

Sacramento Valley Salmon Resiliency Strategy June 2017



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Sacramento Valley Salmon Resiliency Strategy

Introduction

The Sacramento Valley Salmon Resiliency Strategy (Strategy) is a science-based document that has been prepared by the State of California (State) to address specific near- and long-term needs of Sacramento River winter-run Chinook salmon (winter-run), Central Valley spring-run Chinook salmon (spring-run), and California Central Valley steelhead (steelhead). The Strategy mirrors the approach taken with the Delta Smelt Resiliency Strategy developed by the State in 2016: science-driven, focused, and designed to provide resource agencies, the public, Congress, and the California State Legislature with information critical to collaborative approaches to species resiliency.

The Strategy relies heavily on the National Marine Fisheries Service Final Recovery Plan for winter-run, spring-run, and steelhead (NMFS 2014), and is guided by conceptual models of factors driving winter-run population dynamics at key life stages developed by the salmon and sturgeon assessment of indicators by life-stage (SAIL) teams (Johnson et al. 2016; Heublein et al. 2017). The actions are also supported, where indicated, by other salmonid recovery planning documents and efforts.

The Strategy is an aggressive approach to improving species viability and resiliency by implementing specific habitat restoration actions. The State will take leadership roles in each action, although in all cases federal and local agency leadership, coordination, and partnerships are required for success. Recent successful restoration efforts led by local agencies and landowners demonstrate the importance and value of these collaborative partnerships. State agencies that could implement this Strategy include the California Natural Resources Agency, the Department of Water Resources (DWR) and the Department of Fish and Wildlife (DFW). The U.S. Bureau of Reclamation (Reclamation) will be a primary partner in many of the actions.

In many cases, included actions will benefit an array of aquatic and terrestrial species. Coordination and alignment across various resource management agencies will ensure achievement of maximum public benefit. All of the actions will comply with applicable laws including the U.S. Endangered Species Act (ESA), California Endangered Species Act, California Environmental Quality Act, National Environmental Policy Act, and the federal Clean Water Act.

Goals and Objectives

The goal of this Strategy is to promote actions that address specific life-stage stressors and thus significantly contribute to the achievement of overall viability of Sacramento Valley salmonids. Specifically, this Strategy focuses on known stressors associated with spawning habitat, rearing habitat, through-Delta survival, and adult fish passage in order to contribute to these high-level objectives:

- Central Valley Project Improvement Act (CVPIA) salmonid doubling goals¹
 - Sacramento River natural production goals
 - 230,000 fall-run
 - 68,000 late fall-run
 - 110,000 winter-run
 - 59,000 spring-run

¹ <https://www.usbr.gov/mp/cvp/docs/A-CENTRAL-VALLEY-PROJECT-IMPROVEMENT-ACT-IMPLEMENTATION-PLAN-FOR-FISH-PROGRAMS-July-22-2015-Public-Draft.pdf>

- Recovery criteria identified in the Final Recovery Plan for winter-run, spring-run, and steelhead (NMFS 2014)²

Specific biological objectives have been identified for the Sacramento River that support the general need to increase survival and productivity of salmonids in the Sacramento Valley and to increase life history and genetic diversity. A summary of these biological objectives:

- Increase productivity by improving spawning and incubation conditions (habitat and water quality).
- Increase productivity by increasing juvenile salmonid survival.
- Support the full range of juvenile migration conditions to maintain life history diversity.
- Support the full range of adult migration conditions to maintain life history diversity.
- Maintain genetic integrity by limiting genetic influence from hatchery-produced fish and interbreeding of genetically or behaviorally distinct runs.

Conceptual Models

Detailed conceptual models of the key factors affecting the population dynamics of winter-run Chinook salmon developed by the SAIL teams were used to link each action to a key attribute or driver to understand how each action relates to population viability. The conceptual models have a tiered structure with population performance (e.g., survival, growth, condition) by life stage being determined by Landscape Attributes (tier 1), Environmental Drivers (tier 2), and Habitat Attributes (tier 3).

