

Department of the Interior  
BUREAU OF RECLAMATION  
ALBUQUERQUE AREA OFFICE

**2004**

**SUPPLEMENTAL WATER  
PROGRAM REPORT**

February 2005



## **Introduction**

The Rio Grande silvery minnow was listed as a federally endangered species on July 20, 1994. Dewatering of the river channel within the silvery minnow's habitat was identified as a key threat to the continued existence of the species. A sizeable portion of the silvery minnow's habitat is located within the mainstem of the Rio Grande between Cochiti Dam and San Marcial, which is a section of the river prone to critically low flows during the irrigation season.

The Final Rio Grande Supplemental Water Programmatic Environmental Assessment<sup>1</sup> (EA) was developed in compliance with the National Environmental Policy Act of 1969 to analyze the establishment of a Supplemental Water Program that would provide supplemental water to primarily benefit the silvery minnow. The following items that were identified within the EA were evaluated as possible components of the Supplemental Water Program. During 2004, the U.S. Bureau of Reclamation's (USBR) Supplemental Water Program did not include items 4. and 5.

1. San Juan-Chama Water Leases: USBR may conduct a San Juan-Chama Project (SJ-C) water leasing and management program to provide supplemental water to the Rio Grande for approximately five years, from 2001 to 2005.
2. Concurrence with Waiver Requests: USBR may concur with temporary waiver requests from SJ-C contractors to modify the date of their water delivery into the following calendar year, if such waivers benefit the United States.
3. Low Flow Conveyance Channel Water Management Options: USBR may investigate the implementation of additional measures to manage and use waters in the Low Flow Conveyance Channel (LFCC).
4. Off-channel Interim Storage of Water at Refuges: USBR may investigate opportunities with Federal and State refuges along the Rio Grande to use any available capacity in existing ponds for off-stream temporary storage. Examples of refuges that may have limited capacity in existing ponds include Sevilleta National Wildlife Refuge, La Joya State Game Refuge, and the Bosque del Apache National Wildlife Refuge.
5. Use of Groundwater Wells: USBR may investigate the possibility of drilling new wells or leasing the right to pump existing agricultural wells from willing lessors to exchange water with the lessors or directly augment Rio Grande flows during emergencies. Alternatively, USBR may lease water from new wells developed by others.

## **Summary of the 2004 Supplemental Water Program**

The 2004 Supplemental Water Program was used to assist in achieving the targeted flows as described in the Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of the Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico, dated March 2003 (BO).

A total of 16,675 AF of native Rio Grande water released under the Emergency Drought Water Agreement, and 10,478 AF of SJ-C water acquired through USBR's water leasing program were used to augment Rio Grande flows for endangered species purposes during 2004. Approximately 13,170 AF water was transferred from the LFCC to the Rio Grande floodway using portable pumps. Table 1 summarizes the water used in 2004 to supplement flows in the Rio Grande between Cochiti and Elephant Butte Reservoir.

**Table 1 – Water Used in 2004 to Supplement flows in the Rio Grande**

<b>Source of Water</b>	<b>Volume (ac-ft)</b>
Leased 2004 SJ-C Contractor Allocation released	10,478
Middle Rio Grande Conservation Pool released	16,675
Water Pumped from LFCC into Rio Grande	13,170
<b>TOTAL</b>	<b>40,323</b>

Representatives from USBR, U.S. Army Corps of Engineers (USACE), USFWS, NMISC, and MRGCD participated in conference calls throughout the irrigation season to exchange information and discuss Agency actions. These calls provided an efficient means to coordinate water operations, LFCC pumping operations, and related silvery minnow rescue operations.

## **Stream Flow Forecast and Estimated Actual Runoff**

The National Resource Conservation Service's (NRCS) May 1, 2004 stream flow forecast for the Rio Grande Basin<sup>2</sup> projected the total spring runoff to be below average based on precipitation at 142% of average and basin snowpack at 71% of average. The May 1<sup>st</sup> forecast projected the most probable stream flow to range from highs of 96% of average for the Costilla Creek near Costilla to a low of 38% of average for the Rio Pueblo de Taos below Los Cordovas. It should be noted that NRCS snowmelt forecasts are unregulated forecasts of stream flow that would occur naturally without any upstream influences.

