



— BUREAU OF —
RECLAMATION



Water Management Goal Technical Feedback Meeting

January 29, 2025

Reno, NV

Agenda

- Introductions (name, affiliation, role)
- State of the Program
- Water Management Goal Activities
- 2025 Operations
- Adjourn



State of the Program



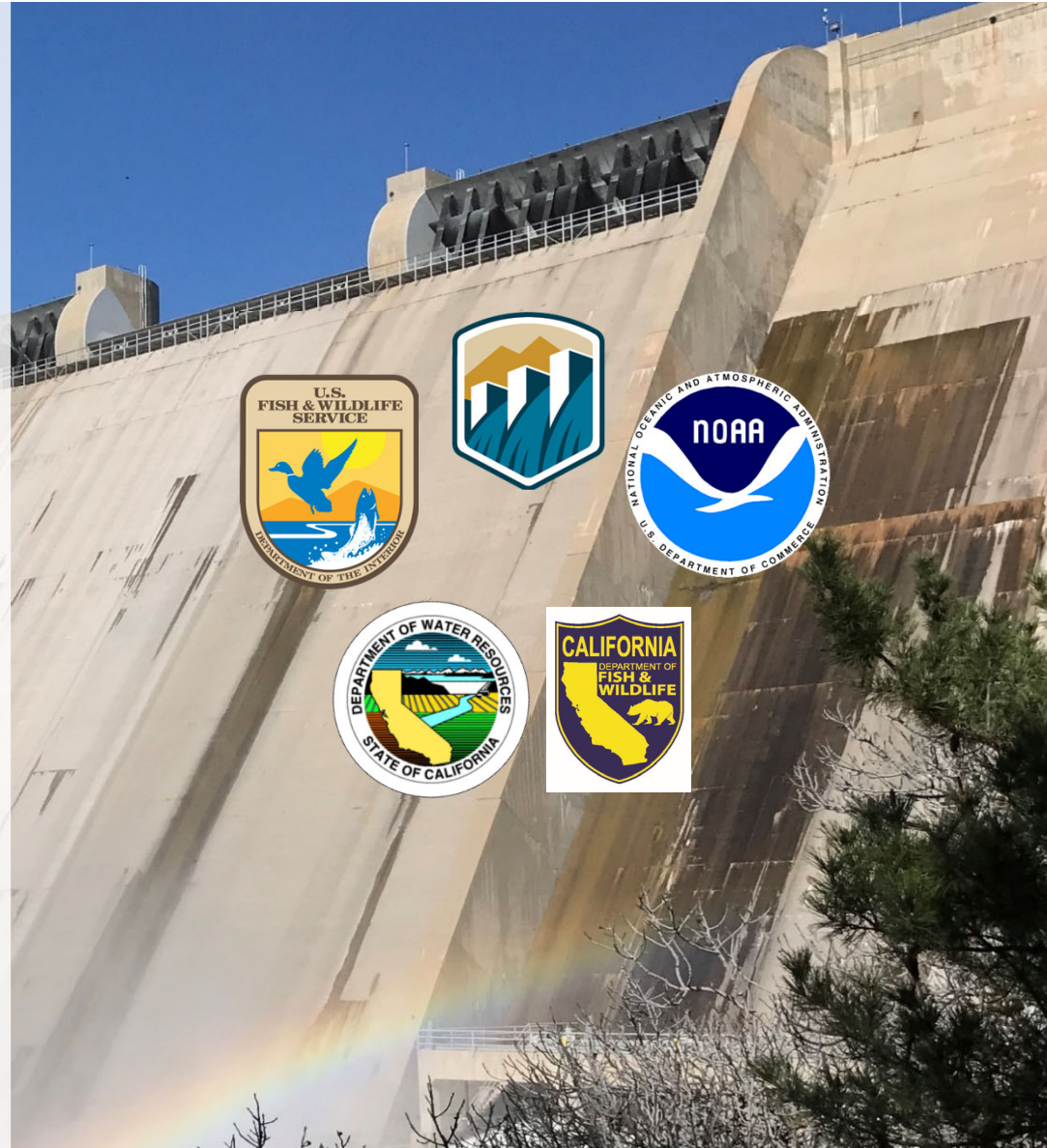


2006 Settlement reached
 2009 Federal legislation enacted (Settlement Act, PL 111-11) to authorize the San Joaquin River Restoration Program

