Restoration Administrator Flow Recommendation

To: Mario Manzo, Chad Moore, Katrina Harrison, Emily Thomas
CC: Michael Jackson, Rufino Gonzalez, Lui Zaninovich, Peter Vorster, Steve Ottemoeller, TAC
Date: March 29, 2016
From: Tom Johnson, Restoration Administrator
Subject: Recommendations for Balance of 2016 Restoration Flows

The following is a recommendation by the Restoration Administrator (RA) for Restoration Flows for the balance of 2016, pursuant to the December 2013 Restoration Flow Guidelines (RFG) and Exhibit B of the Settlement. As always, I reserve the right to change, update and/or modify Flow Recommendations as circumstances change and conditions warrant.

Background

I am in receipt of the March 18, 2016 Restoration Allocation which provides an allocation of 261,400 ac-ft of Restoration Flows as measured at Gravelly Ford.

Considerations for Restoration Flow Releases

From the January 29 Restoration Flow Recommendation, the focus of this year's Restoration Flow releases were identified as:

1. Taking a fundamental step towards implementation of the Settlement by commencing year-round connectivity of the river from Friant Dam to the Merced River confluence.
2. Facilitate outmigration of juveniles and to further refine techniques and methods for juvenile trapping in Reach 1.

These objectives are still valid; however the Allocation identifies specific challenges for each of these objectives.

While not specified in the Allocation, based on discussions I am aware that releases from Friant Dam to fulfill Exchange Contract obligations are likely to occur as soon as mid-April, and will occur for six weeks or more based on current projections. As you are aware, releases to meet Exchange Contract obligations will require the cessation of juvenile trapping activities, and removal of trapping weirs and other equipment from the river.

Additionally, based on the need for environmental sampling for the potential presence of kangaroo rats downstream of Sack Dam will prevent release of Restoration Flows downstream of Sack Dam until the sampling protocol has been completed and results analyzed. Additionally, the Eastside Bypass sand removal project will further constrain release below Sack Dam from June 1 through at least July, and possibly until August 30.

The current Restoration Flow recommendation dated February 26, 2016 provides for delivering 80 cfs past Gravelly Ford through the end of March.

Recommendation

The RA is recommending the following for the balance of 2016:

- Commencing April 1, continue to release Restoration Flows from Friant Dam above Holding Contract releases as necessary to achieve 80 cfs of Restoration Flows at Gravelly Ford. Continue this target release until the commencement of flows to meet Exchange Contract requirements.
- Upon commencement of releases to meet Exchange Contract requirements, cease Restoration Flows unless there is the ability to release Restoration Flows downstream of Sack Dam. Restoration Flows and Exchange Contract releases are not mutually beneficial; given specific conditions this year (the need to maintain lower flows for juvenile trapping, and the inability to release Restoration Flows below Sack Dam at this juncture), the Exchange Contract releases are not a benefit to the Restoration Program at this time.
- This Recommendation assumes that releases to meet Exchange Contract requirements will occur from April 15 through May 31; I will provide an updated or adjusted Recommendation if releases to meet Exchange Contract requirements are substantially different than that.
- If the Operational Constraints that prevent flows below Sack Dam are relieved on or prior to May 1, and if releases to meet Exchange Contract requirements are still in effect, coordinate with Exchange Contractor release schedule to commence Restoration flows in parallel with the Exchange Contractor releases in the amount of 145 cfs past Gravelly Ford, and 50 cfs past Sack Dam.
- Upon cessation of Exchange Contract releases, commence Restoration Flows from Friant Dam above Holding Contract releases as necessary with the target of providing the following Restoration Flows at Gravelly Ford. These recommended Restoration Flow targets at Gravelly Ford for the balance of the Restoration Year after cessation of the Exchange Contract releases may be updated if circumstances change:
    - 90 cfs in May, June and through July 15
    - 120 cfs from July 16 and through August
    - 140 cfs in September
    - 190 cfs in October
    - 340 cfs in November (the fall pulse is distributed throughout the month of November)
    - 230 cfs in December
    - 250 cfs in January and February, 2017
- Depending on the timing of the commencement of Exchange Contract releases, provide an additional 100 cfs release from Friant Dam for a 48 hour period commencing on Monday April 4, Monday April 11, and Monday April 18th to facilitate juvenile outmigration and trapping activities. This is not a recommendation for a particular flow at GRF.
- Upon release of constraints for flows past Sack Dam, commence releases of flows past Sack Dam in the amount of 50 cfs; at that time and based on channel conditions and the results of flow bench evaluations I will provide a recommendation for balance of year releases past Sack Dam.

