



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
New Mexico Ecological Services Field Office  
2105 Osuna NE  
Albuquerque, New Mexico 87113  
Phone: (505) 346-2525 Fax: (505) 346-2542

February 2, 2001

Cons. # 2-22-01-I-038

## Memorandum

To: Area Manager, Bureau of Reclamation, Albuquerque Area Office

From: Field Supervisor, New Mexico Ecological Services Office, Albuquerque, New Mexico

Subject: Request for Endangered Species Consultation for the Bureau of Reclamation's Winter Operations Plan on the Pecos River for the Pecos Bluntnose Shiner (*Notropis simus pecosensis*).

This is in response to the November 14, 2000, memorandum transmitting the "Interim Programmatic Biological Assessment of Effects of Proposed Pecos River Winter Operations on the Pecos Bluntnose Shiner" (BA) to the U. S. Fish and Wildlife Service (Service) for the Bureau of Reclamation's (Bureau) winter water operations of Sumner Dam in DeBaca County, New Mexico. Initially, the BA included winter water operations from November 1, through February 28 each year for the next three winter operating periods (years 2000-2001, 2001-2002, 2002-2003). The purpose of the interim programmatic BA was to consult with the Service for winter operations of Bureau's discretionary activities for Sumner Dam operations that may affect the Pecos bluntnose shiner and its critical habitat until the completion of the ongoing National Environmental Policy Act (NEPA) process, which was estimated to be completed by December, 2003. However, the Bureau informed the Service in a memorandum dated January 22, 2001, that the Pecos River winter operations BA would not be a multi-year programmatic BA, and would only be applicable for the winter of 2000-2001. The Bureau indicated that this change was necessary, because of changes planned in subsequent Sumner Dam winter operations.

The BA indicates that the Bureau intends to operate Sumner Dam in winter to achieve a target (average) flow of 35 cfs at the Near Acme Gage. Based on the Bureau's proposal to bypass inflows from Sumner Dam to provide an target flow of 35 cfs at the Acme gage, the Bureau has determined that the 2000-2001 winter operations "may affect, but is not likely to adversely affect" the Pecos bluntnose shiner; and "will not destroy or adversely modify" its critical habitat.

## **Description of the Action Area**

The Carlsbad Project Area is located within the Pecos River basin of southeastern New Mexico; and for the purposes of this consultation the action area includes the Pecos River downstream from Ft. Sumner Dam to the inflow of Brantley Reservoir (Figure 1).

## **Description of the Proposed Action**

The Bureau proposes to operate Sumner Dam in the winter of 2000-2001 in a manner that will improve habitat conditions for the Pecos bluntnose shiner. The Sumner Dam operation proposed by the Bureau for 2000-2001 is similar to both the 1998-1999 & 1999-2000 winter water operations plans. During the months of November, 2000, through February, 2001, the Bureau will implement the Pecos River winter operations plan that will store portions of the available inflows to Sumner Reservoir and target a flow of 35 cfs at the Acme gage, which is located 177 kilometers (106 miles) downstream from Sumner Dam. When the target flow of 35 cfs at Acme is being fulfilled by natural baseflows, the Bureau will not bypass any inflows (bypass flows).

The BA indicates that the Sumner Dam bypass flows will not exceed the natural inflow to Sumner Reservoir as measured at the Puerto de Luna (PDL) Gage. The PDL Gage readings will be used to determine bypass flows for winter operations. Historically, the minimum flow from 1938 to 1998 at PDL gage was 40 cfs. From 1980 to 2000, the average flow from November 1 to February 28 at the PDL Gage was 98 cfs with a minimum of 65 cfs. The BA indicates that a maximum bypass of 40 cfs will be needed to target 35 cfs at the Acme Gage. In the last two winters, a maximum bypass of 32 cfs occurred in early February, 2000. Thirty-five cfs at the Near Acme Gage will provide suitable habitat (depth & velocity) within the upper critical habitat reach for the Pecos bluntnose shiner (Hoagstrom 1999a).

The bypass flows from Sumner Dam will be managed in the following manner. The low flow travel time from Sumner Dam to Acme is approximately 7 to 8 days for 30 cfs and 10 to 12 days for 5 cfs. The bypass flows will be adjusted up or down every 12 days depending on whether or not the target flow of 35 cfs at Acme is being achieved. The bypass flow at Sumner Dam will be increased as long as bypass flows are available, and bypass flows are generally available in winter (non-irrigation season). In the event that rain or snowmelt provides runoff to the Pecos river, bypass flows may be reduced or stopped if the 35 cfs flow is being met by natural river flows. Bypasses will resume once these natural inflows cease.