12 UNITED STATES DISTRICT COURT
 13 EASTERN DISTRICT OF CALIFORNIA
 14 (SACRAMENTO DIVISION)

15 NATURAL RESOURCES DEFENSE COUNCIL, <i>et al.</i>	Case No. CIV S-88-1658 LKK/GGH
16 Plaintiff,	NOTICE OF LODGMENT OF STIPULATION OF SETTLEMENT
17 v.	
18 KIRK RODGERS, as Regional Director of the 19 UNITED STATES BUREAU OF 20 RECLAMATION, <i>et al.</i>	
21 Defendants.	
22 ORANGE COVE IRRIGATION DISTRICT, 23 <i>et al.</i>	

TITLE X—WATER SETTLEMENTS
Subtitle A—San Joaquin River Restoration Settlement
PART I—SAN JOAQUIN RIVER RESTORATION SETTLEMENT ACT



Settlement Goals

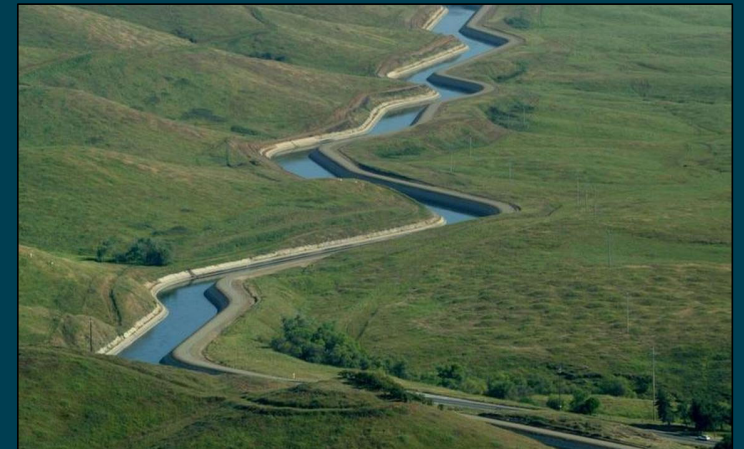
Restoration Goal

To restore and maintain fish populations in “good condition” in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.



Water Management Goal

To reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.



Restoration Goal Activities

- Improve channel capacity and increase San Joaquin River flows
- Reintroduce spring-run and fall-run Chinook salmon
- Construct bypasses around existing infrastructure for flows and fish
- Improve habitat to support a self-sustaining fishery



Improving Channel Capacity: Levee Projects

- Reach O Levee Project – DWR project
- Started and completed in 2020
- Re-enforced 2 miles of levee with slurry wall to meet seepage and stability criteria within the Eastside Bypass



Improving Channel Capacity & Fish Passage

- Merced National Wildlife Refuge Weir Removals (2019 & 2021)



Reintroduction: Salmon Conservation & Research Facility

- SCARF expected to be commissioned by CDFW in 2025



Reintroduction: Spawning and Returns

- First confirmed spring-run Chinook salmon spawning in over 60 years
- First adult returns documented in 2017

VOLUME 98 NUMBER 507 FRESNO, CALIF. FEBRUARY 2, 2018 NEWS ALL DAY 100¢ PER COPY

The Fresno Bee

Chinook salmon reach milestones in San Joaquin



Tagged juvenile spring-run chinook salmon swim in a tank at the Salmon Incubation and Rearing Facility near Friant Dam on Jan. 24. Tagging helps biologists monitor spring-run chinook salmon numbers, which is part of the San Joaquin River Restoration Program.

BY BRIANNA CALIX
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As work to restore the San Joaquin River continues, scientists are seeing promising signs that salmon can thrive in the river as hatchery fish reach new milestones.

