


Juvenile Salmonid Survival and Migration in the San Joaquin River Restoration Area During Flood Operations, Spring 2011

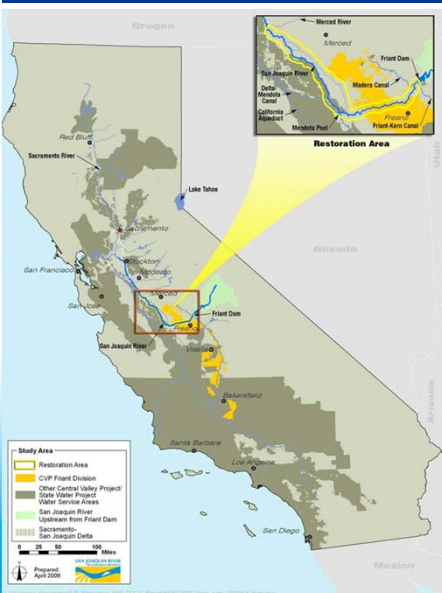
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Study Area

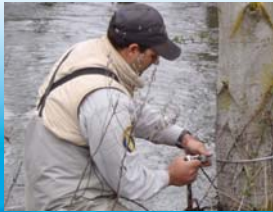


- San Joaquin River Restoration Area
 - Friant Dam to Merced Confluence
- Interim Flows
 - To Collect data to inform settlement actions, including fish reintroduction
- 2011 Flood Operations
 - Majority of Friant Release routed down the Chowchilla Bypass

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Study Goals



- Characterize fish movement rates, route selection, and survival rates through the Restoration Area
- Investigate areas of potential losses due to predation and entrainment for further study
- Provide management direction for reintroduction implementation based on results



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Methods


- Acoustic Telemetry
 - 29 Vemco® 180 kHz stationary receivers deployed throughout the restoration area at key locations
 - Above and below mine pits, at decision points for fish migration
 - Read Range = 75 m radius
 - Dual receiver stations to determine detection probability and survival by location
 - Feather River Fall Run Chinook salmon
 - 1200 fish (200 acoustic tagged) released at two locations on April 21, 2011
 - All fish coded wire tagged for long-term ID



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Methods (cont)

- Acoustic Telemetry Release locations
 - Below Friant Dam
 - San Mateo Crossing
 - Below Chowchilla Bypass
- Release Groups
 - ~600 coded wire tagged fish
 - +96 acoustic tagged fish
 - 4 acoustic tagged fish from each location held in the hatchery for tag life study