During the winter operation, flows at all key river gages will be monitored using the Corps' real-time Pecos report of the U.S. Geologic Survey's (USGS) website of key Pecos gages. The gages of critical importance are Sumner Dam outflow, Taiban, Dunlap, and Near Acme. The Dunlap gage is located in the middle of the upper critical habitat of the bluntnose shiner, and is located 53 miles downstream of Sumner Dam and 52 miles upstream from Acme.

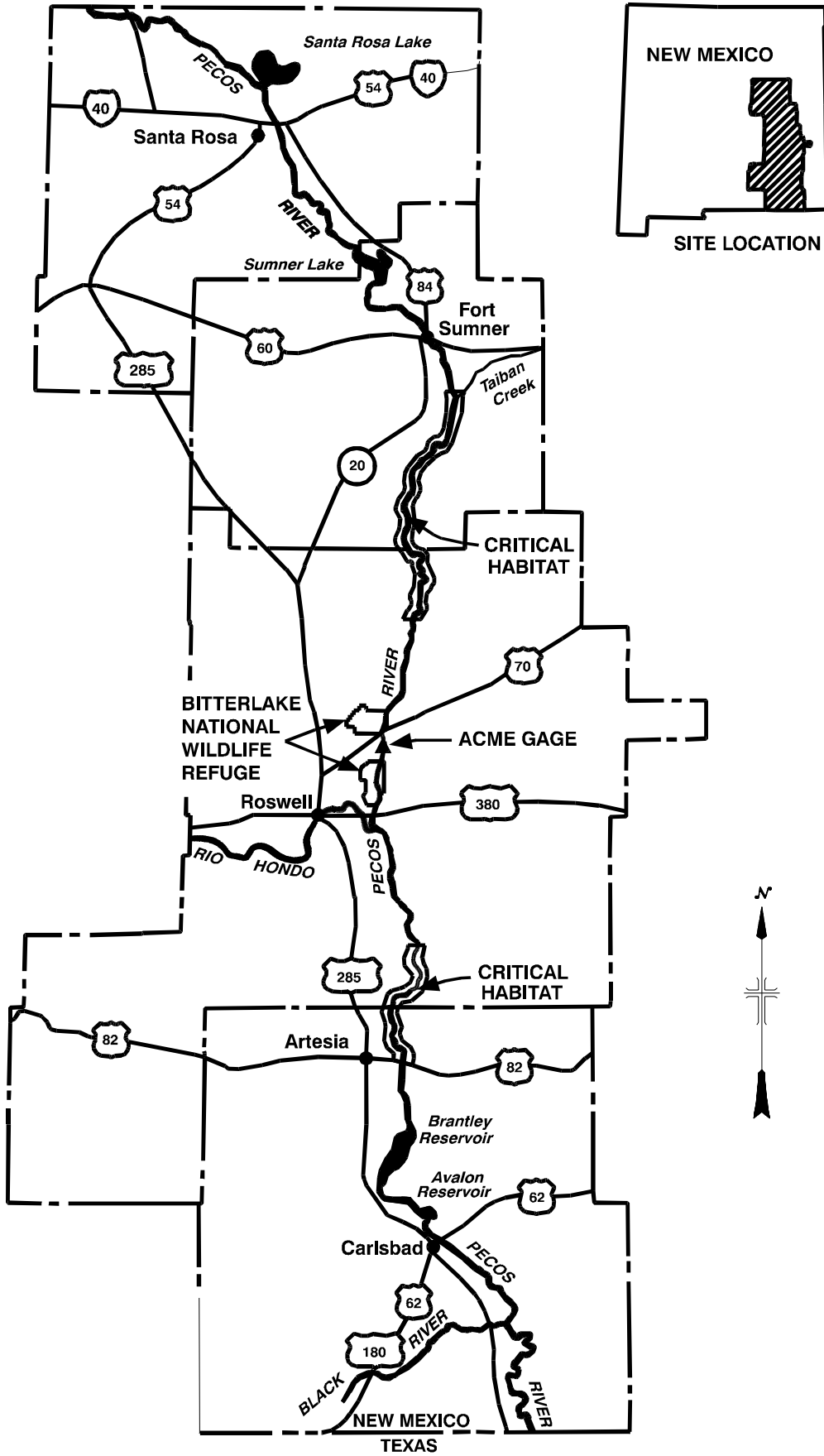


Figure 1.