A recent breakthrough came in fall 2017, when spring-run Chinook salmon created their nests, called redds, in the colder parts of the river below Friant Dam. The fish successfully



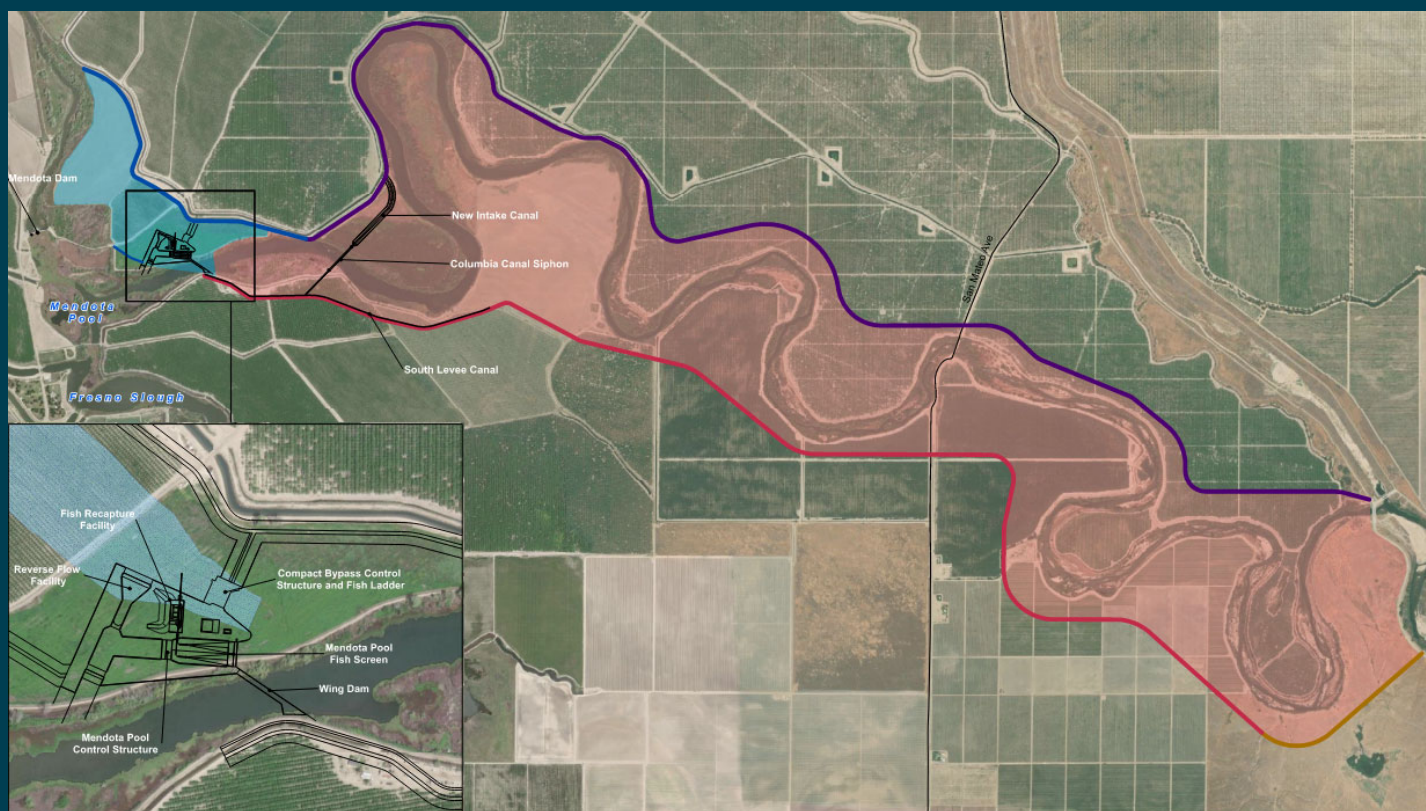
A tagged juvenile spring-run chinook salmon is seen at the Salmon Incubation and Rearing Facility near Friant Dam.

the restoration program manager. "One year doesn't prove that this is going to work in the future and everything is great... We definitely need to see a number of years of data to help us come to those conclusions. But, it's promising."