The 2004 spring snowmelt runoff in the Rio Grande basin was an improvement over the previous year which was significantly below normal. March-July runoff stream flows at Otowi Bridge and San Marcial were estimated to be 57% and 29% of average, respectively. Table 2 presents the NRCS May 1, 2004 forecast volumes and estimated actual runoff for select stations within the Rio Grande Basin. Runoff stream flow volumes were estimated by adjusting actual stream flow data to account for existing upstream influences.

**Table 2 – May 1, 2004 NRCS Stream Flow Forecasts and Estimated Runoff (ac-ft)**

Forecast Point	Most Probable Runoff Volume (% 30 yr avg)	1971-2000 30 Year Average Volume	Estimated Runoff Volume (% 30 yr avg)
Embudo Creek at Dixon (Mar-Jul)	35,000 (69%)	51,000	32,000 (63%)
El Vado Reservoir Inflow (Mar-Jul)	205,000 (87%)	237,000	144,300 (61%)
Rio Grande at Otowi Bridge (Mar-Jul)	560,000 (74%)	757,000	411,500 (54%)
Santa Fe River near Santa Fe (Mar-Jul)	2,700 (59%)	4,600	2,000 (43%)
Jemez Canyon Reservoir Inflow (Mar-Jul)	25,000 (66%)	38,000	21,500 (57%)
Rio Grande at San Marcial (Mar-Jul)	400,000 (70%)	573,000	169,000 (29%)

**Leased SJ-C Water for 2004 Supplemental Water Releases**

Table 3 provides a summary of all SJ-C supplemental water leases and releases executed in 2004.

**Table 3 – Summary of San Juan-Chama Contractor Water Leased for 2004**

Dates of Release	Contractor	Volume (ac-ft)	Reservoir	Purpose
	Espanola	650	Heron	Leased but not released
	San Juan Pueblo	2000	Heron	Leased but not released
	Los Alamos	1200	Heron	Leased but not released
	Red River	60	Heron	Leased but not released
	Jicarilla Apache	180	Heron	Leased but not released
	Taos	400	Heron	Leased but not released
May 11 – Aug. 28	Uncontracted	2,990	Heron	ESA Releases
Aug. 28 – Oct. 7	Jicarilla Apache	6,320	Heron	ESA Releases
Apr. 30 – May 11	Belen	400	Heron	ESA Releases
Leased in 2003	Santa Fe	2,500	Abiquiu	ESA Releases
<b>Subtotal: 2004 Releases for ESA</b>		<b>10,478*</b>		
<b>TOTAL 2004 LEASES</b>		<b>16,700</b>		

\* released from Abiquiu

### **Low Flow Conveyance Channel Pumping**

USBR operated and maintained 15 portable diesel driven pumps to transfer water from the LFCC to the Rio Grande during the 2004 irrigation season. The pumps are located between Socorro and Elephant Butte Reservoir, beginning at the Neil Cupp location approximately 2.8 miles north of Highway 380 and extending downstream approximately 5 miles south of San Marcial LFCC gage at Fort Craig. The Middle Bosque site was decommissioned this year due to limitations of available flow in the LFCC. Figure 1 provides a map showing the general locations of LFCC pumping stations.

The first day that LFCC pumps operated was June 1, and the last day of pumping occurred on October 31. Approximately 13,170 AF was pumped from the LFCC to the Rio Grande during 2004. The approximate annual volume pumped by location is tabulated in Table 4.