The winter-run conceptual models are focused on the existing population spawning in the Sacramento River and do not take into account the broader species viability context, where additional populations or spawning areas are needed for species resiliency (Lindley et al. 2007).

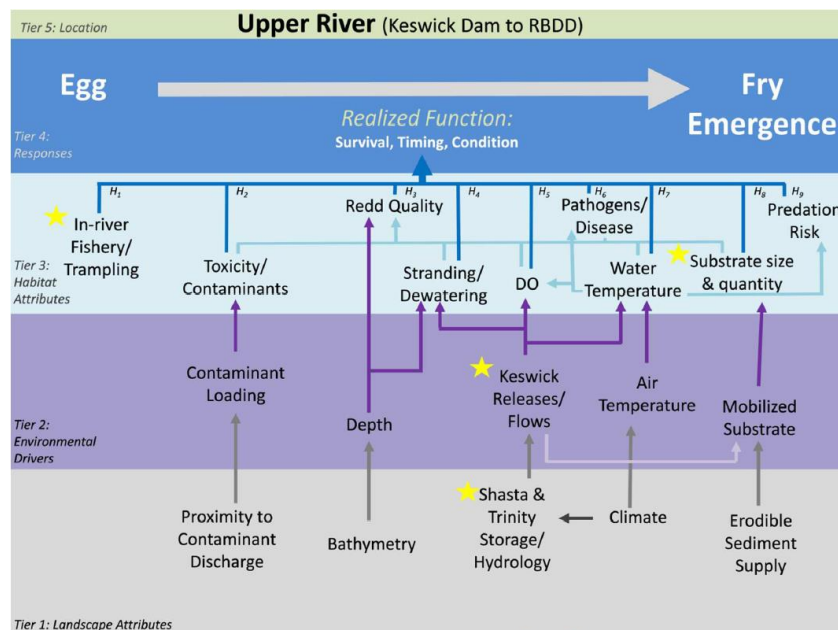


Figure 1. Conceptual model of drivers affecting the transition from winter-run egg to fry (CM1). The “H-number” refers to hypothesized responses of potential actions denoted by stars.

²http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/california_central_valley/final_recovery_plan_07-11-2014.pdf

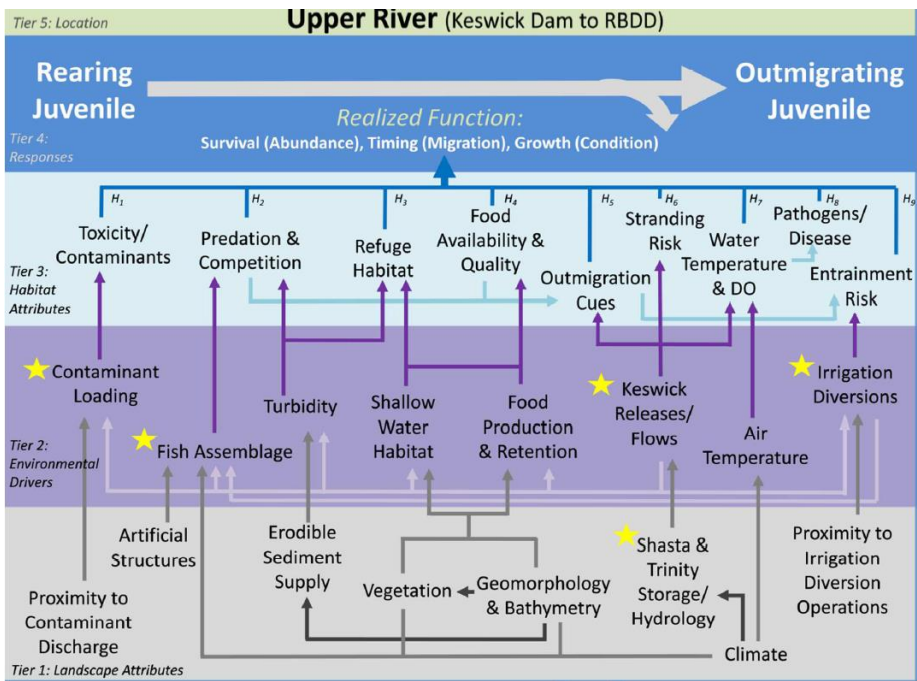


Figure 2. Conceptual model of drivers affecting the transition from winter-run juvenile rearing in the Upper Sacramento River to migrating into the Middle River (CM2). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