Spring-run Chinook essentially disappeared from the San Joaquin after the Friant Dam was completed in the 1940s, drying out a 60-mile stretch of the river for more than half a century. Salmon couldn't complete their journey back from the

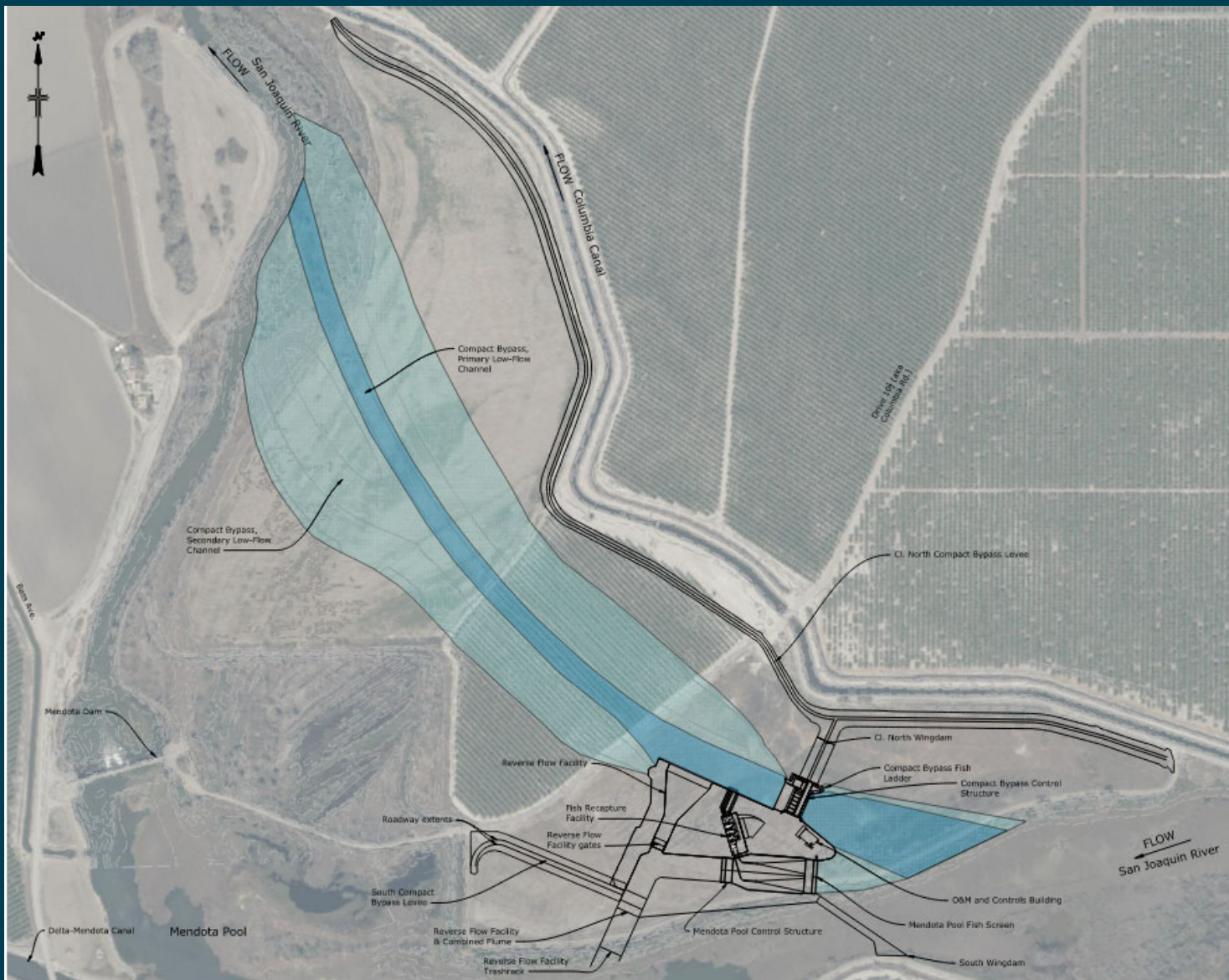


Construction: Mendota Pool Bypass and Reach 2B Improvements Project



Project Objectives

- Provide fish passage past Mendota Dam
- Increase Reach 2B channel capacity to 4500 cfs (1200 cfs currently)
- Provide floodplain habitat
- Preserve existing water delivery capabilities of Mendota Pool users



