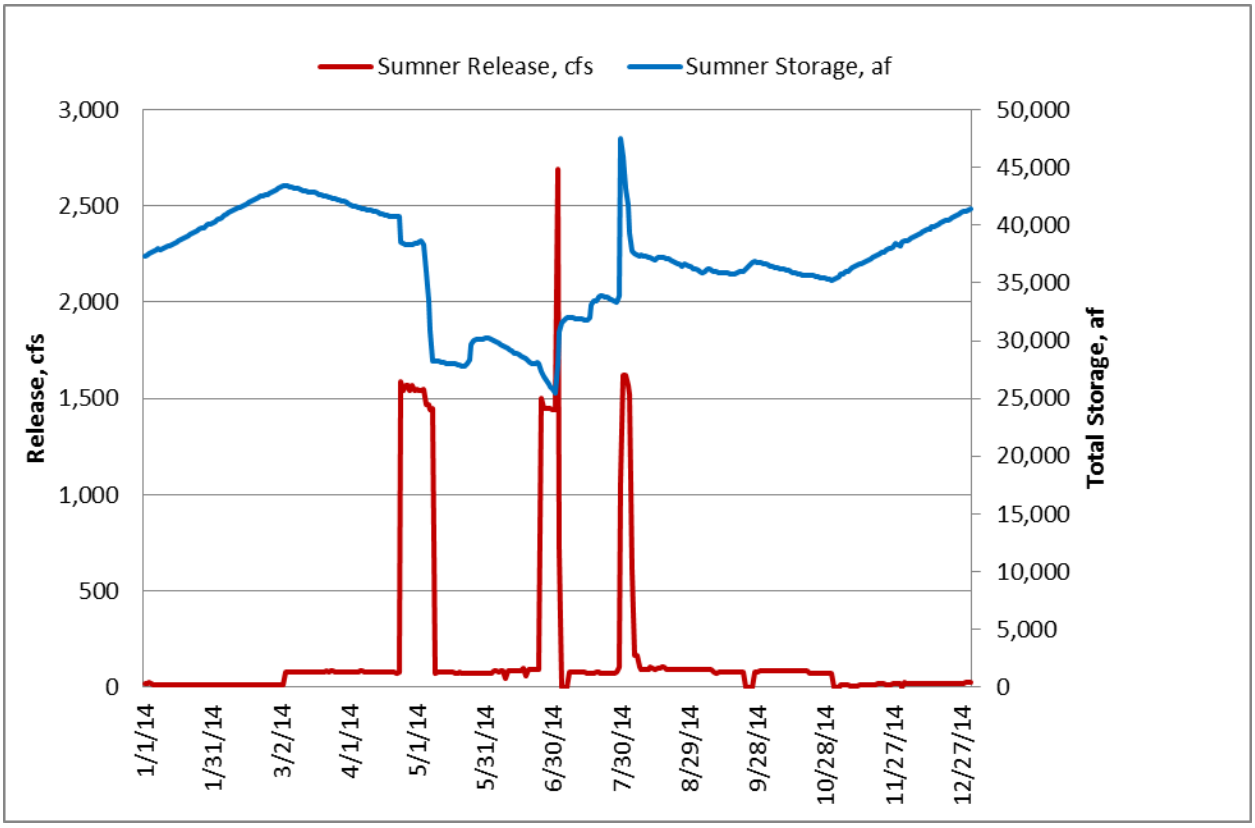

Figure 2: Release and Storage for Sumner Reservoir

Sumner Dam Facility Review and Safety of Dams Programs

A Periotic Facility Review (PFR) was performed on Sumner Dam on April 1, 2014. Two new recommendations were created from this review. The next exam for Sumner Dam will be an Annual Site Inspection, scheduled to be completed before the end of FY2015. Four O&M recommendations were completed in FY2014. There are currently fourteen incomplete O&M recommendations for Sumner Dam. All three radial gates at Sumner Dam are in need of repairs. CID is responsible for the repairs and 68.36% of the repair cost. Reclamation is responsible for 31.64% of the repair cost. Reclamation has helped CID prepare for this project by providing information regarding planning, designs, schedules, cost estimates, and environmental issues. There were no major repairs done to the radial gates during FY 2013 and FY2014 due to unusual high water elevations against the radial gates. CID plans to complete the remaining work on the radial gates on an annual basis and should finish the entire rehabilitation by 2017.

A Periodic Security Inspection was performed on Sumner Dam on April 1, 2014. No significant security issues were reported. Classroom Damtender Training was completed on March 6, 2013. Onsite Damtender Training was completed for April 1, 2014.

Brantley Dam and Reservoir

During periods without irrigation releases, Brantley Dam bypasses mitigation flows of 20 cfs. During the irrigation season, releases are made from Brantley Dam to Avalon Reservoir at a rate necessary to support the diversion into CID's main canal, generally between 75 and 350 cfs, as required by irrigation demand, but did get as high as 1,370 cfs for flood control.