**Table 4 – Approximate Annual Volume by LFCC Pumping Location**

<b>Pumping Location</b>	<b>No. of Pumps</b>	<b>Approximate Annual Volume (ac-ft)</b>
Neil Cupp	4	1,961
North Boundary Bosque del Apache NWR	3	460
Middle Bosque del Apache NWR	0	0
South Boundary Bosque del Apache NWR	5	10,627
Fort Craig	3	122
<b>TOTAL</b>	<b>15</b>	<b>13,170</b>

# LFCC PUMP LOCATION MAP

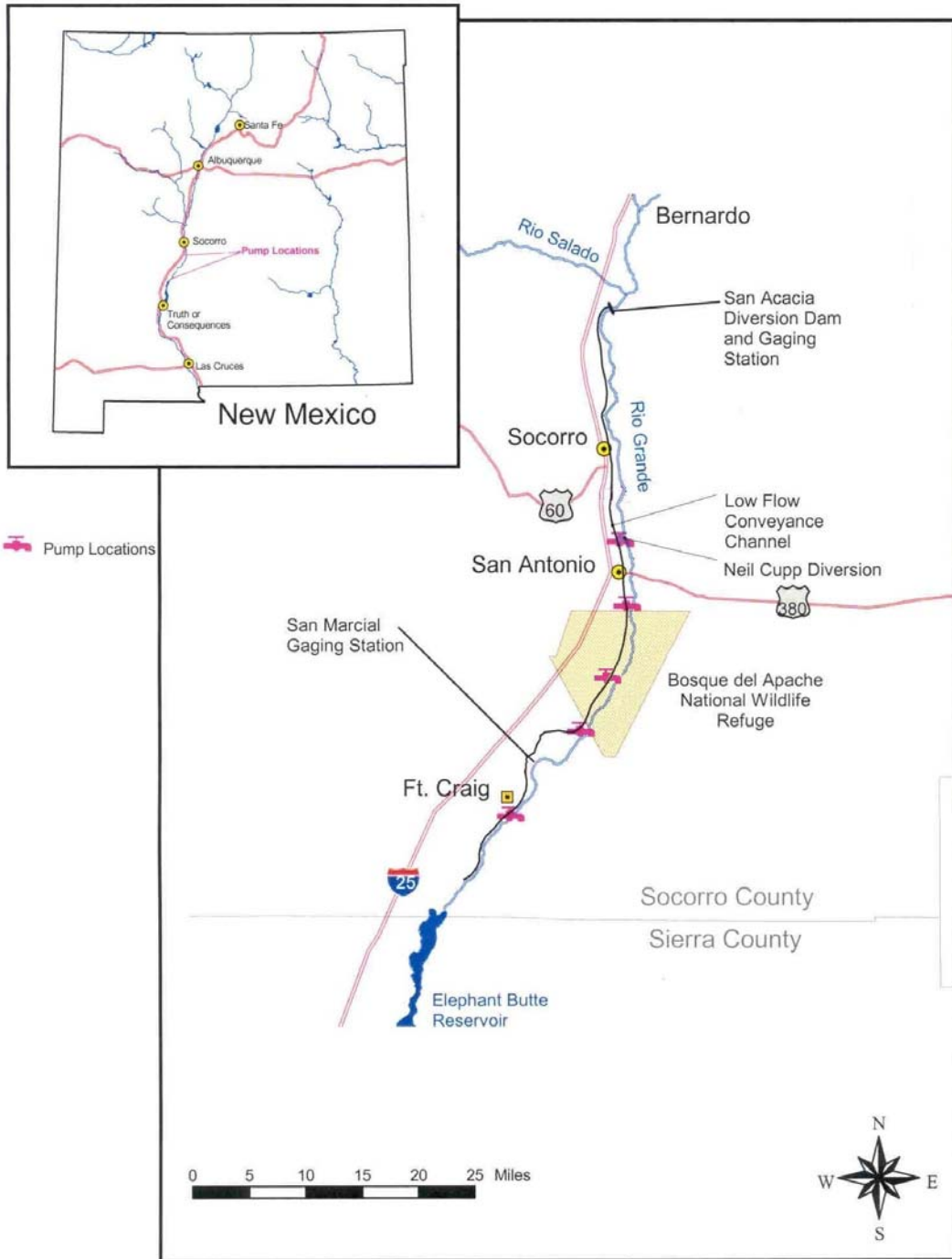


Figure 1 – Map Showing Low Flow Conveyance Channel Pumping Locations

Discharge measurement and telemetry installations were completed at the Neil Cupp, North Boundary Bosque del Apache, and South Boundary Bosque del Apache pumping stations. Discharge data from these sites is now posted on USBR's ET Toolbox web site at the following URL:

<http://www.usbr.gov/pmts/rivers/awards/Nm/rg/RioG/gage/schematic/SCHEMATICsouth.html>

### **Actual San Acacia and San Marcial Flows Compared to Target Flows**

Supplemental water was used to assist in achieving the targeted flows as described in the March 2003 (BO). Unlike in previous years, the elements of target flows are based on the April 1 runoff forecast for the Otowi Gage which determines whether the year will be declared a Dry, Average, or Wet year. Years in which Article VII of the Rio Grande Compact are in effect are declared Dry years. 2004 was classified as a Dry year since Article VII was in effect, and the protocols for a Dry year were followed.

Target flows at Albuquerque, San Acacia, and San Marcial as described in Reasonable and Prudent Alternative Water Operations Elements E and F are summarized in the following paragraphs.

#### **Element E**

“Action agencies, in coordination with parties to the consultation, shall provide continuous river flow from Cochiti Dam to the southern boundary of the silvery minnow critical habitat from November 16 to June 15.

#### **Element F**

“Action agencies, in coordination with parties to the consultation, shall provide year-round continuous river flow from Cochiti Dam to the Isleta Diversion Dam with a minimum flow of 100 cfs at the Central Bridge (Albuquerque) Gage.

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<sup>1</sup> *Final Rio Grande Supplemental Water Programmatic Environmental Assessment*, March 2001 (USBR 2001)

<sup>2</sup> *New Mexico Basin Outlook Report, May 1, 2003* (USDA / NRCS 2003)

Figure 2 – Measured Albuquerque Discharge

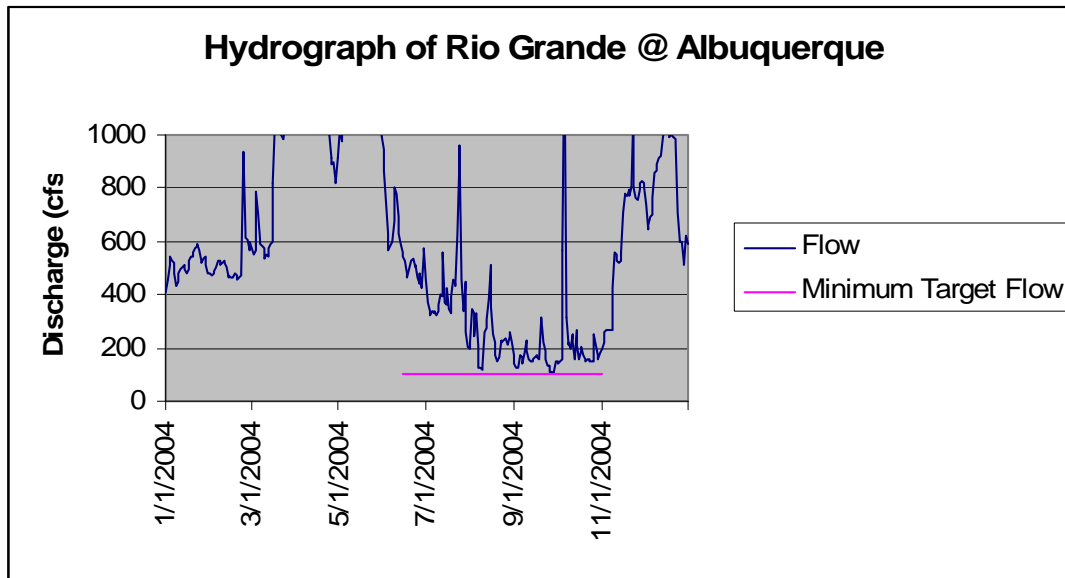


Figure 3 – Measured San Marcial Discharge