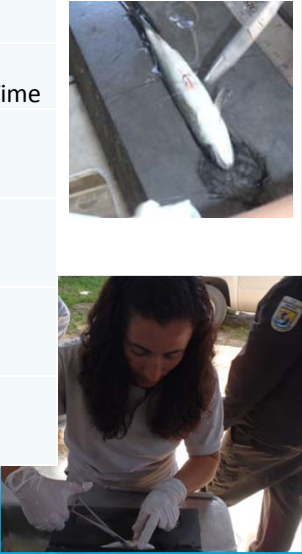


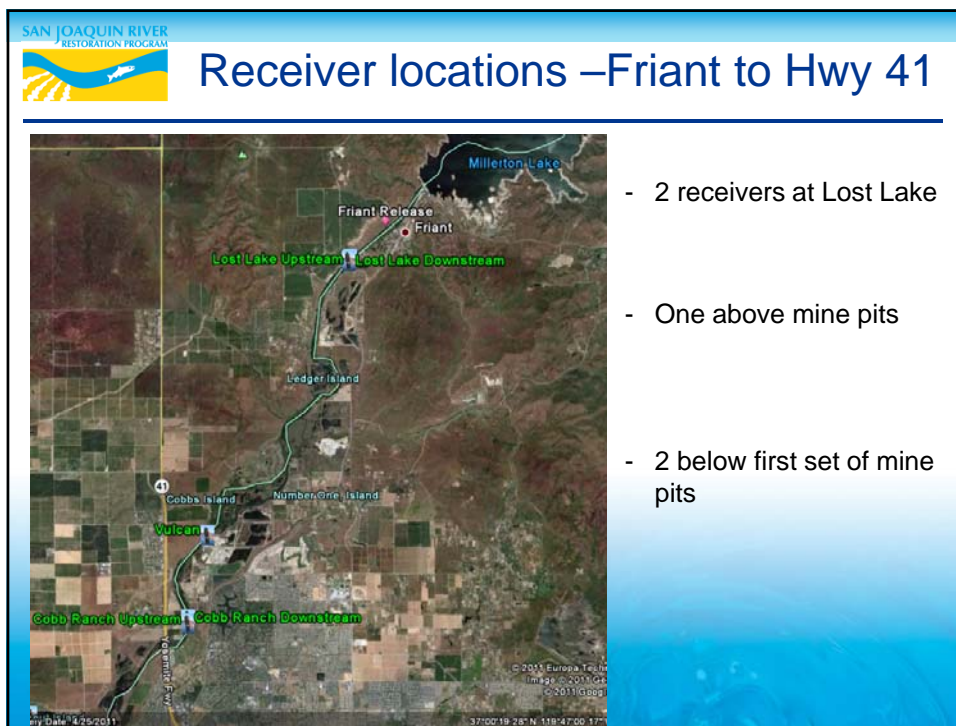
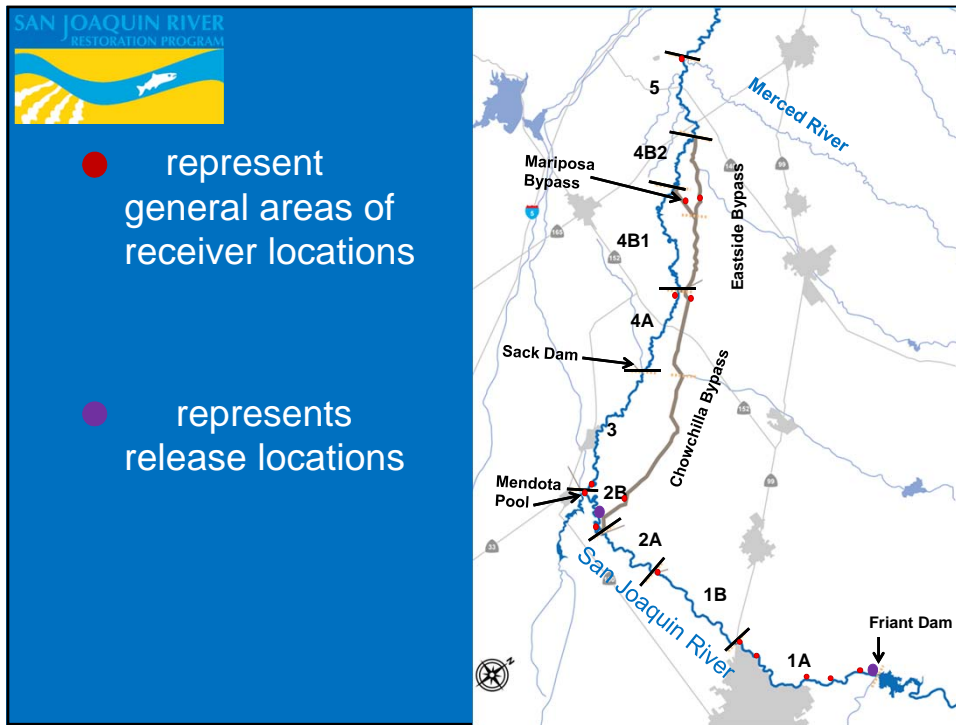
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Methods (cont.)

Fish Data Summary			
Release Group	Wt. Avg.	FL. Avg.	Avg. Surgery Time
Friant 1A	17.06	124.42	0:02:20
Friant 1B	19.608	120.72	0:02:56
San Mateo 2A	19.7966	122.52	0:02:36
San Mateo 2B	19.355	121.5	0:02:12

Fish Size needed for Surgery= 13.0g (5% of body weight)
 Tag Burden = 3.28 – 3.81% by tag group





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Receiver locations –downstream of Hwy 41 to upstream of Chowchilla Bypass

- One between 2nd and 3rd set of mine pits (Scout Island)
- Two between 3rd and 4th set of mine pits (Pashayan)
- Two at Gravelly Ford (upstream of Chowchilla Bypass)


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Receiver locations –Chowchilla Bypass to Mendota Pool

- 2 below the bifurcation structure in the River
- 1 six miles down the Chowchilla
- 1 above columbia canal
- 2 in the Mendota Pool
- 2 at the James Bypass
- 1 downstream of Mendota Pool

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Receiver locations –Sand Slough area



-2 at Sand Slough -2 in Eastside Bypass at Washington Rd.