Brantley Reservoir began the year with a total storage of 32,016 af. Irrigation releases from Brantley commenced on March 28 and then were made as needed to meet demand and conserve water. The final irrigation release from Brantley Reservoir occurred on October 26. Approximately 92,604 af was released from Brantley for irrigation during this period, including mitigation flows. Brantley Reservoir reached a maximum total storage of 81,095 af on December 29 and 31, 2014. The lowest total storage occurred on May 9 with a volume of 16,614 af. Brantley Reservoir ended the year with a total storage of 81,095 af. Figure 3 depicts Brantley Reservoir's total storage, bypasses, and releases.

In late September, southeastern New Mexico and west Texas received extremely heavy precipitation. Brantley Reservoir received 9.2 inches of rain in 11 days. Repairs were already underway on Red Bluff Reservoir's service spillway, downstream from Brantley and just across the New Mexico border in Texas. Due to safety concerns related to the ongoing repairs, the Red Bluff Irrigation District asked Reclamation, and Reclamation agreed, to store floodwater that would otherwise have been released.

The storms were regional, and Red Bluff later filled and spilled. This meant further work was needed on the service spillway, and Reclamation was asked to continue storing floodwater in Brantley, until releases from Red Bluff could accommodate it without overtopping the earthen service spillway. On March 9, 2015, Brantley held 84,979 af, composed of a full conservation pool of 42,057 af and 42,922 af of floodwater stored for both New Mexico and Texas. Release of the stored floodwater is expected in June or July of 2015.

Brantley Dam Facility Review and Safety of Dams Programs

A Periotic Facility Review (PFR) was performed on Brantley Dam on April 2, 2014. Three new recommendations were created from this review. The next exam for Brantley Dam will be an Annual Site Inspection, scheduled to be completed before the end of FY2015. One O&M recommendation was completed in FY2014. There are currently ten incomplete O&M recommendations for Brantley Dam.

There are sinkholes upstream and downstream on the left areas of Brantley Dam. The sinkholes are monitored visually on a regular basis, and are photographically surveyed/documented every eight years. The latest survey was in March 2010. The sinkholes seem to be filling in naturally, and fewer were found since the previous survey in 2005.

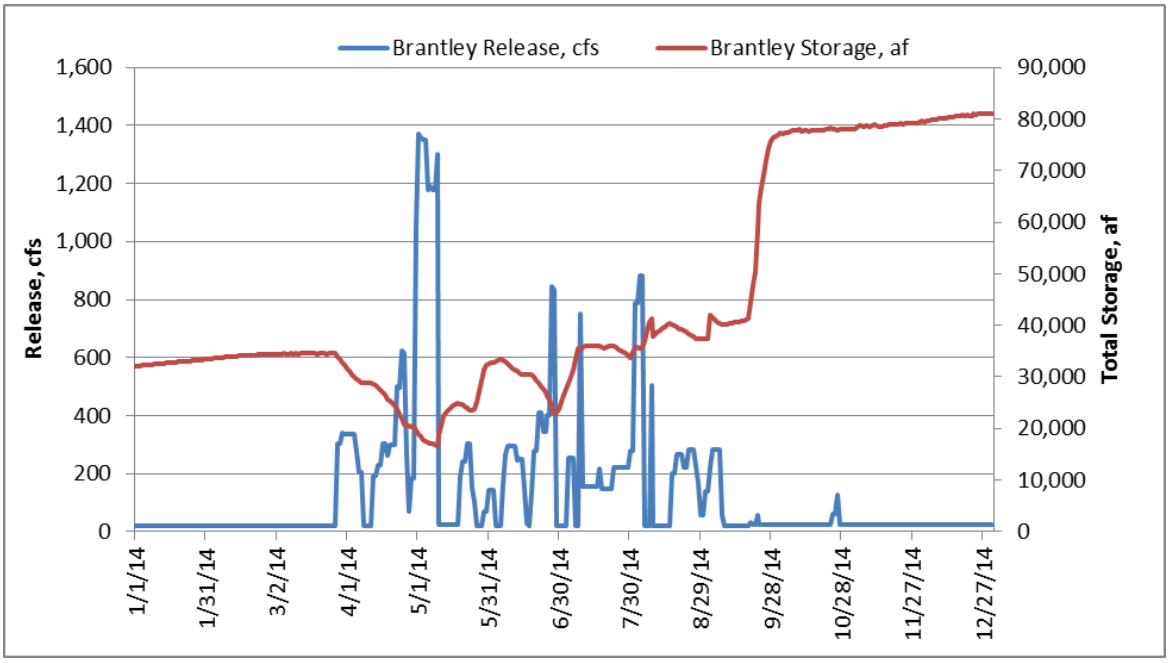

Figure 3: Release and Storage for Brantley Reservoir

A Periodic Security Inspection was performed on Brantley Dam on April 2, 2014. No significant security issues were reported. Classroom Damtender Training was completed on March 6, 2013. Onsite Damtender Training was completed for April 2, 2014.