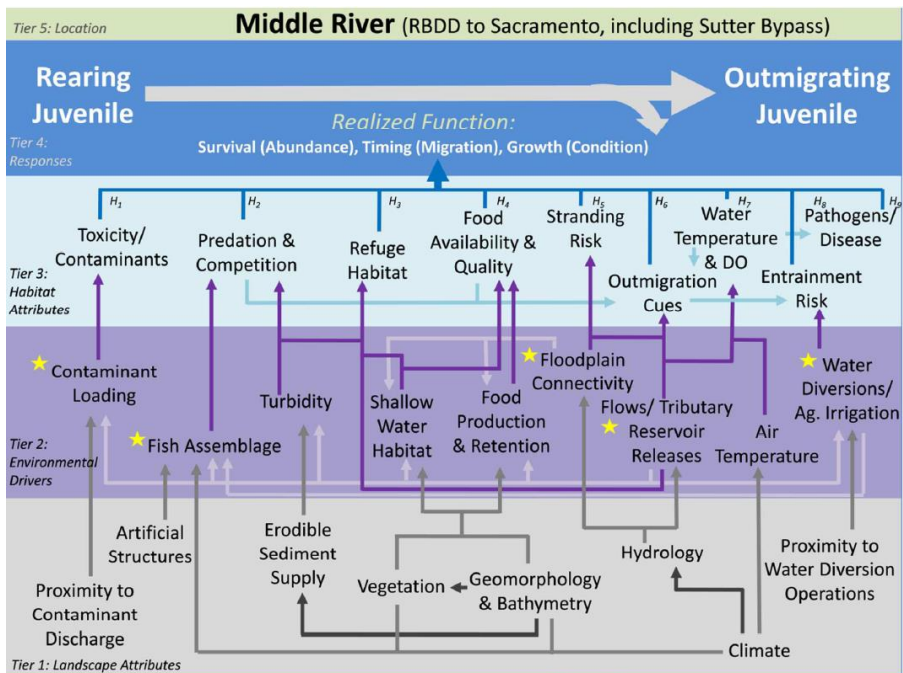


Figure 3. Conceptual model of drivers affecting the transition from winter-run juvenile rearing in the Middle Sacramento River to migrating into the Bay-Delta (CM3). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