Construction: Mendota Pool Bypass, Fish Screen, and Associated Features





Construction:
Arroyo Canal Fish Screen & Sack Dam Fish Passage Facility
BEFORE

Construction: Arroyo Canal Fish Screen & Sack Dam Fish Passage Facility

AFTER (rendering)

*Illustration by Stantec



Water Management Goal Activities



Delta Recapture

Significant effort over past 12 months to identify path to Delta recapture, momentum from SOD Drought Plan

- Retrospective modeling of Restoration Flows from Friant Dam to Delta
- Conducted in parallel with SJRRP modeling support for Voluntary Agreements/Healthy Rivers & Landscapes
- Core Logic — the degree to which Restoration Flows improve Delta export should be credited to Recapture (conducted through post-hoc accounting)
- Maximum potential recapture ~ 21% of Restoration Flows (less losses) reaching Delta
- Most of the time Lower SJR will have more favorable recapture conditions



Delta Recapture Conditions

Controlling Condition	Factors	Recapture	Delta Restoration Flow Recapture Potential
Facility or permitted capacity constraints	Excess Delta Conditions; Export pumps, San Luis storage, or canal conveyance at capacity; Maintenance outages	✘	Restoration Flows subordinate to project water and transfers to CVP south-of-Delta (SOD) pursuant to the SJRRS Act
Real-time Demand Limits	Excess Delta Conditions; San Luis Reservoir is full, only direct delivery possible	✔	Friant Contractors must be eligible and able to take direct delivery of Recapture Water under their existing 9(d) contracts
Old and Middle River (OMR)	Excess Delta Conditions with restrictions; State and Federal ESA requirements that use OMR Index	✔	Recapture opportunity consistent with incremental improvement in the Vernalis flow component of the OMRI calculation
Delta Salinity, Water Quality	Delta Balanced Conditions; Managed by reducing exports or adjusting Sacramento Valley reservoir releases	✘	Salinity is more heavily influenced by export pumping and Sacramento River inflow, not SJR inflow.
Delta Outflow; Delta Export/ Inflow ratio (E/I)	Delta Balanced Conditions; D-1641/State Water Project CEQA; Export linked to Delta inflow	✔	Recapture opportunity consistent with incremental improvement in inflow and when Projects preserving storage during dry conditions
SJR Inflow Export limit	D-1641: exports limited by Vernalis flows for 31 days in April and May State and Federal ESA: link exports to Vernalis flows for 60 days in April and May based on the San Joaquin Valley Classification	✔	Recapture opportunity consistent with incremental improvement in the April/May Vernalis flow



Expect Pilot to Start with Low-Hanging Fruit

• Real-time Demands Controlling:

- Typically 100% of available recapture can be pumped when this condition is controlling if direct delivery recipients can be identified.
- About 10% of modeled Delta Recapture is pumped under RT Demands.
- Only occurs in spring of very wet years.

• OMR Controlling:

- Typically 100% of available recapture can be pumped when this condition is controlling.
- About 60% of modeled Delta recapture that can be pumped is pumped under OMR.
- Most likely January 1 – April 15

Controlling Condition	Factors	Recapture
Real-time Demand Limits	Excess Delta Conditions; San Luis Reservoir is full, only direct delivery possible	✓
Old and Middle River (OMR)	Excess Delta Conditions with restrictions; State and Federal ESA requirements that use OMR Index	✓



Lower San Joaquin Recapture

Due to NEPA status and pending Recapture & Recirculation Plan, Lower SJR recapture is accomplished through annual temporary permits:

- State Board updates operating conditions at each renewal
- Operating conditions typically intended to:
 - Protect Restoration Flows
 - Avoid impacts to other water users
 - Perfect water rights
 - Improve collective understanding of SJR water operations (e.g. Mendota Pool, Holding Contracts in Reach 1)
- Permit conditions affect all Restoration Flow and Millerton operations
- Current permit through November 2025



