

Bureau of Indian Affairs
Report to the
Rio Grande Compact Commission
on
Activities During 2020

April 8, 2021

This report is divided into three sections in response to the February 12, 2021 request from Mr. Craig Cotten for the Engineer Advisers of the Rio Grande Compact Commission:

1. Prior and Paramount water operations for 2020 and anticipated operations for 2021.
2. Six Middle Rio Grande Pueblo irrigation efficiency improvements.
3. Carryover of Pueblo Prior and Paramount stored water.

1. Prior and Paramount Water Operations.

2020

The irrigation season of 2020 presented challenges related to the management of the Prior and Paramount water stored in El Vado. The Bureau of Indian Affairs (BIA) worked closely with the Pueblos of Cochiti, Santo Domingo, San Felipe, Santa Ana, Sandia and Isleta to ensure availability of water to Pueblo farmed lands. Cooperation and coordination with the US Bureau of Reclamation (Reclamation) and the Middle Rio Grande Conservancy District (District) as well as the New Mexico Interstate Stream Commission supported the effort.

The storage target (the final calculation was determined based on the May 2020 forecast) called for in the 1981 agreement¹ amounted to 20,095 acre-feet, which was stored at El Vado. The entire amount was stored outside the time that Article VII Rio Grande Compact (Compact) restrictions were in place. The total released for Prior and Paramount use was 20,004 ac-ft through September 30. No Prior and Paramount releases take place after September 30. The remaining 91 ac-ft was transferred to the District Out-Of-Article VII storage account in the Upper Rio Grande Water Operations Model (URGWOM). The final total released to Elephant Butte was 87 ac-ft on January 16, 2021.

Figure 1 shows Prior and Paramount supply, demand, and releases during 2020. The process for evaluating the need for releases of Prior and Paramount stored water involves comparing the irrigation demand of 8,847 acres of Pueblo lands (corresponding to the acreage of Prior and Paramount lands at the six Pueblos) to the availability of natural flow at the Rio Grande at Otowi (Otowi) gage. In order to estimate availability of natural flow at the Otowi gage, BIA uses a spreadsheet model, first developed in 2006, and refined over the years. The spreadsheet model has a long form, which is relevant when Rio Grande and Rio Chama tributaries are flowing, and

¹ 1981 Agreement among US Bureau Indian Affairs, US Bureau of Reclamation and the Irrigation Committee of the Six Middle Rio Grande Pueblos, executed July 1, 1981, governing storage in El Vado for Prior and Paramount lands.

a short form which is better for use under conditions when tributaries are dry. Only the short form was used in 2020.

Prior and Paramount demand is first satisfied through the available natural flow of the Rio Grande computed at the Otowi gage, then if the natural flows at the Otowi gage are less than Prior and Paramount demand, the shortfall is made up with releases from El Vado. As long as the District was in general operation for all its water users, the amount of Prior and Paramount release required was charged against the Prior and Paramount account in URGWOM, even as the District released enough water to satisfy the irrigation demand of all its water users. Any Prior and Paramount storage left at the end of June, July, or August was turned back to the District for general District use, as the water was stored outside of Rio Grande Compact Article VII restrictions. A constant release of approximately 100 cfs from Prior and Paramount storage was released through September as the District ceased general operations for non-Prior and Paramount water users early in September. The 100 cfs included both the computed Prior and Paramount release requirement plus a daily turnback of unused Prior and Paramount storage to the District. This ensured that the District could make use of as much unused Prior and Paramount storage as possible for general District use, as Prior and Paramount storage was done outside of Article VII restrictions.

2021

Computations for the required amount of Prior and Paramount storage takes place each year between March and early May. The series of three prior and paramount storage calculations do not commence until the March 1, April 1, and May 1 streamflow forecasts are published by the NRCS². The final storage quantity is based on the May 1 forecast, which is not yet available.

The March 1 forecast from the Basin Outlook Report (see Attachment 1) shows a 50% chance of exceeding 390,000 acre-feet from March through July 2021 at the Rio Grande at Otowi gage. Using this figure and the 1981 agreement guidelines, this forecast produces a preliminary storage target of 28,181 acre-feet (including projected evaporation losses at El Vado Reservoir) as seen in Table 1.