Avalon Dam and Reservoir

Due to the small reservoir capacity and the location of Brantley Dam 10 miles upstream, Avalon Dam is used primarily as a diversion dam to meet irrigation demand for CID. Water released from Brantley Dam is re-regulated by the small reservoir at Avalon, which releases it into the CID Main Canal. Avalon Reservoir began the year with 2,300 af and ended the year with 2,942 af. It reached a maximum storage of 5,295 af on May 4 and remained there until May 8, and a minimum of 863 af on October 24 and 25. Diversions into the CID Main Canal began on March 24 and ended on October 26, delivering 60,116 af.

Avalon Dam Facility Review and Safety of Dams Programs

A Periotic Facility Review (PFR) was performed on Avalon Dam on April 2, 2014. Eight new recommendations were created from this review. The next exam for Avalon Dam will be an Annual Site Inspection, scheduled to be completed before the end of FY2015. One O&M recommendation was completed in FY2014. There are currently twenty-four incomplete O&M recommendations for Avalon Dam.

A Periodic Security Inspection was performed on Avalon Dam on April 2, 2014. No significant security issues were reported. Classroom Damtender Training was completed on March 6, 2013. Onsite Damtender Training was completed for April 2, 2014.

Carlsbad Project Environmental Compliance

Reclamation's Direct Flow Operations

Reclamation has a lease agreement with the NMISC for up to 1,800 af (consumptive use) of well water (Vaughan) to be pumped into the Pecos River annually. The Vaughan Pipeline (Pipeline) supplements flows on the Pecos to meet the needs of the 10-year BO. The outfall structure of the Pipeline is located upstream of the USGS' Taiban Gage. Maximum output during 2014 was between 8 and 9 cfs. The Pipeline provided 1,569 af of the 1,583 af purchased for 2014.

In addition to the lease agreements described above, Reclamation has established a 1,000 af fish conservation pool in Sumner Reservoir through an exchange of 750 af of water rights it owns at Seven Rivers. Because the expected need was low in 2014, only 540 af were pumped, which were exchanged for a 720 af FCP in Sumner. Water under this water right pumped into Brantley Reservoir from wells at Seven Rivers is exchanged for water that can be released from Sumner Lake to maintain flow targets established in the 10-year BO. All of the fish conservation pool was released from Sumner after irrigation season of 2014.

Under a forbearance agreement with FSID, 2,500 af were stored for Reclamation under CID's storage right at Sumner Lake. A portion of the stored water, 1,388 af, was released after irrigation season for ESA related purposes. The remaining 1,112 af reverted to Project storage at the end of 2014.

Reclamation entered into a fallowing agreement in 2014 with FSID farmers. The agreement gave Reclamation a portion of FSID's two-week allotment, which was diverted into the FSID Diversion Dam and then returned to the river via the Sand Gate Diversion from the Ft. Sumner Canal. Water under this agreement began returning to the River on April 30 and continued through the end of the irrigation season on October 31. A total volume of 3,897 af was delivered to the River under this agreement.

Reclamation's Water Offset Program

Reclamation leases water rights from willing owners within the Pecos River Basin to offset the additional depletions caused by ESA related operations. Reclamation is entirely dependent on the availability of willing water rights holders and congressional budget decisions to meet the instream flow requirements of the 10-year BO.

From November 1, 2013, through October 31, 2014 (the 2014 accounting year), Reclamation had water lease agreements with five Pecos River pumpers, one of whom is also a Hagerman Irrigation Company irrigator, to lease 1,842.9 af (consumptive use portion) of surface water rights and 507 af (consumptive use portion) of Hagerman Canal water rights. The land associated with the leased water was fallow. The Hagerman Canal water was pumped directly into the Pecos River.

Accounting for 2014 will be presented at the Compact Commission Meeting. Final calculations produced using the Pecos Annual Accounting Method, developed jointly by the NMISC and Reclamation, indicate that for the 2014 water year Reclamation's Carlsbad Project Water Acquisition (CPWA or Offset) Program put 1,350 af more water into the Pecos River than the additional depletions incurred by the modified operations of Sumner Dam. Reclamation bypassed 3,238 af and released none of the 2014 forbearance water creating 1,128 af of additional depletions for the 2014 water year. CPWA amounts of 2,485 af (adjusted for consumptive use, transmission loss, and Brantley evaporation) was provided at Brantley Reservoir for the water year to eliminate these additional depletions, resulting in a Reclamation credit of 1,350 af for the 2014 water year.