This slide features a blue header with the San Joaquin River Restoration Program logo and the title 'Receiver locations –Sand Slough area'. Below the header is an aerial photograph of a river system. Four receiver locations are marked with small icons and green text labels: 'SS Up' and 'SS Down' on the left side of the river, and 'ESB1' and 'ESB2' on the right side. Below the photograph, a blue bar contains the text '-2 at Sand Slough' and '-2 in Eastside Bypass at Washington Rd.'.

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Receiver locations –East Side and Mariposa bypasses


-1 in the Mariposa Bypass 2 in the ESB below the Mariposa



This slide features a blue header with the San Joaquin River Restoration Program logo and the title 'Receiver locations –East Side and Mariposa bypasses'. Below the header is an aerial photograph of a river system with several bypasses. Three receiver locations are marked with small icons and green text labels: 'Mariposa Bypass' at the bottom left, and 'ESB below Mariposa 1' and 'ESB below Mariposa 2' in the center. Below the photograph, a blue bar contains the text '-1 in the Mariposa Bypass' and '2 in the ESB below the Mariposa'.

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Receiver Locations – end of Restoration Area

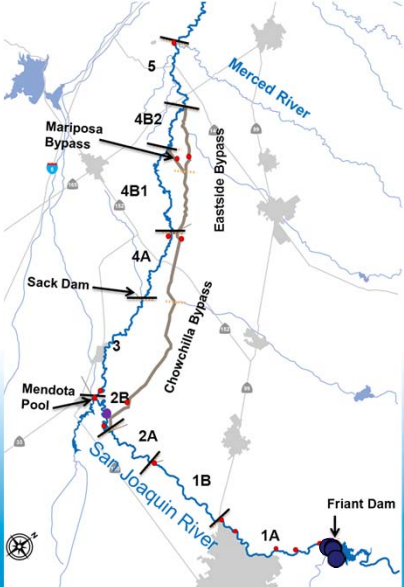


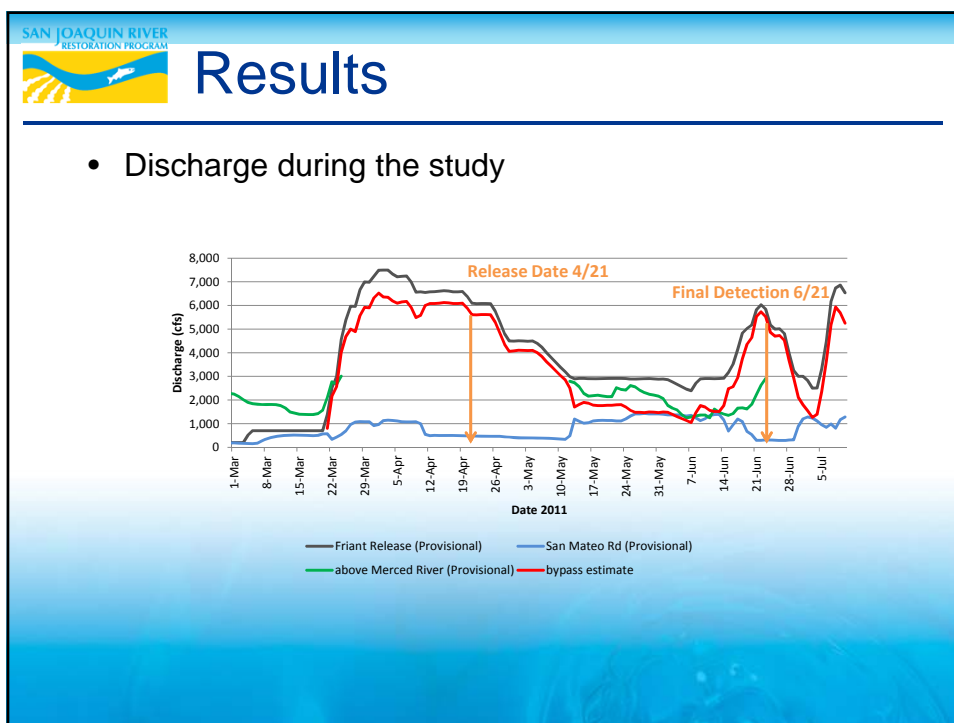
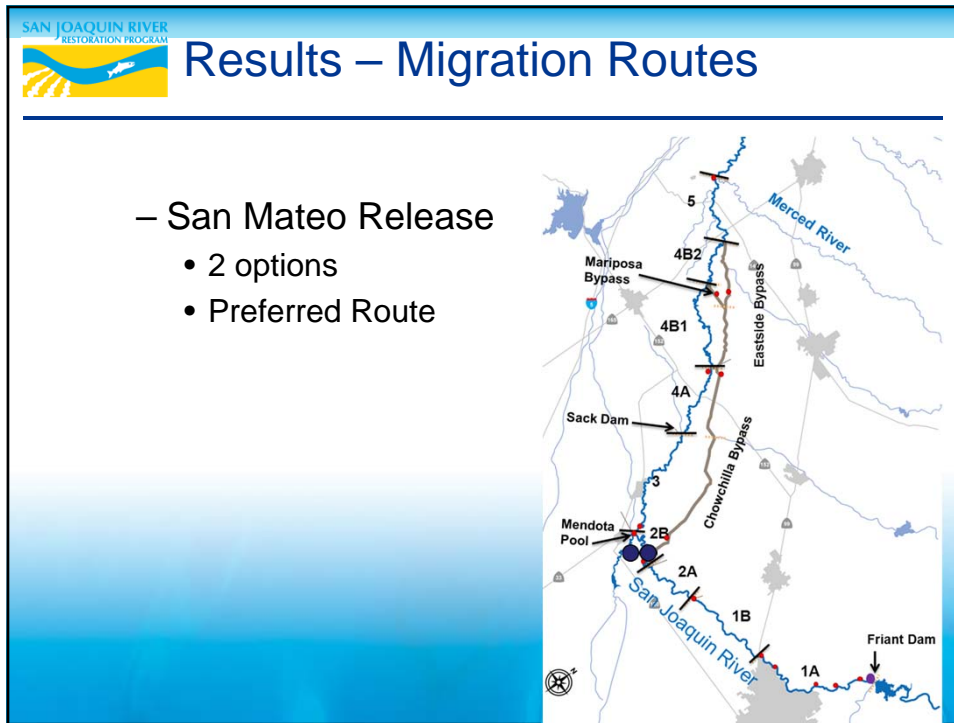
- 2 at the Confluence of the Merced and the San Joaquin