The USGS installed an FM transmitter to the Near Acme Gage during the summer of 2000. The FM transmitter provides real-time data to the USGS website. This transmitter is located on the opposite side of the river from the other gage recorder, and will increase the accuracy of determining the river flow.

### Summary of Sumner Dam Winter Operations in 1998-1999 & 1999-2000

The Bureau used adaptive management of the inflow bypasses based on experience gained during winter water operations from 1998-1999 & 1999-2000 to improve river conditions for the bluntnose shiner (Tables 1 and 2).

Table 1. Average Pecos River winter flows (cfs) at the Dunlap and Acme Gages in 1998-1999 and 1999-2000.

	Dunlap Gage					Acme Gage				
	1998-1999	1999-2000				1998-1999	1999-2000			
	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>
cfs	80	40	38	31	<b>47</b>	59	43	42.4	39	<b>46</b>
	<b>Acme Gage</b>					<b>Acme Gage</b>				
	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>
cfs	147	51	42	37	<b>70</b>	44	33	30	33	<b>35</b>

Table 2. Average Winter Bypass flows (cfs) from Sumner Dam in 1998-1999 and 1999-2000.

Years	1998-1999					1999-2000				
	Months					Months				
	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Avg.</u>
cfs	11	15	21	21	<b>17</b>	12	21	27	25	<b>23</b>

The Pecos River flows during the winter of 1998-1999 and 1999-2000 were indicative of an average and a dry winter, respectively. The average winter flows at the Acme Gage were 70 cfs in 1998-1999 and 35 cfs in 1999-2000. For both years at each gage site (Table 1), the flows declined as winter progressed. The bypass flows (Table 2) for each of those years increased over the same timeframe as the Bureau targeted 35 cfs at Acme. During the 1998-1999 winter operation period, flows at Acme were supplemented with natural, significant rain events. The winter of 1999-2000 was dry with little rain or snow, and the bypass flows were increased to target 35 cfs at Acme. Figures 1 and 2 show the winter flows and bypasses.

