

FISH RESTORATION

Restoration Goal from the Settlement

“ To restore and maintain fish populations in good conditions 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. ”

-Natural Resources Defense Council v. Kirk Rodgers, as Regional Director of the United States Bureau of Reclamation, *et al.*

How do we accomplish the goal?



Mendota Dam

Channel Improvements

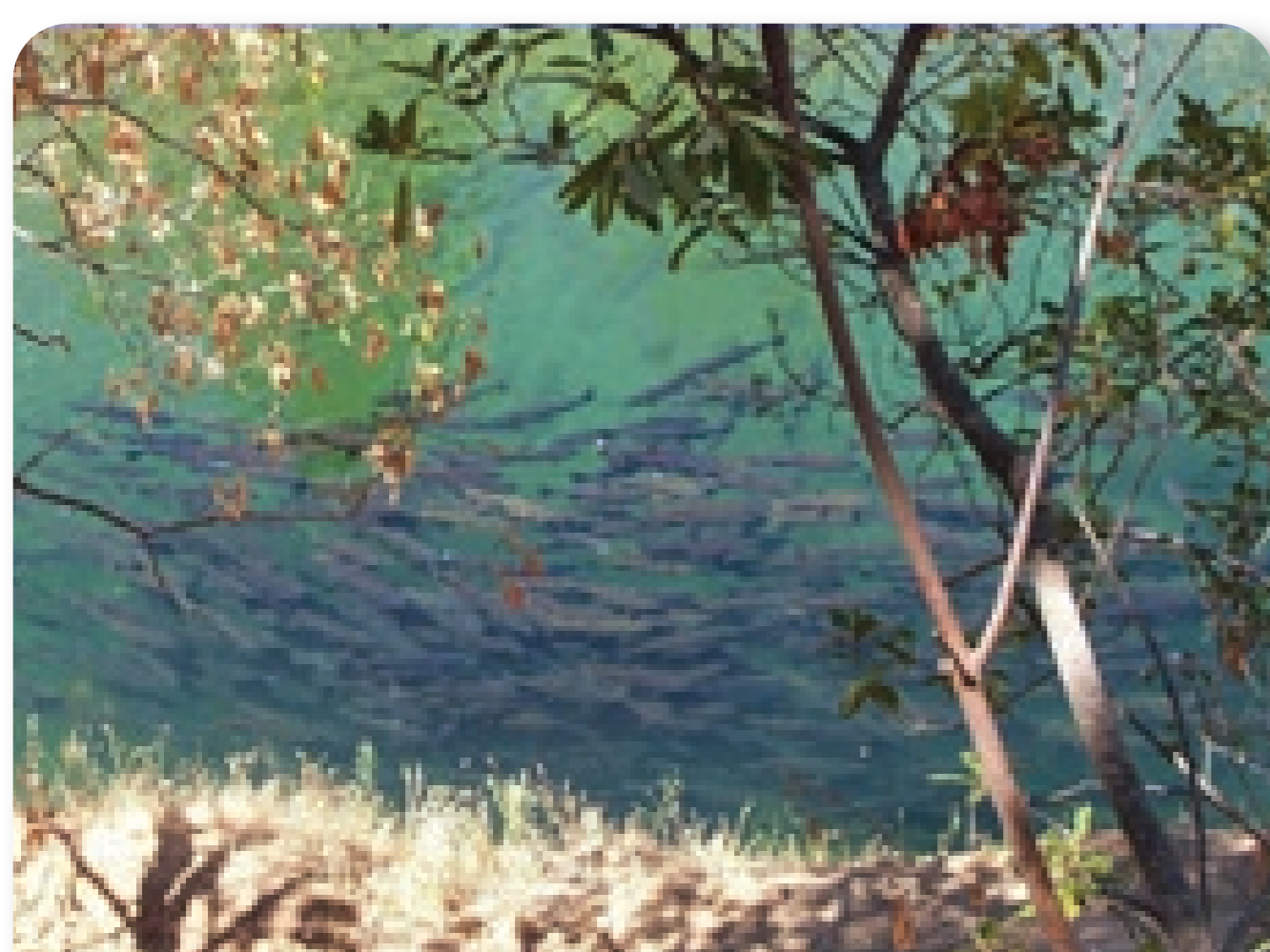
Evaluation of projects and options including those identified in Paragraph 11 of the Settlement to enable flow conveyance, fish passage and habitat improvements in the River:

- Gravel pits
- Reach 2B channel expansion
- Arroyo Canal screens
- Reach 4B flow strategy
- Mud & Salt slough barriers
- Bifurcation structure
- Mendota Pool bypass channel
- Sack Dam fish passage
- Sand Slough control structure
- Additional improvements

Key dates identified in the Settlement:

Phase 1 Channel improvements by **December 2013**

Phase 2 Channel improvements by **December 2016**



Sacramento Basin Spring-Run Chinook Salmon

Restoration Flows

In addition to channel and structural improvements, releases of water from Friant Dam to the confluence of the Merced River will be made to achieve the Restoration Goal. Interim Flows begin in Fall of 2009 but are limited to experimental purposes, and by channel capacity and construction activities. Full Restoration Flows will begin no later than January 2014.

