Restoration Administrator Flow Recommendation

To: Don Portz, Chad Moore, Emily Thomas, Adam Nickel
CC: Michael Jackson, Rufino Gonzalez, Doug Obegi, Steve Ottemoeller, Jeff Payne, TAC
Date: February 13, 2019
From: Tom Johnson, Restoration Administrator
Subject: Updated Recommendation for 2018 Restoration Flows and Recommendation for 2019 Restoration Flows

The following is an updated Flow Recommendation by the Restoration Administrator (RA) for 2018 Restoration Flows and a new Flow Recommendation for 2019 Restoration Flows pursuant to the February 2017 Restoration Flow Guidelines (RFG), as amended, and Exhibit B of the Settlement.

Background

The current accepted Restoration Flow Recommendation (Recommendation) for 2018 is dated June 8, 2018, as updated October 18th, 2018. The October 18, 2018 Recommendation called for the postponement of the fall pulse flow until February 2019 to allow the conduct a flow bench evaluation in Reach 3.

Additionally, I am in receipt of the Restoration Allocation (Allocation) from Reclamation dated February 11, 2019 which designates 2018 as a **Normal-Wet** Water Year Type and provides an allocation of Restoration Flows of 321,741 acre-feet as measured at Gravelly Ford. The Allocation also specifies certain contractual and operational constraints on Restoration Flow releases for 2019.

Additional Considerations

During the past two weeks, I have worked closely with the Program office to understand the seepage constraints that will limit flows in the channel, monitor storm and precipitation events, and to adjust Restoration Flows to accommodate operational and in-river scientific flow requirements. Key near-term constraints and objectives going forward include:

- Flows are limited to 520 cfs below Mendota Dam into Reach 3 until a Flow Bench Evaluation can be successfully performed, at which time flows may be raised further. It is anticipated that 12 to 30 days of relatively stable flows in Reach 3 will be required to complete all of the flow bench evaluations to refine seepage constraints for Reach 3.
- Imminent substantial storm activity is likely to initiate substantial tributary inflows, which may require Restoration Flow adjustments, and which may dictate a revised Allocation from Reclamation in the near future.

Several longer-term considerations are factored in this initial Restoration Flow Recommendation, including:

- As in 2018, a key focus of this 2019 Restoration Flow Recommendation will be to retain year-round flow connectivity through all reaches. Flow connectivity provides water to support the

extant non-salmonid native fish populations, support riparian vegetation, support the aquatic food web, evaluate microhabitat and water temperatures under low flow conditions, and evaluate reach-specific flow losses under steady-flow conditions across seasons. In 2018, connectivity was maintained with the assistance of shifting approximately 15,000 acre-feet from the spring flexible flow period to the summer base flow period; a similar shift is planned for 2019.

- Juvenile spring-run Chinook salmon are present in the system and are being tracked. A series of short pulse flows to facilitate downstream movement of juvenile salmon are planned for March and April (pending storm activity and tributary inflows).
- Depending on the sequence and magnitude of winter and spring storms, Restoration Flows may be released to supplement natural tributary runoff events, and/or assist with reservoir management.
- The SJRRP is planning on releasing tagged spring-run Chinook salmon adults below Friant Dam during the summer (May to September time frame, dates TBD).
- Buffer Flows are not utilized in this Recommendation, but may be utilized in updated Recommendations later this year depending on flow conditions.

Recommendation for the Remainder of Restoration Year 2018 and Balance of Restoration Year 2019

For the remainder of Restoration Year 2018 and the balance of the 2019 Restoration Year, I recommend Restoration Flows in Table 1.

Table 1. Summary of Restoration Flow Recommendations for February 1, 2019 through February 29, 2020.