² USDA Natural Resources Conservation Service (NRCS), Basin Data Reports.

2. Six Middle Rio Grande Pueblo irrigation efficiency improvements.

The BIA was able to make limited funding available to the six Middle Rio Grande Pueblos in 2020 to perform betterment work on Middle Rio Grande Conservancy District (District) irrigation facilities. Due to the COVID-19 pandemic and resulting Pueblo closures, very little work was performed on Pueblo lands in 2020.

Pursuant to statute, the BIA funds the District to perform routine operation and maintenance work on their systems which serve Pueblo lands. The BIA cooperates with the District to improve water delivery and efficiency. Examples include working towards the District's policy of irrigating a minimum of one acre per hour, scheduling irrigation, and helping coordinate with Pueblo farmers for delivery and an adequate water supply. The District was also hampered in their work in 2020 due to the COVID-19 pandemic, and was limited to using small crews and accomplishing small projects such as turnout installation.

Congress authorized irrigation infrastructure improvements through Public Law 111-11 Title IX, Section 9106, Rio Grande Pueblos, New Mexico. This a potential source of funding for efficiency improvements for eighteen New Mexico Pueblos in the Rio Grande basin. Funding for a study was provided through the Bureau of Reclamation. Funding has not yet been made available for construction. More details are available in the Reclamation report to the Rio Grande Compact Commission.

3. Carryover of Pueblo Prior and Paramount stored water.

Discussions regarding carryover of Pueblo Prior and Paramount stored water in El Vado are ongoing on an infrequent basis.