Endangered Species Program

Pecos Bluntnose Shiner

Reclamation continues to monitor flows under the 10-year Biological Opinion (BO) initiated in August 2006. The 10-year BO and Environmental Impact Statement (EIS) committed Reclamation to operate the Carlsbad Project with a target flow of 35 cfs at the Taiban Gage and to keep the river continuous in order to conserve the federally protected Pecos bluntnose shiner (shiner) (*Notropis simus pecosensis*). The River was continuous during the 2014 calendar year.

Reclamation receives an annual update on the status of the shiner from the U.S. Fish and Wildlife Service (USFWS). All metrics used to track the status of shiner were lower compared to the previous year and continue to decline from high population density in 2010 and 2011. Mean monthly percent abundance ranged from 0.2 ± 0.2 to 7.0 ± 3.0% and mean population density ranged from 0.02 ± 0.02 to 3.8 ± 1.5 fish/100 m^2. In 2014, cumulative mean percent abundance was 2.8 ± 0.5% and mean catch rate was 1.6 ± 0.4 fish/100 m^2 (Figure 4). Population density and percent of shiner within the fish community decreased in 2014 and are at levels not seen since 2004 and 2005. (Davenport 2014)

Under the current 2006 BO, shiner abundance trends are reported in four-month trimesters: January-April, May-August, and September-December, and among river sections: Tailwater, Rangeland, and Farmland. The current BO requires the minimum two year running average for the shiner in trimester one be 3.5 shiner/100 m^2 and 8.0 shiner/100 m^2 in trimester three (USFWS 2006. Amidst an unprecedented drought, the two year running average fell below the prescribed limits for incidental take in trimester three of 2013[3]. In 2014, the two year average for trimester

[3] Davenport, S.R.. 2013. Status and trends of Pecos bluntnose shiner *Notropis simus pecosensis* Pecos river, New Mexico. Final report submitted to US Bureau of Reclamation, Albuquerque Area Office. 36 pages.

one was at 1.8 shiner/100 m^2 and 2.8 shiner/100m^2 remaining below BO prescribed levels as shown in Table 5[4].

Table 5: Pecos bluntnose shiner (PBS) two year mean population density with standard error and number of samples (N) for 2006 to 2014. Two-year running average was calculated from site means for the year stated and preceding year (for example in 2006, by calculating mean from all sites for trimester one in 2005 and 2006; same for trimester three).

Year	Trimester one PBS/100 m^2	Trimester three PBS/100 m^2	Any trimester 2008
2006	**3.5** (± 0.75 SE, N = 48)	**5.3** (± 0.90 SE, N = 48)	> 2.7 (2.5)
2007	**5.0** (± 0.8 SE, N = 53)	**9.8** (± 1.8 SE, N = 50)	> 4.0 (2.5)
2008	**7.2** (± 1.3 SE, N= 62)	**14.3** (± 4.5 SE, N= 59)	> 9.8 (2.5)
2009	**11.9** (± 1.9 SE, N= 64)	**17.4** (± 3.8 SE, N= 73)	> 15.2 (2.5)
2010	**13.1** (±2.1 SE, N = 75)	**21.0** (± 2.2 SE, N = 82)	> 12.3 (2.5)
2011	**18.4** (± 2.2 SE N = 58)	**21.3** (± 2.6 SE N = 81)	> 18.4 (2.5)
2012	**21.6** (± 5.1SE N = 55)	**14.7** (± 3.0 SE N = 62)	7.6 (2.5)
2013	**11.25** (± 5.4SE N = 47)	**5.0** (±1.3 SE N = 46)	NA
2014	**1.8** (±0.7 SE N = 48)	**2.8** (±0.6 SE N = 56)	

[4] Davenport, S.R.. 2014. Status and trends of Pecos bluntnose shiner *Notropis simus pecosensis* Pecos river, New Mexico. DRAFT report submitted to US Bureau of Reclamation, Albuquerque Area Office.