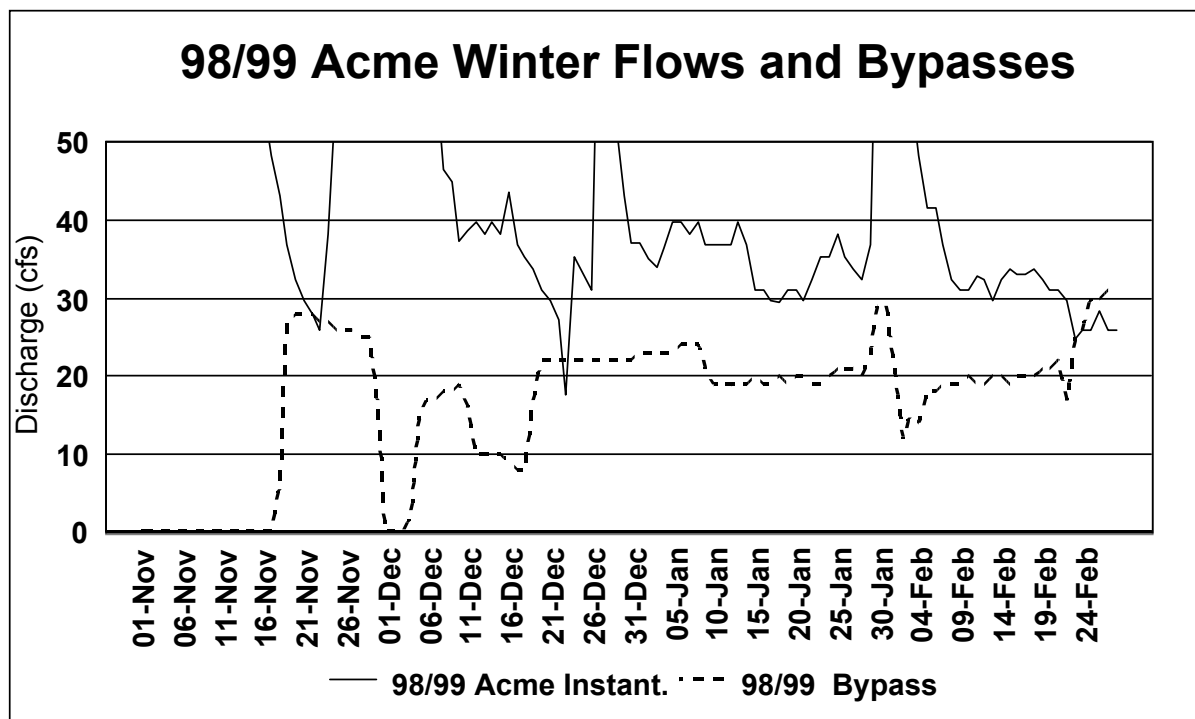


Figure 2 1998/1999 Acme Winter Flows and Bypasses

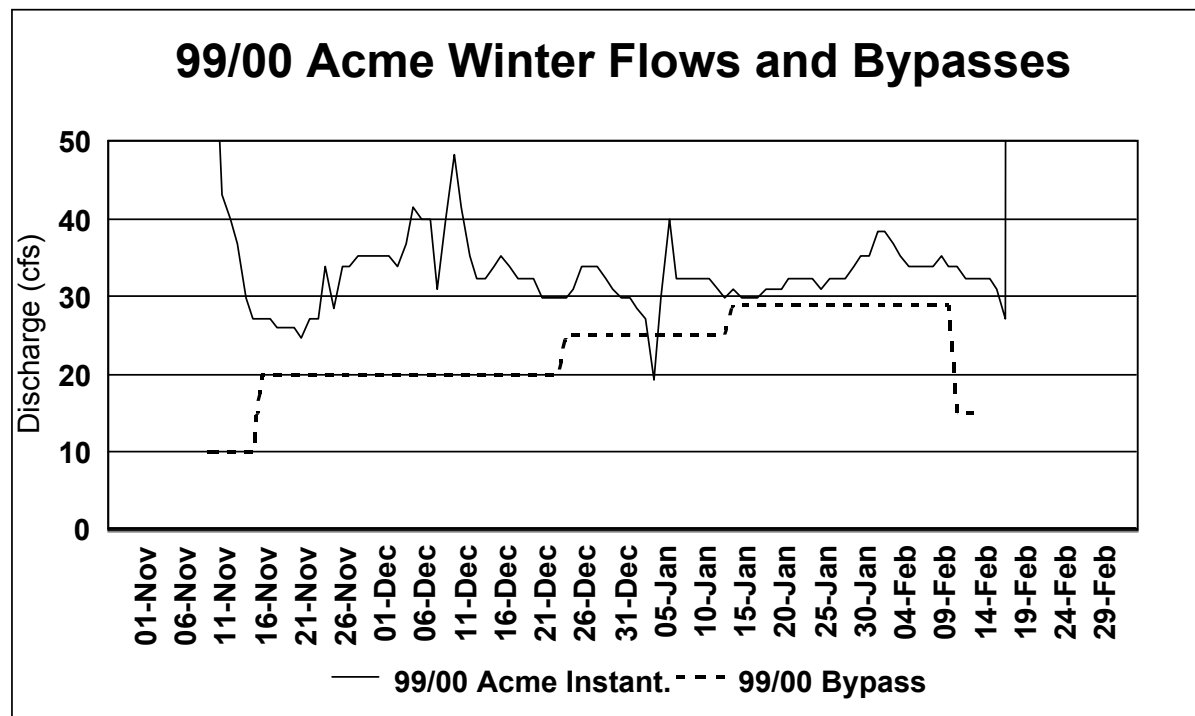


Figure 3 1999-2000 Acme Winter Flows and Bypasses

The overall bypasses were slightly higher in 1999-2000 (23 cfs) than in 1998-1999 (17 cfs) winter period (Table 2) due to drier weather in 1999-2000.

## **Direct, Indirect, and Cumulative Effects of Sumner Dam Operations to the Pecos Bluntnose Shiner and its Critical Habitat**

### **General Effects of Sumner Dam on the Pecos River Ecosystem**

Sumner Dam has reduced the river base flow, reduced sediment inflows from the upper basin, eliminated large floods, and disrupted natural flow patterns. Sumner Dam has also fragmented the Pecos River and the bluntnose shiner no longer occurs upstream of the dam. Sumner dam prevents large floods that are important in maintaining channel width and controlling vegetation (primarily salt cedar) encroachment. More frequent floods are also critical in supporting riparian vegetation, recharging the alluvial aquifer, invigorating nutrient cycling, and connecting aquatic and terrestrial ecosystems. In addition, river base flows are important for maintaining the alluvial aquifer, constructing and maintaining in-channel habitat, sustaining nutrient cycling within the river channel, and supporting riparian vegetation.