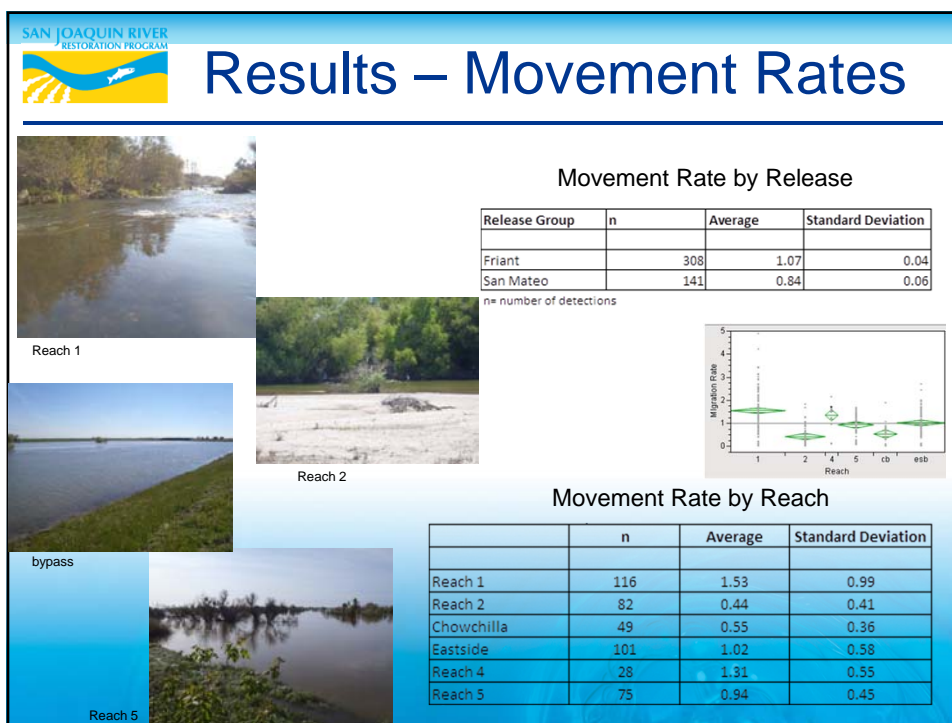
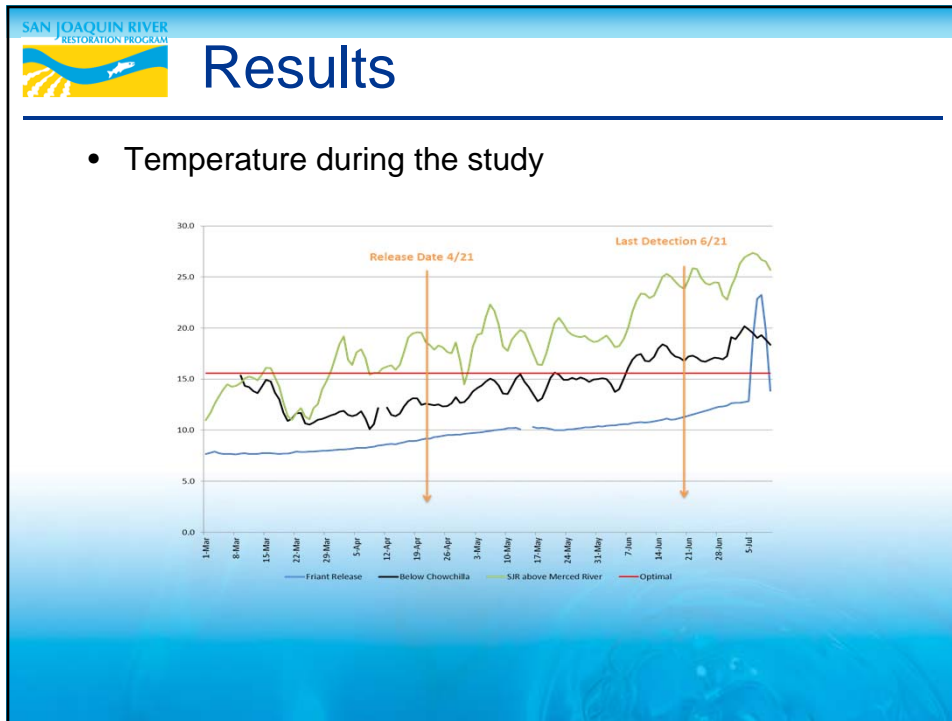
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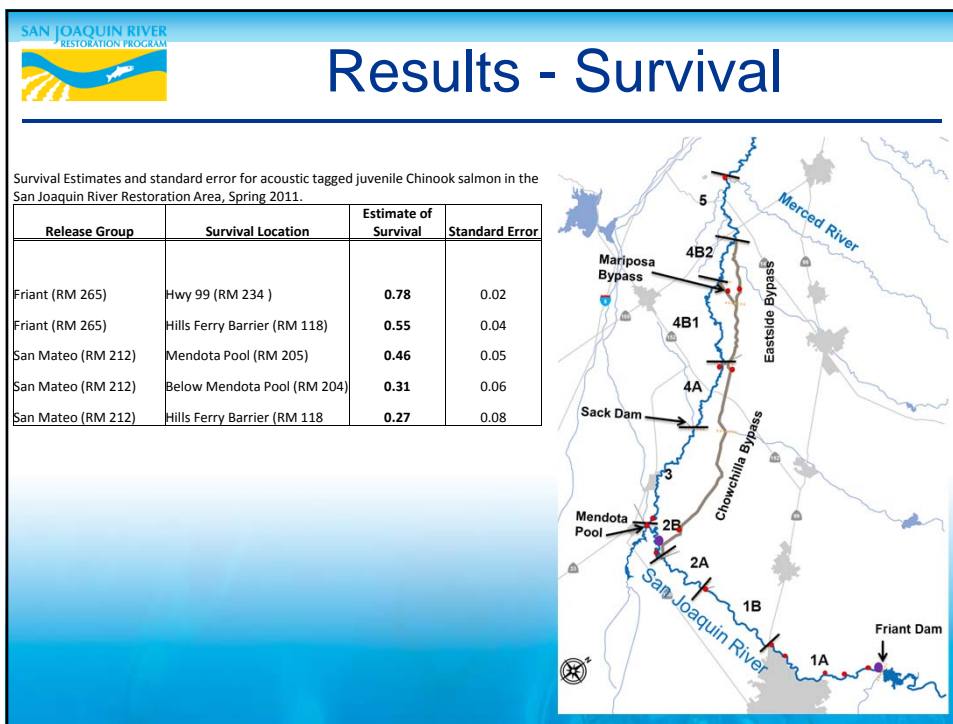
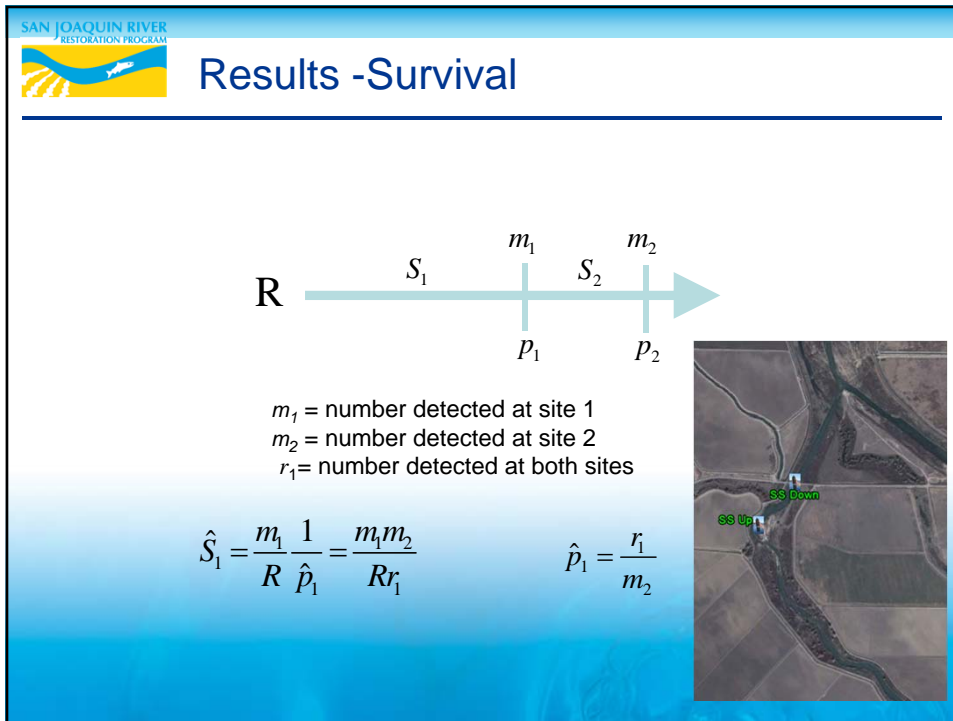
Results – Migration Routes

- Friant Release
- 4 Options
- Preferred Route











2012 Proposal

- Releasing BY 2010 Merced Fall Run
 - First Group on a pulse of ~300~500 cfs (Late March)
 - Second Group on a pulse from ~500 - ~1,000 cfs (Early April)
 - All fish will be CWT, PIT tagged, and 100 acoustic tagged
- Releasing YOY Feather River fall-run
 - ~100 below Friant
 - ~ 100 at downstream “connected River” (probably reach 5)
- Receivers expanded to San Joaquin Mainstem upstream to the Stanislaus – connect to USBR 6-year steelhead acoustic study.
- Coordinate with USBR PIT tag feasibility study and planned flow pulses