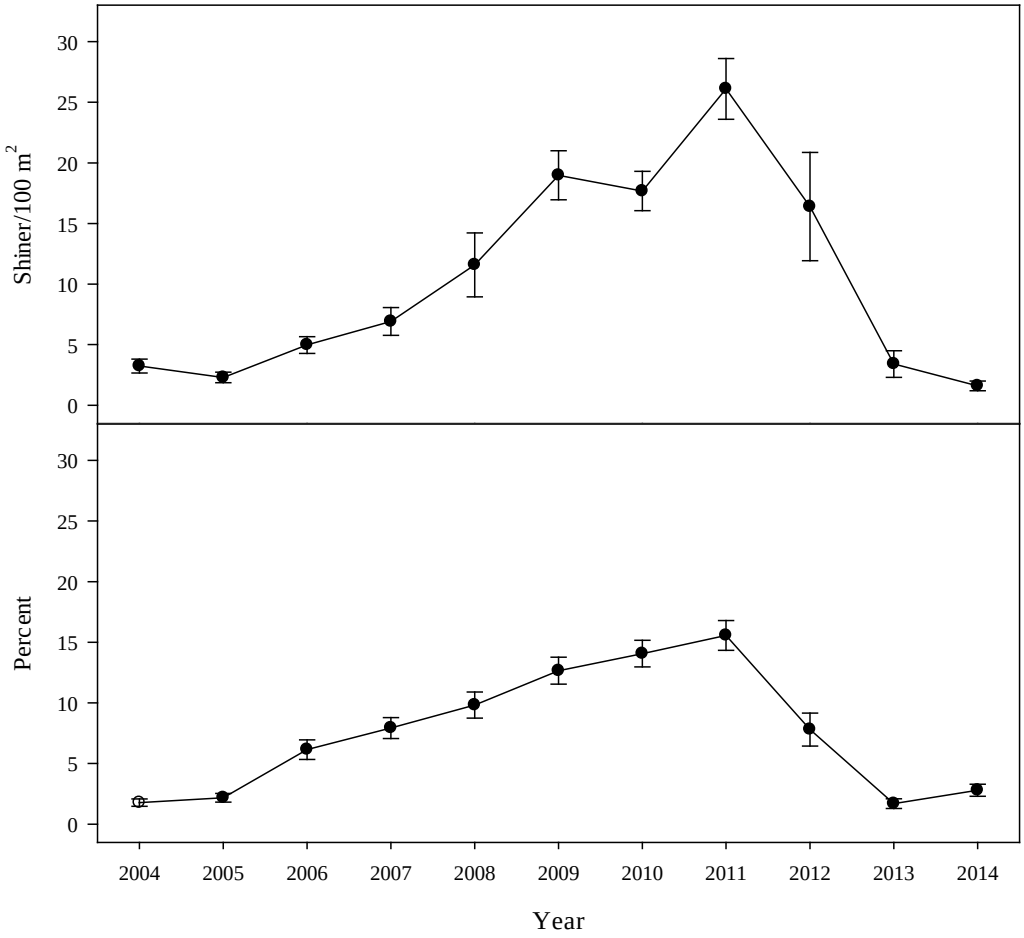

Figure 4. Pecos bluntnose shiner annual population density (top) and percent abundance (bottom), ± one standard error, for years 2004 through 2014, Pecos River, New Mexico

Least interior Tern

At the beginning of the 2014 tern nesting period, Brantley Reservoir was at an elevation of 3,249 ft., covering approximately 2,130 acres; an increase of nearly 15 ft. since the end of the 2013 breeding season. By May 29th, the reservoir elevation had risen to over 3,252 ft., exceeding normal levels and inundating all exposed shoreline. The reservoir level continued to fluctuate moderately through June 28 when it reached a low of 3,248.5 ft. Sporadic summer rains contributed water to the reservoir, and the reservoir level slowly rose through the remainder of the breeding season, reaching and exceeding the 3,250 ft. elevation mark July 2 to a high of 3,254 ft. These reservoir levels inundated previously exposed areas and essentially eliminating all suitable nesting habitat at Brantley upon the terns' arrival.

In 2014, a total of 13 adult terns were observed over the course of the breeding season (Table 6). On several occasions, up to eight adult terns were observed with no instances of either courtship or copulation recorded. Based on these observations it was concluded that no breeding pairs were documented at Brantley Lake during the 2014 breeding season. Compared to 2013, this was a sharp decrease in tern numbers at Brantley (88% decrease).

Table 6. Summary of 2014 Least Tern observations at Brantley Reservoir, New Mexico[5]

Date	Adult	Sub-Adult	Immature	Nests*
May 20/21 2014	0	0	0	0
May 29/30 2014	0	0	0	0
June 4/5 2014	2	0	0	0
June 13/14 2014	8	0	0	0
June 19/20 2014	3	0	0	0
June 28 2014	0	0	0	0
July 6/7 2014	0	0	0	0
July 16/17 2014	0	0	0	0
July 26/27 2014	0	0	0	0
August 6/7 2014	0	0	0	0
2014 Totals**	**13**	**0**	**0**	**0**

* Only nests containing eggs were considered active nests. Empty scrapes were not tallied in the total

** Total numbers of terns observed are intended to be an index of tern usage at Brantley Reservoir, given similar survey efforts on an annual basis (i.e. weekly surveys), not an absolute count of individuals.

Pecos River Restoration

Under the 2006 BO, Reclamation also agreed to "assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1 to 1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1 to 1.5 miles by 2014." In 2009, Reclamation funded and completed a channel restoration project that reconnected Oxbow 4 at Bitter Lake National Wildlife Refuge (BLNWR) to the mainstem of the Pecos River.