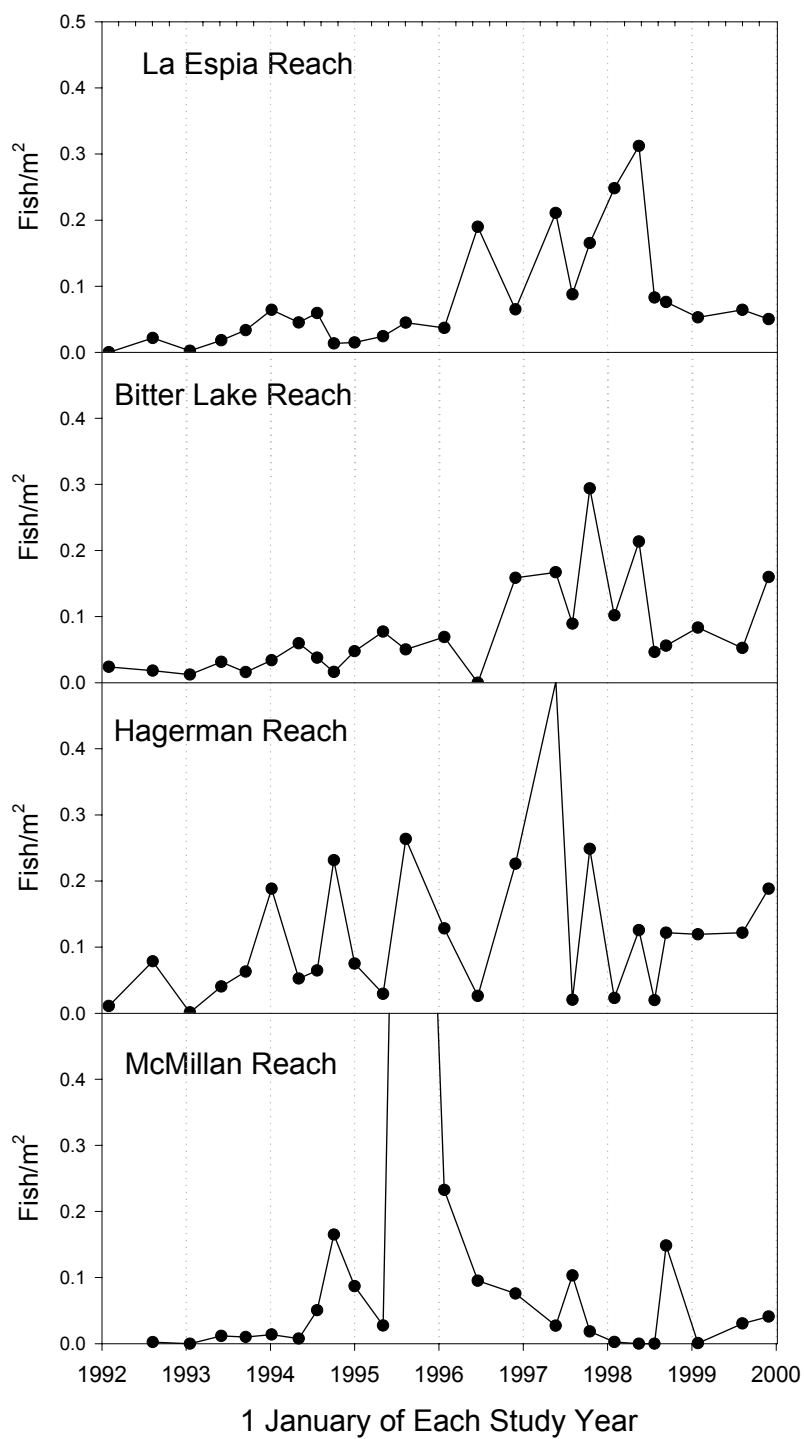
Historically, water releases from Sumner Dam were stopped after the irrigation season ended on October 31, and resumed in March each year. As a result, the river downstream of Sumner Dam had only naturally occurring baseflows which were frequently very low.