Recapture Next Steps

- Delta Recapture
 - Set up communications and operational structure with State Water Project and CVP Central Valley Operations
 - Will require tight coordination with Lower SJR Recapture Partners (PID and BCID) and FWA to optimize recapture
 - Operational Pilot, expect for select months
- Lower SJR Recapture
 - Reinitiate work on complete Recapture and Recirculation Plan
 - Address Paragraph 16(a)(1) with Settling Parties — ensure that any recapture of Restoration Flows shall have no adverse impact on the Restoration Goal, downstream water quality or fisheries
 - Environmental compliance and permitting for long-term recapture actions



Water Rights

Key Temporary Permit Conditions:

- Detailed tracking of flows in SJRRP Operations Spreadsheet to distinguish Restoration Flows and other water (i.e. mass balancing)
- Clarifying Mendota Pool operations — State Board has sometimes assumed water taken from Mendota Pool were river diversions, not deliveries (i.e. double counted the diversions)
- Attempting to establish realistic limits to flow gauge accuracy
- “Characterization” of Reach 1 diverters

These entail reports, spreadsheets, and numerous technical meetings



Reach 1 Losses and Interconnected Surface Waters

There is a confluence of interest surrounding Reach 1 diverters:

- Aforementioned characterization of Reach 1 losses
- Increasing losses and concern over impact to Friant water supply
- Suspicion of illegal diversions or breach of Holding Contract
- Questions regarding the transfer water usage under Holding Contracts
- SGMA directives to quantify Interconnected Surface Waters (ISW)



Reach 1 Losses Report

Early draft of Reach 1 losses report has been shared with a small group:

- Long-term trend of increasing Reach 1 losses
- Minor component due to decreased inflows/discharges
- Major component either:
 - ↑ groundwater infiltration
 - ↑ evapotranspiration
 - ↑ holding contract demands
- R1 loss trend responds to upper watershed runoff deficit
- Additional losses during part of the year due to higher river stage (Restoration Flows)
- Greatest increase in losses occurs in December, January, and February
- Greatest loss per mile in lowermost section above Gravelly Ford



Reach 1 Losses and Interconnected Surface Waters

Recommended Reach 1 Actions:

- Complete Reach 1 losses report and circulate for review (SJRRP)
- Complete inventory of Holding Contracts (SCCAO/SJRRP)
- Improve flow gauge network (ongoing)
- Link points of known diversions to land parcels/Holding Contracts
- Track land parcels since Holding Contracts were signed, evaluate riparian connection
- Improve SB88 diversion reporting compliance
- Quantify groundwater recharge

Note: many actions will require other parties/agencies to contribute



Part III Projects – Friant Division Improvements

- Authorized and directed to conduct feasibility studies and construct for facility improvements
- Authorized to provide financial assistance for groundwater banking and recharge
- Settlement Act identifies \$35M for Friant-Kern Canal and Madera Canal improvements.
 - \$25M obligated for Friant-Kern Canal
 - \$4.3M obligated for Madera Canal, \$5.7M remaining



Restoration Flow Guidelines

Status:

- Previous work on several chapters in 2020 is complete and needing review
- Flow Compliance:
 - Gravelly Ford Flow Compliance standards completed
 - Sack Dam Flow Compliance in progress
 - Sub-committee worked on this 2020-2023
 - Ongoing negotiations with Henry Miller Reclamation District 2023-present
- Upon resolution, plan to compile all changes
- Lower priority than Reach 1 losses report and State Board permit compliance, ideally return to RFG in summer



2025 Operations



Forecasting

- Accurate runoff forecasts pave the way for smooth operations, addressing both Restoration and Water Management Goals
- Joint Forecasting Team: SCCAO and SJRRP evaluate all available information weekly, track assumptions and actual conditions, and we blend various forecast products together
- 2025 Operational Products:
 - Continued support for ASO surveys in 2025 from DWR (3 flights) and FWA (1 flight + modeling)
 - Option for 5th ASO survey under SNOFO grant (new!)
 - SNOFO grant includes making ground-based measurements when ASO is flown off the snow course measurement cadence (new!)
 - iSnobal modeling (both DWR and M3Works/ASO versions)
 - WRF-HYDRO runoff prediction
 - NCAR SWE prediction from snow pillows under Reclamation SNOFO grant (new!)