The second habitat improvement project, located at Bureau of Land Management (BLM) Overflow Wetlands Area of Critical Environmental Concern (ACEC) south of the BLNWR restoration project, was completed in 2014. Lands in the project area are managed by BLM, the NM State Land Office, and private landowners. According to the 2006 BO, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows will be most successful in mitigating the observed displacement of the shiner eggs and in providing a variety of channel conditions favorable to the different life stages of the shiner. The 2nd project included removal of non-native vegetation, lowering and contouring riverbanks, and excavating smaller bank sites. This project will be monitored for 5 years.

Upcoming Consultation

Reclamation has started work on a new Biological Assessment (BA) to submit to the USFWS. The current BO expires in April 2016 and Reclamation plans to submit its BA around September 2015. The new BA will analyze the hydrology and proposed operations including the recent extreme drought to determine the effects of Reclamation's proposed operations of the Carlsbad Project and water acquisition program on the listed species within the basin.

[5] Root, Shaun and D. Ahlers. 2015. Interior Least Tern Monitoring Results 2014. Brantley Lake, NM. Bureau of Reclamation, Albuquerque, NM.

Pecos River Basin Water Salvage Project

In past years, Reclamation has controlled saltcedar growth from the Sumner Dam area to the New Mexico - Texas state line under the authority of Public Law 88-594. However, this activity was not funded in fiscal year 2014. The NMISC has historically contributed funds for the work, but were unable to contribute funds in FY 2013. Reclamation previously accomplished the work by contracting with the Carlsbad Irrigation District for mechanical removal of the saltcedar. Total land previously cleared in New Mexico is approximately 33,200 acres.

Fort Sumner Project

Operations

The irrigation season for FSID typically begins March 1 and ends October 31. FSID is also allowed to divert for two, eight-day periods during the winter. This winter allotment has generally been taken just prior to March 1. In 2014, FSID forbore 2,500 af of their winter allotment to Reclamation under Contract No. 08-WC-40-292. The volume stored by Reclamation in Sumner Reservoir from the forbearance was 2,500 af.

FSID began diverting water for irrigation on March 4 and ended irrigation for the year on October 31. During the irrigation season, 70 to 95 cfs were bypassed through Sumner Reservoir, depending on FSID's available water right. A total of 37,139 af were diverted into the FSID main canal as recorded by the USGS Fort Sumner Main Canal Near Fort Sumner, NM, gage, shown in Figure 5.

Under a fallowing agreement between FSID and Reclamation signed in March 2014, individual members signed up acreage that would be fallowed. This allowed the portion of water that would have been used to irrigate these lands to be returned to the River through the Sand Gate Weir off of the Sumner Main Canal. Returns to the River began April 30 and continued through the end of irrigation season, for a total of 3,897 af returned.

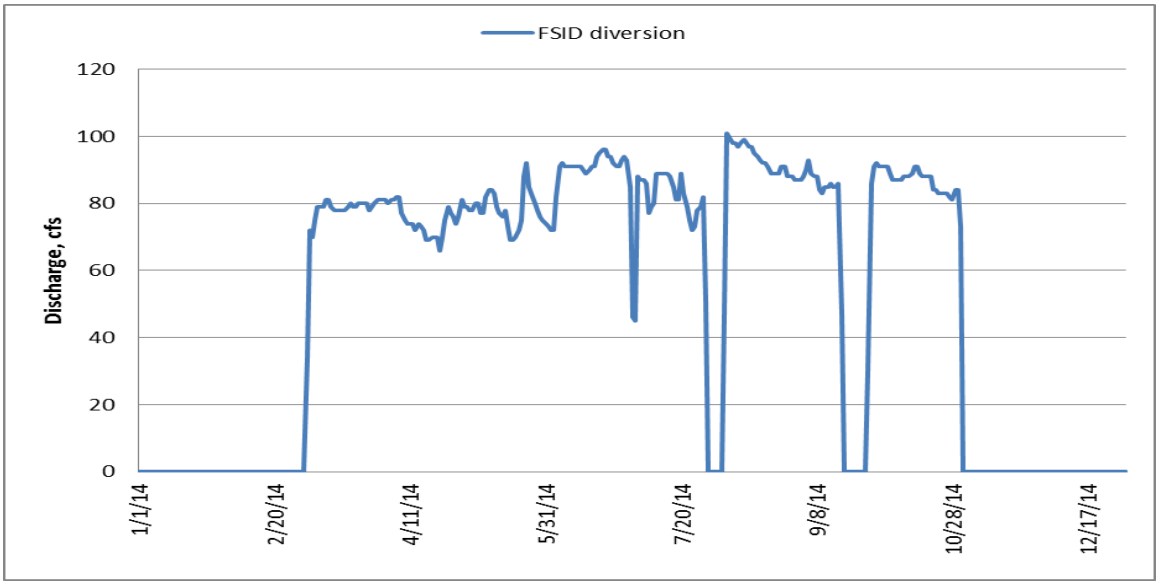

Figure 5. FSID Main Canal Diversion (data from USGS website 3/7/2015)

Fort Sumner Irrigation District Review of Operation and Maintenance

The Review of Operation and Maintenance (RO&M) examination of the FSID Diversion Dam was completed in June 2009. The next RO&M examination is scheduled for April 2015. All recommendations have been completed.