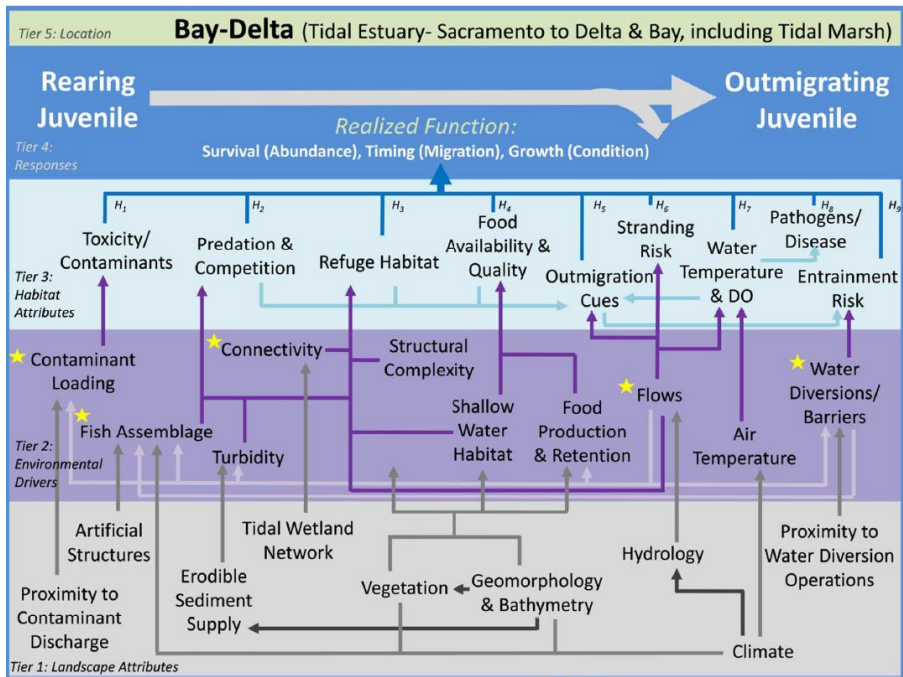


Figure 4. Conceptual model of drivers affecting the transition from winter-run juvenile rearing in the Bay-Delta to migrating into the ocean (CM4). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

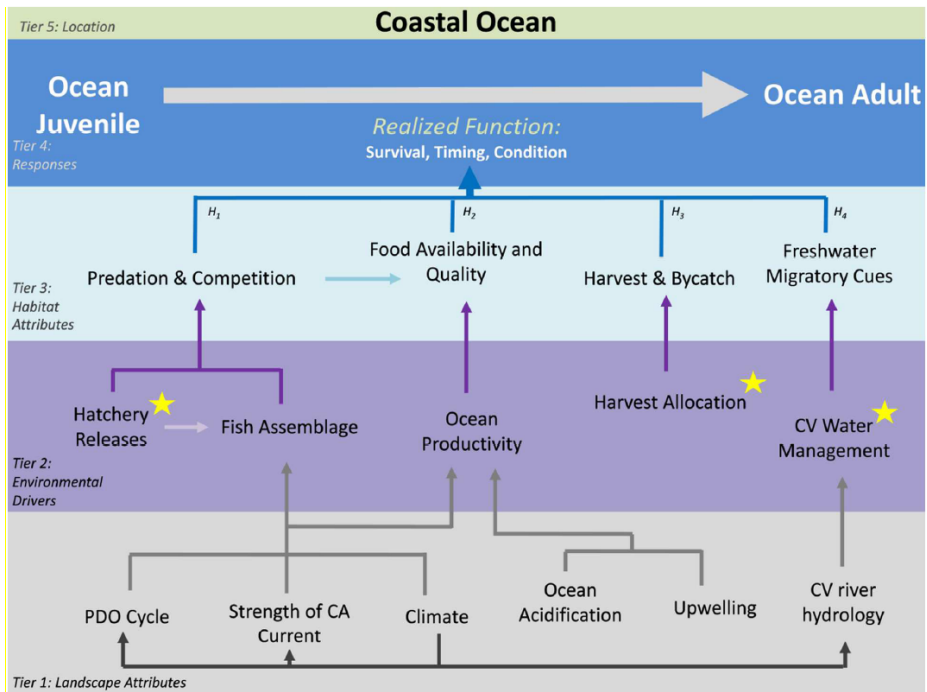


Figure 5. Conceptual model of drivers affecting the transition from winter-run juveniles entering the ocean until their upstream migration as adults (CM5). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