### **Sumner Dam Flow Supplementation (Bypass Flows)**

Since 1991, baseflow in the 100-mile reach has persisted (no stream intermittency observed) and has been enhanced by wet climatic conditions and base flow supplementation from Sumner Dam. Pecos bluntnose shiner growth was second highest in 1999 after increased base flows in winter 1998-1999, irrigation season of 1999, and again in the winter of 1999-2000 (Table 3). This improved fish growth leads to improved survival, increased egg production, and subsequently higher Pecos bluntnose shiner population numbers (Figure 4).

Table 3. Mean standard length (mm) of Pecos Bluntnose Shiner, 1992-1999. A '+' indicated annual mean SL was above the total mean SL while '-' indicated the opposite.

	1992	1993	1994	1995	1996	1997	1998	1999
bluntnose shiner	36.3 +	24.2 -	25.9 -	23.0 -	25.6 -	27.9 -	32.9 +	34.2 +



Density of Pecos bluntnose shiner, 1992-1999.

Figure 4.

Pecos bluntnose shiner and related mainstream cyprinids are adapted to exploit predictable features of Great Plains rivers. In sand bed streams, the presence of alluvial microhabitats within the river channel is available when the mean velocity is great enough that areas with “supercritical” velocity are present in relation to river bed features and the meandering channel. Supercritical velocities create high turbulence which interacts with shifting sand substrate in constructing geomorphic features. In meandering river channels, these features repeat themselves in a regular frequency related to valley slope, discharge, sediment size, and meander/width ratio. Turbulence, erosion, and deposition which occur in relation to supercritical velocity areas increase forage availability for stream inhabitants by cycling detritus through the sediments, the deposition of detritus often creates zones with relatively high primary productivity, and provides velocity refugia (plunges) within the main current where drifting food objects are readily captured. The 35 cfs flow is considered the “minimum” flow that supercritical velocities (turbulence) occurs. Supercritical velocities are required to move sediment and create shiner habitat and are uncommon even at 35 cfs (Hoagstrom, 1999a,b).

## **Conclusion**

The supplemental bypass releases in the last three winters have improved quantity and quality of the winter habitat, and have in part resulted in increased numbers and growth of the Pecos bluntnose shiner. Based on the BA for the 2000-2001 winter operations, the potential effects to the Pecos bluntnose shiner and its critical habitat are expected to be insignificant and discountable. The proposed action will continue to benefit the Pecos bluntnose shiner and improve its critical habitat from past conditions. Therefore, the Service concurs with the Bureau’s determination that this proposed action “may affect, but is not likely to adversely affect” the Pecos bluntnose shiner; and will not “destroy or adversely modify” its critical habitat.

If the Pecos River winter operations are modified, please notify the Service for further assistance. We greatly appreciate the close cooperation of the Bureau in protecting endangered species and their habitats. In future correspondence on this project, refer to consultation number 2-22-01-I-038. If we can be of further assistance, please contact Dennis Coleman of my staff at (505) 346-2525, extension 116.

Joy E. Nicholopoulos



cc:

Mr. Tom Davis, Carlsbad Irrigation District, 201 South Canal, Carlsbad, New Mexico 88220

Mr. Jerry Maracchini, New Mexico Department of Game and Fish, P.O. Box 25112, Santa Fe, New Mexico 87504

Mr. Norman Gaume, New Mexico Interstate Stream Commission, P.O. Box 25102, Santa Fe, New Mexico

Mr. Tom Turney, New Mexico State Engineer, P.O. Box 25102, Santa Fe, New Mexico 87504

Lt. Col. Raymond G. Midkiff, U.S. Army Corps of Engineers, 4101 Jefferson Plaza NE, Albuquerque, New Mexico 87109

Geographic Assistant Regional Director, Arizona and New Mexico, Fish and Wildlife Service, Albuquerque, New Mexico

Project Leader, New Mexico Fishery Resources Office, Fish and Wildlife Service, Albuquerque, New Mexico

#### **LITERATURE CITED**

Hoagstrom, C. W. 1999a. Status of Pecos River, New Mexico Fish and Habitat with Emphasis on Sumner Dam Operation and Federally and State Threatened Pecos Bluntnose Shiner (*Notropis simus pecosensis*). Pecos River Fishery Investigation draft final research report. U.S. Fish and Wildlife Service, Fishery Resources Office, Albuquerque, NM. 357 pp.

Hoagstrom, C. W. 1999b. In-Channel Habitat VS. Discharge During Low Flow Supplementation between August 1998 and March 1999. Pecos River Fishery Investigation draft report. U.S. Fish and Wildlife Service, Fishery Resources Office, Albuquerque, New Mexico. 62 pp.