Reintroduction of Salmon

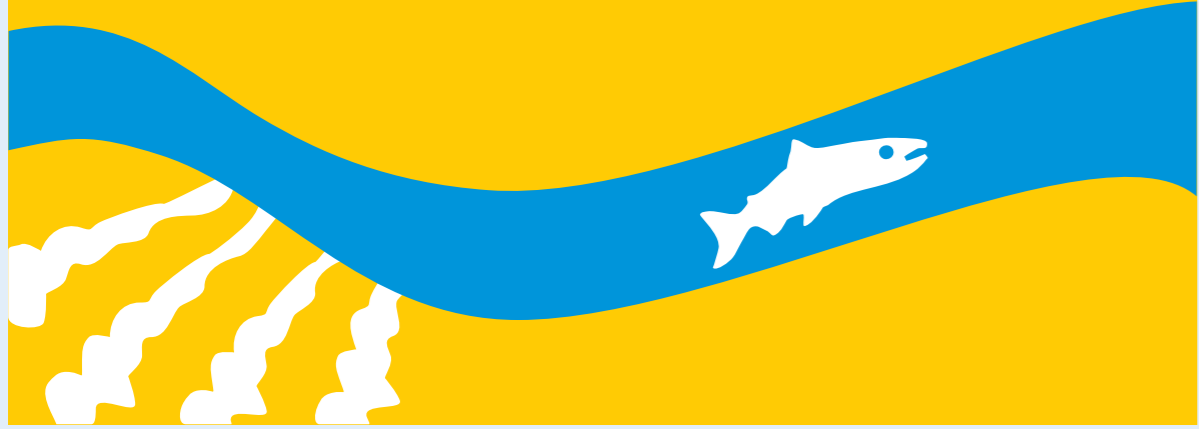
The Restoration Goal includes the reintroduction of spring-run and fall-run Chinook salmon between Friant Dam and the confluence with the Merced River at the earliest practical date after commencement of sufficient flows and issuance of required permits.

Key Dates Identified in the Settlement:

| | |
|-------------------|--|
| 2010 September | U.S. Fish & Wildlife Service (USFWS) submits an application for reintroduction of salmon to National Marine Fisheries Service (NMFS) |
| 2012 April | NMFS issues a decision on application |
| 2012 December | Reintroduce salmon |



San Joaquin River below Gravelly Ford



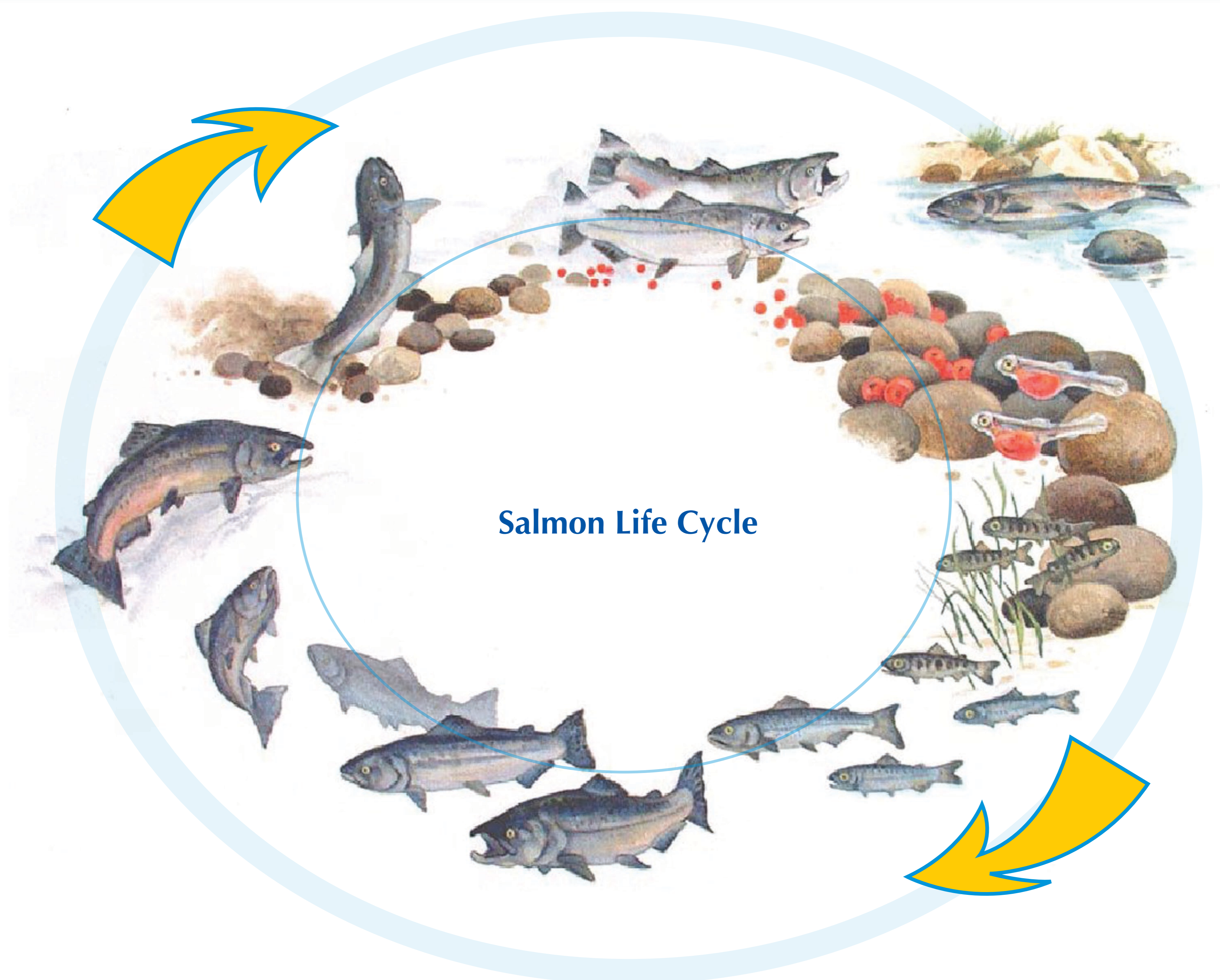
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Conceptual Models