Other Pecos River Activities and Operations

Carlsbad Irrigation District Water Lease Program

Reclamation and the NMISC completed an Environmental Impact Statement in August 2006, clearing the way for a long term "Miscellaneous Purposes Contract," which is required to allow Carlsbad Project Water to be released for delivery to the state line. Reclamation and CID entered into a 40 year contract on November 21, 2006, allowing Carlsbad Project water to be used for purposes other than irrigation. This contract provides for NMISC and CID to enter into third-party lease agreements for the purposes of leasing water from other CID water users. It also allows NMISC to use water appurtenant to lands it owns within the district for purposes other than irrigation. Such leases must be approved by Reclamation. No third-party agreements have been executed and approved to date.

Pecos River Settlement Implementation

The State of New Mexico, the Pecos Valley Artesian Conservancy District (PVACD), CID, and the United States Government signed the water rights Settlement Agreement (Settlement) on March 25, 2003. The Settlement and its implementation were vital to ensure delivery to Texas under the Pecos River Compact, to provide additional water supplies to CID, and to protect the Pecos Valley Artesian Conservancy District from a priority call on its junior groundwater rights. The Settlement provides additional water from two sources of water acquired by the New Mexico Interstate Stream Commission (NMISC): surface water from CID farmers and groundwater from PVACD farmers that is pumped from augmentation well fields operated by the NMISC.

Fortunately, in September of 2013, a sizable rain filled the reservoirs on the Pecos River, and the need for NMISC to pump water for CID under the Settlement was not required. Again in September 2014, a large storm filled the Pecos Reservoirs and it is predicted that NMISC will not need to pump in 2015.

Pecos River Basin General Stream Adjudication

The Pecos River General Stream Adjudication[6] is ongoing in the fifth Judicial District Court in Chaves County, New Mexico. Reclamation and the U. S. Department of Justice are involved in this case by virtue of U. S. interest in the water rights for the Carlsbad Project. Adjudication of individual CID members' rights is ongoing.

[6] State of New Mexico, ex rel. the Office of the State Engineer and Pecos Valley Artesian Conservancy District v. L. T. Lewis, et al. and the United States of America, Case Nos. 20294 and 22600 (Consolidated)].

WaterSMART

The Department of the Interior's WaterSMART initiative assists communities and irrigation districts in the western United States with funding to meet critical water related needs. The Department seeks to collaborate with local interests on projects that will help reduce the potential for water related conflicts. Under the WaterSMART Program, Reclamation oversees the Title XVI Water Reclamation and Reuse Program, Basin Studies, the Cooperative Watershed Management Program, Water and Energy Efficiency Grants, and Landscape Conservation Cooperatives (LCCs).

In Fiscal Year (FY) 2015, Reclamation will provide support for a Drought Response Program for drought contingency planning (to update or develop new plans) and drought resiliency projects (to implement small scale projects). In January 2015, a notice from Reclamation seeking applicants for the 2015 WaterSMART Basin Studies Program via letters of interest was issued. In February, AAO staff participated in a meeting with the Reclamation and U.S. Fish & Wildlife Service (USFWS) coordinators of the Desert and Southern Rockies LCCs to discuss, among other topics, Reclamation's participation in planning for a Rio Grande Water and River Conservation Forum, to be held in Spring 2016 and sponsored by the Desert, Southern Rockies, and the Gulf Coast Prairie LCCs, the South Central Climate Science Center (CSC), World Wildlife Fund (WWF), and Coca Cola. This workshop will contribute to efforts to identify priority areas for conservation, and best management practices for restoration, mitigation, and climate change adaptation. In April, Reclamation will post Drought Resiliency Projects and Drought Contingency Planning Funding Opportunity Announcements (FOAs). In May, the Title XVI Authorized Projects and Feasibility Studies and the Basin Study selections will be announced. Additional information on the WaterSMART Program is at http://www.usbr.gov/WaterSMART/index.cfm.

Pecos Basin Study

A memorandum of understanding between the New Mexico Interstate Stream Commission and Reclamation for a Pecos Basin Study was signed in October 2012. The Pecos River Basin in New Mexico and Texas is chronically water short, and is facing ever-increasing demands. This Basin Study proposes to develop better tools to help federal and state water managers improve administration of the limited water supplies in the Basin. Specifically, the proposal is to develop a numerical groundwater model for the Fort Sumner Underground Water Basin, within the Pecos River Basin in New Mexico. This portion of the Pecos River Basin is of critical importance in meeting the needs of both the 25,055 irrigated acres in the Carlsbad Project and the threatened Pecos bluntnose shiner. Additionally, compliance with the water delivery requirements of the Pecos River Compact is essential. A robust groundwater model of the Fort Sumner Basin is an essential element in effective conjunctive management of groundwater and surface water.