Date Range	***Friant Release***	***Restoration Flows at Gravelly Ford***	***Total Flow at Gravelly Ford****
February 1, 2019 through February 10, 2019	As necessary	250 cfs	255 cfs
February 10, 2019 through February 21, 2019	As necessary	526 cfs	531 cfs
February 22, 2019 through March 5, 2019	As necessary	620 cfs	625 cfs
March 6-May 4, 2019	Benches of 350 cfs, with Pulses up to 1,050 cfs	As occurs	As occurs
May 5, 2019 through Oct 31, 2018	As necessary	190 cfs	195 cfs

November 1, 2019 through November 10, 2019	As necessary	575 cfs	580 cfs
November 11, 2019 through December 31, 2019	As necessary	230 cfs	235 cfs
January 1, 2020 through February 29, 2020	As necessary	250 cfs	255 cfs

Total Flow includes the minimum Holding Contract flows of 5 cfs required at Gravelly Ford

- The seepage-constrained Restoration Flow level in Reach 3 is 520 – 609 cfs. Releases from Mendota Dam to provide water to Henry Miller Reclamation District (HMRD) are currently 100 – 200 cfs in Reach 3. Restoration Flows between February 10 and March 5, 2019 will supplement the HMRD deliveries to hold a steady 520 cfs in Reach 3 until the conclusion of the flow bench evaluation.
- The Restoration Flows targeting 526 cfs at GRF commencing February 10 will utilize carried-forward fall 2018 pulse flow water until that 2018 water is consumed, and will then use 2019 Spring Flexible Flow Period water for GRF Restoration Flows above 250 cfs in February and above 370 cfs in March.
- The flow target of 526 cfs at GRF in mid-February will provide for Restoration Flows to Mendota Pool sufficient to maintain steady flow of 520 cfs in Reach 3. Any additional Restoration Flow arriving at Mendota Pool that is excess of the 520 cfs capacity for Reach 3 may be recaptured.
- The target Reach 3 flow in mid-February will be 520 cfs for ten days to allow for flow stabilization and flow bench evaluation in Reach 3. The timing of the flow bench evaluation may be adjusted based on stability of Reach 3 flows and amount of tributary inflow.
- Assuming a successful flow bench evaluation where channel conveyance/seepage constraints are not exceeded, raise flows to the next allowable increment (assumed to be 609 cfs in Reach 3) and perform another flow bench evaluation using the same methodology. This Recommendation assumes a required target flow of 620 cfs at GRF for the second flow bench evaluation. The timing and magnitude of the flow target for GRF may be adjusted depending on tributary inflow and the results of the first flow bench evaluation.
- During performance of the flow bench evaluations, the SJRRP will monitor actual Restoration Flow deliveries to Mendota Pool, and coordinate adjustment of Mendota Pool releases to ensure that Reach 3 flows are held steady, and any Restoration Flows arriving at Mendota Pool in excess of the Reach 3 conveyance/seepage constraints are recaptured.
- After the conclusion of the flow bench evaluations, the SJRRP will monitor actual Restoration Flow deliveries to Mendota Pool, and coordinate adjustment of Mendota Pool and Sack Dam releases to ensure that all Restoration Flow arriving at Mendota Pool is released below Sack Dam (with appropriate loss adjustments for Mendota Pool and Reach 3). There should be no recapture of Restoration Flow at Mendota Pool whatsoever between the conclusion of flow

bench evaluations on March 5, 2019 and February 29, 2020; all Restoration Flows arriving at Mendota Pool should be released downstream unless seepage constraints dictate otherwise.

- After conclusion of the flow bench evaluation on March 5, 2019, release a series of short pulses between March 6 and May 4, 2019 to facilitate the movement of juvenile fish out of the system. Pulses of 750 cfs to 900 cfs, of one to five days duration, are recommended. The final shape and timing of pulses will be coordinated with river operators and fisheries agencies researchers. The estimated total volume of the benches and pulses above base flow for the period between March 6 and May 4, 2019 is 30,000 ac-ft at GRF.
- This Recommendation then shifts approximately 15,000 acre-feet of water from the Spring Flexible Flow Period to the summer base flow period, which will require a water supply test. In the event that a water supply test results in impacts to the Friant Contractors, Reclamation shall immediately consult with the Restoration Administrator.
- At this juncture, it appears that there will be a considerable block of URF's that can be made available for sale; disposition of URF water will occur following Reclamation's Allocation in March.

Figures 1 and 2 below show the anticipated release schedule for this year. **FORTHCOMING**

Table 2 below compares the default Exhibit B flow schedule and the Recommended Flow Schedule. **FORTHCOMING**

Additional Consultation

I will continue to coordinate with the TAC, Program Office, and technical study leads to monitor hydrologic conditions, fish population conditions, uncontrolled season releases, operational conditions, and other factors, and will update the Restoration Flow Recommendation as conditions change.