- Any Restoration Flows that reach Mendota Pool and are not released past Sack Dam may be recaptured at Mendota Pool.

The outcome of this flow recommendation is shown in Table 1.

Recommendation for Disposition of URF's, and Other Discussion

This flow schedule will produce a significant volume of Unreleased Restoration Flows (URF's). My recommendation for disposition of URF's is as follows:

1. Withhold 30 TAF of URF's from sale pending an updated Recommendation from me later in the year. This withholding will avoid "overselling" URF's in the event hydrologic conditions turn dry.
2. The allocation uncertainty from earlier this year clearly demonstrate the need for the Restoration Program to have access to water that it can call upon despite uncertainty elsewhere in the CVP, and despite any delays in a Restoration Allocation. Accordingly, I am recommending that an additional 30 TAF of URF's be set aside for banking opportunities, and I will work with Reclamation to identify appropriate banking or exchange opportunities to ensure early season water availability for the Program in future years.
3. I anticipate that seepage losses in the system may exceed Exhibit B estimates; however it is not clear if this is a unique phenomenon related to the preceding four dry years and lack of connectivity and continuity in river flows, or a condition to be managed in a more sustained fashion.
4. Based on withholding URFs for flows and banking to address uncertainties, I am not planning on utilizing Buffer Flows this Restoration year.

Additional Consultation

I will continue to coordinate with the TAC, Program Office, and technical study leads to monitor release conditions, data collection conditions, juvenile trapping progress and other factors. As necessary, I will be prepared to provide additional Restoration Flow recommendations as necessary. I look forward to the April Allocation, and will make any necessary changes or adjustments at that time.

Table 1

Estimated Flow and Volumes Utilized

Normal-Dry						RECLAMATION DEFAULT FLOW SCHEDULE				RA RECOMMENDED FLOW SCHEDULE			
Schedule Start	Friant Default Flow (cfs)	Friant Capacity Constraint (cfs)	Default Flow Friant Interim Flow (cfs)	Gravelly Ford Flow Targets (cfs)	Exhibit B Riparian Holding Contract Demand (cfs)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)	Base Flow (acre-ft)	Spring Flexible Flow (acre-ft)	Fall Flexible Flow (ac-ft)	Riparian Recruitment Flow (ac-ft)
1-Feb											2,231		
1-Mar	500	1,380	500	375	130		11,008				2,231		
16-Mar	1,500	1,380	1,380	1,255	130		39,669				2,380		
1-Apr	2,500	1,400	1,400	1,255	150		37,190				2,876		
16-Apr	790	1,400	790	645	150		19,053				0		
1-May	350	1,440	350	165	190	8,886			0	0			
29-May	350	1,440	350	165	190	952			0	0			0
1-Jun	350	1,440	350	165	190	9,521			0	5,355			0
1-Jul	350	1,480	350	125	230	14,757				13,864			
1-Sep	350	1,460	350	145	210	8,331				8,331			
1-Oct	350	1,410	350	195	160			11,683				11,683	
1-Nov	700	1,380	700	575	130			6,783				3,848	
7-Nov	700	1,380	700	575	130			4,522				2,698	
11-Nov	350	1,370	350	235	120			9,124				13,884	
1-Dec	350	1,370	350	235	120	14,142				14,142			
1-Jan	350	1,350	350	255	100	15,372				15,372			
1-Feb	350	1,350	350	255	100	13,884				13,884			
			TOTAL FLOW RELEASE BY FLOW PERIODS (ac-ft):			85,845	106,921	32,112	0	70,949	9,719	32,112	0
								DIFFERENCE (ac-ft):		14,896	97,202	0	0
			TOTAL DEFAULT FLOW RELEASE (ac-ft):			**261,412**			**112,780**	**TOTAL RESTORATION FLOW RELEASE (ac-ft)**			
TOTAL DEFAULT FLOW RELEASE WITH CONVEYANCE CONSTRAINTS (ac-ft):						**224,878**			**112,098**	**DIFFERENCE WITH CONSTRAINED VOLUME (ac-ft)**			
			URF's due to Conveyance Constraints (ac-ft):			**36,534**			**148,632**	**DIFFERENCE WITH DEFAULT VOLUME (ac-ft)**			