Staff in the Albuquerque Area Office are working on a summary of the potential drought adaptation measures identified at meetings over the past several months with Fort Sumner Irrigation District (FSID), Pecos Valley Artesian Conservancy District (PVACD), Carlsbad Irrigation District (CID), the U.S. Army Corps of Engineers (USACE), and Reclamation's Biological Assessment (BA) Team for the Pecos River. We may request an extension from the Office of Policy to September 30, 2015 to incorporate the work being performed for the BA, a literature review, and analysis of gage data being performed by USACE, into the final report.

Quagga and Zebra Mussels

In January 2007, an employee with the National Park Service at Lake Mead, NV, discovered the first quagga mussel in the western United States. The mussels were likely transported to the west via a contaminated boat from an eastern state. Since that time, mussels have expanded their range throughout many western states. Since 2009, Reclamation has been sampling seven of its New Mexico reservoir bodies (Navajo, Heron, El Vado, Elephant Butte, Caballo, Sumner, and Brantley) for mussels and processing these water samples through Reclamation's research lab in Denver.

In October 2012, a mechanic doing work on a boat at Elephant Butte Reservoir discovered living mussels; these mussels were later identified as zebra mussels. The contaminated boat had been utilized multiple times at Elephant Butte Reservoir over a number of years. According to the owner, who had moved the boat from Michigan to New Mexico, the boat had not been utilized in any waters other than Elephant Butte since about 2007. Once this discovery was made, additional water testing for mussels at Elephant Butte was completed in November 2012. Results so far are negative.

Because Reclamation strongly believes that preventing the spread of mussels is the least costly option for protecting the state's water bodies, it is pursuing the following ongoing activities:

- Reclamation's Albuquerque Area Office has made a serious public outreach effort since 2009, printing some 41,000 'Zap the Zebra' brochures and 1,000 mussel posters. These brochures and posters that have been dispersed throughout New Mexico at the state parks, convenience and sporting good shops, libraries, etc.
- Permanent signs with the "Stop Aquatic Hitchhikers!" message have been installed at boating docks and other key park locations that are under Reclamation's jurisdiction.
- Reclamation purchased three mobile decontamination units; one is permanently assigned to Elephant Butte Reservoir, one is available for the Chama River area, and the third unit is in the Pecos River basin area. However, these units can be moved where needed.
- State and Federal employees continue to be trained to perform watercraft inspections (Level 1) and decontamination procedures (Level 2).

Seven mussel decontamination station locations have been designated at the following reservoir locations: Heron, El Vado, Elephant Butte Main Entry, Elephant Butte Hot Springs, Sumner, and two sites at Brantley. Funding and future direction shall determine if any of these facilities are built.

Similar to 2013, 2014 confirmed no positive mussel detections. Reclamation continued to sample seven of its New Mexico reservoir bodies under the direction of Ms. Denise Hosler, the Mussel Detection Program Manager. Represented below is the respective reservoir, total number of tests sites, the total number of months over which the tests were conducted, associated PCR test results (Polymerase Chain Reaction, a technique to amplify a single or few copies of a piece of DNA to determine the species of origin) and Microscopy test results:

- Navajo – 49 test sites; 8 months; all results negative
- Heron – 10 test sites; 6 months; 8 PCR not tested (2 negative); Microscopy negative
- El Vado – 13 test sites; 5 months; all results negative
- Elephant Butte – 19 test sites; 6 months; 3 PCR not tested (16 negative); Microscopy negative
- Caballo – 6 test sites; 6 months; PCR not tested; Microscopy negative
- Sumner – 18 test sites; 6 months; all results negative
- Brantley – 17 test sites; 6 months; 16 PCR not tested (1 negative); Microscopy negative

It is believed that the ongoing drought, along with fluctuating reservoir levels, may be affecting mussel establishment. Continued vigilance is important as conditions may change in the future. As recently as 2012, Reclamation detected three reservoirs in the State of New Mexico as "suspect" for having quagga mussels: Sumner, El Vado, and Navajo. As noted in 2012, further testing and confirmation is necessary before these waterways meet the State of New Mexico's criteria for being deemed "infested." Within the State of New Mexico, a body of water is deemed infested if it meets one of the following conditions:

1) Aquatic Invasive Species (AIS) is confirmed by positive PCR testing from two independent labs and at least one sample is confirmed positive by microscopy analysis; or
2) Confirmation of live adult AIS by two experts in the field of taxonomic identification of the taxa in question.

Without the presence of an organism (body), the positive DNA testing indicates an introduction or "inoculation," but not enough evidence to state that the water body has an established reproducing mussel population to call it infested.