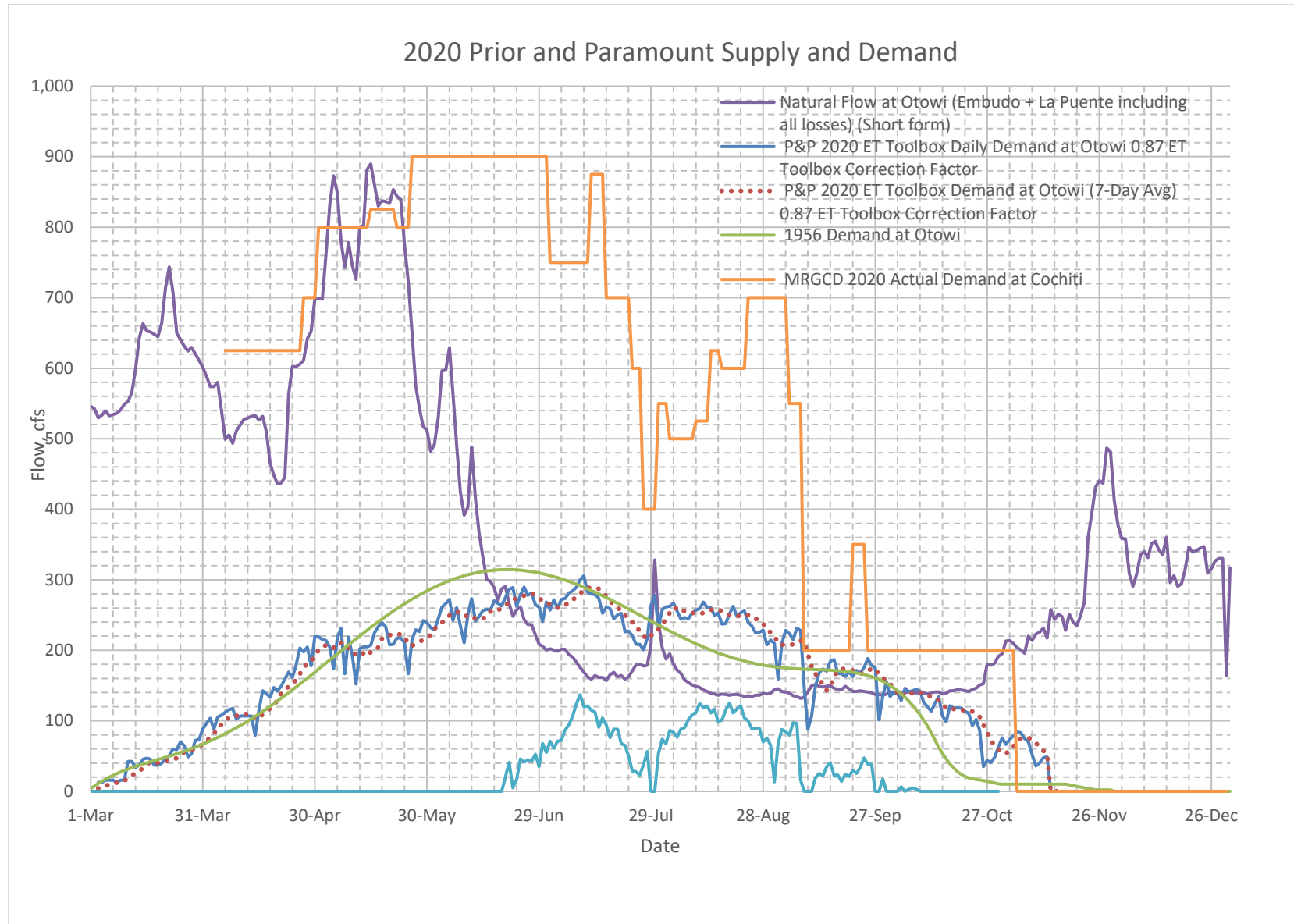


Figure 1. Prior and Paramount Water Operations During 2020.

Bureau of Indian Affairs											
2021 STORAGE REQUIREMENTS FOR PRIOR AND PARAMOUNT LANDS											
Preliminary -- Final Storage Volume is Based on the May 1 Forecast											
	2021	Total Six Middle Rio Grande Pueblo Diversion Demand (ac-ft) for 8,847 Acres	Water Supply -- Rio Grande at Otowi (acre-feet)					Storage Requirement (acre-feet)			
			Late Summer Months Low of Record 1956 (Otowi Index)	Portion of Spring Runoff During Current Month through July (1934)	Forecasted Volume Remaining from Current Month to July	Anticipated Storage at El Vado for MRGCD and/or Indian Lands	Total Water Supply at Otowi	Usable Flow		Shortage without Supplemental Supply at Otowi	River Efficiency El Vado to Otowi
Month	Factor	Range									
							50%	above 30,000			
							60%	15,000-30,000			
							70%	below 15,000			
		0	March 1 Forecast (Mar-Jul) =		390,000	acre-feet	54% of average				
		0	Mar-Jul: 60% x 390,000 =		234,000	acre-feet					
March Forecast	March	1,895		23.4%	54,756	0	54,756	27,378	0	0.8	0
	April	6,470		37.6%	87,984	0	87,984	43,992	0	0.8	0
	May	11,512		23.1%	54,054	0	54,054	27,027	0	0.8	0
	June	17,197		8.7%	20,358	0	20,358	12,215	4,982	0.8	6,227
	July	15,796		7.2%	16,848	0	16,848	10,109	5,687	0.8	7,109
	August	11,772	7,900			0	7,900	5,530	6,242	0.8	7,803
	September	9,384	6,500			0	6,500	4,550	4,834	0.8	6,042
	October	3,595	10,500			0	10,500	7,350	0	0.8	0
	November	105	16,700			0	16,700	10,020	0	0.8	0
	Total	77,727		100.0%		234,000	0	275,600	148,171	21,745	
										Evaporation Losses:	1,000
										As of March 1 Forecast, P&P Storage Target:	28,181

Table 1. Prior and Paramount water storage target using the Rio Grande at Otowi for the March 1, 2021 forecast.

ATTACHMENT 1

NRCS Basin Outlook Report for New Mexico
Excerpts
March 1, 2021

USDA NRCS National Water & Climate Center

* - DATA CURRENT AS OF: March 03, 2021 04:14:53 PM

- Based on March 01, 2021 forecast values

Forecast Point -----	period -----	50% (KAF) -----	% of avg -----	max (KAF) -----	30% (KAF) -----	70% (KAF) -----	min (KAF) -----	30-yr avg -----
Rio Grande at Otowi Bridge (2)	MAR-JUL	390	54	670	495	295	184	720