Reclamation SNOFO Grant

- Successful proposal submission by Friant Water Authority
- Technical support and oversight by SJRRP
- 3 years, \$702K — accelerate adoption of new snow tech
 - +2 ASO surveys focused on spring snowmelt season
 - If ASO surveys conducted apart from snow course measurements, contract support for additional ground-measures
 - Retrospective M3Works iSnobal modeling back to ~1980
 - Continued improvement in NCAR SWE model based on snow pillows
 - Retrospective NCAR modeling based on snow pillows back to ~2000
 - Comparison of these Retrospective SWE models and others



Restoration Allocation

- Initial Restoration Allocation issued Jan 22 for Dry year type (727 TAF runoff resulting in 168 TAF Restoration Allocation)
- Next issuance planned for Feb 14 (would remain Dry year type IF storms arrive next week, otherwise would fall to Critical-High)
- February Allocation would be informed by ASO survey, DWR snow course measurements, and Bulletin 120 runoff forecast
- April Allocation typically sets the price for Tier 2 URFs
- Final Allocation issued in May, unless chance for Critical year type in which case final Allocation issued in June.



Restoration Allocation

Crucial factors in timing of Restoration Allocation:

- Restoration Allocation and subsequent Restoration Administrator schedule establish the volume available for Friant Division supply
- January Allocation critical for February Millerton operations as Restoration Administrator can advance flows into February... SJRRP also needs schedule for planning recapture
- In RFG Table 1 *we trust* (and why we trust it):

**Table 1.
Percent Probability of Exceedance Forecast Patterns**

	Value (TAF)	Date of Forecast Used for the Allocation ²					
		January	February	March	April	May	June
If the 50% forecast is¹:	Above 2200	50	50	50	50	50	50
	1600 to 2200	75	75	50	50	50	50
	900 to 1599	75	75	75	50	50	50
	500 to 899	90	90	75	50	50	50
	Below 500	90	90	90	90	75	50



Channel Capacity

Estimates by Location

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	Seepage (Reach 4A ~500 cfs)								Arroyo Project (~100 cfs)			
2026	Arroyo Project (~100-300 cfs)											
2027	Arroyo Project (~100-300 cfs)											
2028	Seepage (Reach 3 ~700-1100 cfs)											
2029	Seepage (Reach 3 ~700-1100 cfs)											
2030	Seepage (Reach 3)/Reach 2B Project (~900-1200 cfs)											
2031	Seepage (Reach 3)/Reach 2B Project (~900-1200 cfs)											
2032	Reach 2B (~1200 cfs)											
2033	Reach 2B (~1200 cfs)											
2034	Seepage (~2500 cfs)											

Unreleased Restoration Flows (URF)

- If “Dry” year type, little to no URFs for sale
- SJRRP interest in 5-20 TAF in exchanges should 2025 URFs become available
- Tier 1 price is now set at \$25/AF
- Tier 2 price has a revised formula:
 - 800 TAF unimpaired runoff = \$240/AF (\$3 more expensive)
 - 1000 TAF unimpaired runoff = \$209/AF (\$6 more expensive)
 - 1200 TAF unimpaired runoff = \$185/AF (\$7 more expensive)
 - 1400 TAF unimpaired runoff = \$167/AF (\$9 more expensive)
 - Formula for next 5 years: $325000 / (\text{Runoff Forecast in TAF (after March 21)} + 550)$
- CGB Finance conducting review of URF payments
- New URF umbrella agreement circulated last year and should be signed by District Boards by March 1 (expiration of old agreement)



Moving Forward

- Water Management Goal Priorities
- Planning for mid-year WMTF meeting

WMG Contacts

- Karlyn Armstrong – Project Manager
- Erika Kegel – Project Manager
- Chad Moore – Flow & Science Coordinator
- Pedro Valverde – Hydrologic Engineer
- Regina Story – WMG Deputy



Thank you!



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RECLAMATION



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