The Fish Management Work Group is currently building conceptual models of how they believe environmental factors will influence the abundance of spring-run and fall-run Chinook salmon in the San Joaquin River between Friant Dam and the Merced River confluence.

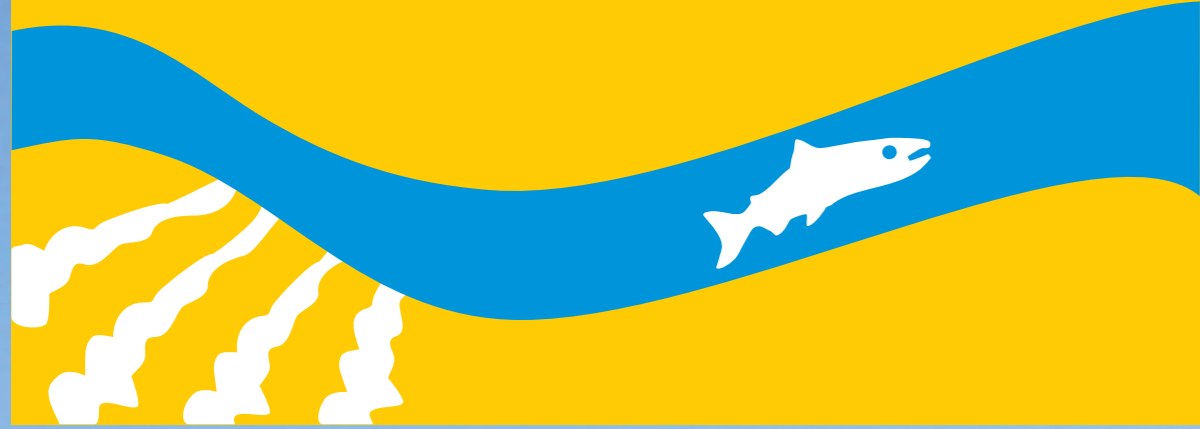
These conceptual models include a thorough and in-depth review of background literature and existing appropriate models on the life history and biology of California Central Valley spring- and fall-run Chinook salmon.

The models are precursors to quantitative models that will be used to assist in the evaluation of program alternatives, guide flow management, and help identify key habitat restoration needs. They will also help identify key knowledge gaps and hypotheses that will be addressed by an adaptive management process that includes a rigorous monitoring program.



Each conceptual model contains the following components:

- Graphic depictions of the current understanding of Central Valley spring- and fall-run Chinook salmon life cycles and limiting factors (e.g., physical, chemical, and biological)
- A narrative description reviewing background literature on the basic life history requirements and potential stressors in the San Joaquin River Basin
- Spring- and fall-run Chinook salmon knowledge gaps
- Controllable and uncontrollable limiting factors that are believed to affect the recovery of Chinook salmon populations in the San Joaquin River Basin



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Milestones

| | |
|--------------------------|---|
| 2007 October | Restoration Administrator submits recommendations to the Secretary |
| 2009 September | Complete Program Environmental Impact Statement/Report (PEIS/R) |
| 2009 October | Initiate Interim Flows and Monitoring Program in San Joaquin River |
| 2010 September | U.S. Fish & Wildlife Service (USFWS) submits a completed permit application to the National Marine Fisheries Service (NMFS) for the reintroduction of spring-run Chinook salmon |
| 2012 April | NMFS issues a decision of the spring-run Chinook salmon permit application |
| 2012 December | Reintroduce spring- and fall-run Chinook salmon |
| 2013 December | Complete Phase 1 channel improvements |
| 2014 January | Initiate full Restoration Flows |
| 2016 December | Complete Phase 2 channel improvements |
| 2024 December | Submit report to Congress on the reintroduction of spring- and fall-run Chinook salmon |



San Joaquin River at State Route 145



Potential Spawning Habitat



Chinook Salmon