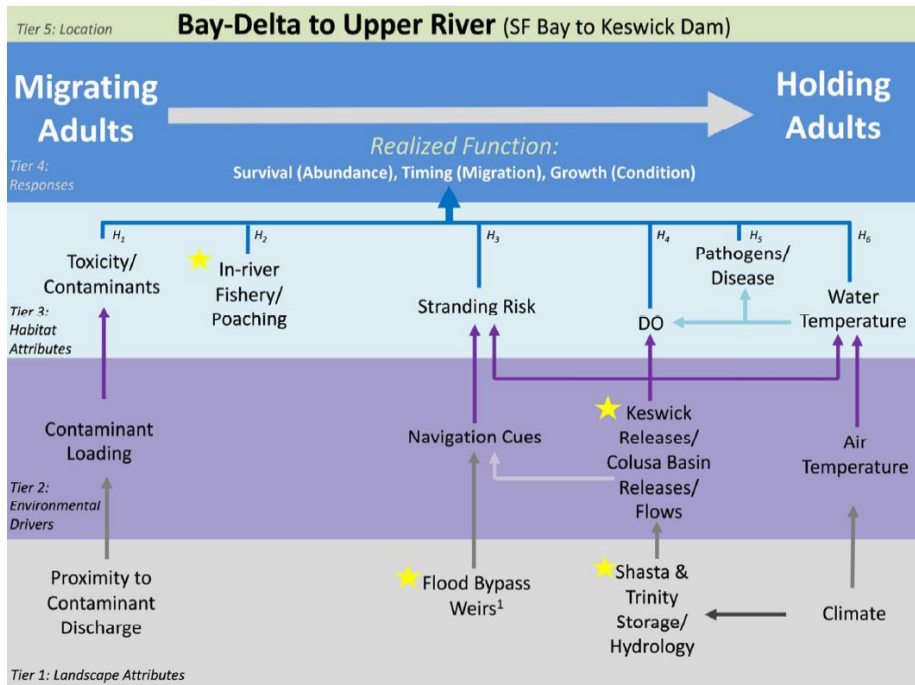


Figure 6. Conceptual model of drivers affecting the transition from winter-run adult migration to holding (CM6). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

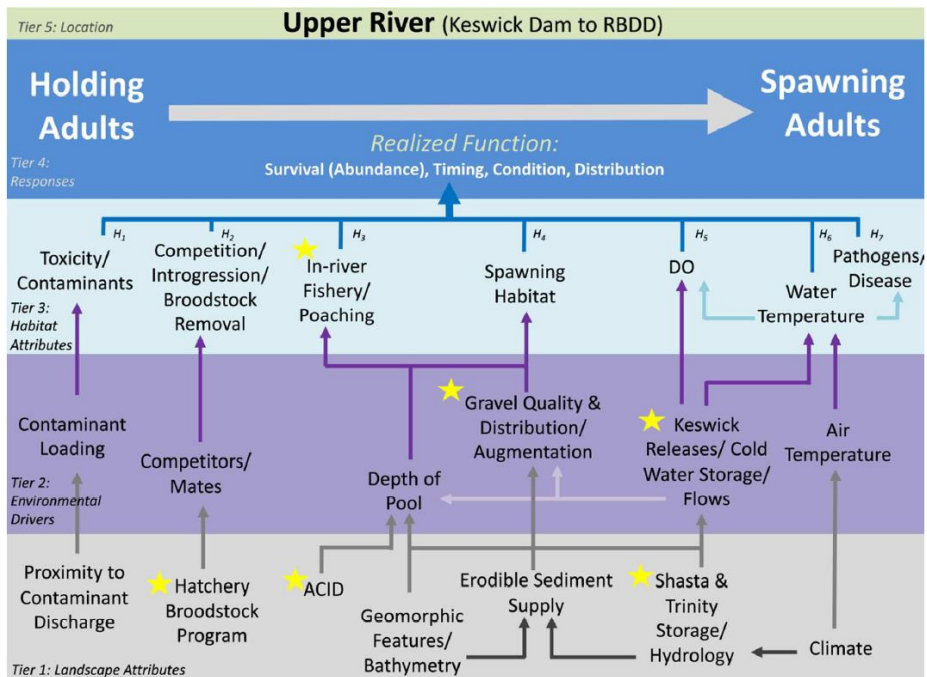


Figure 7. Conceptual model of drivers affecting the transition from winter-run adult holding to spawning (CM7). The “H-number” refers to hypothesized responses of potential management actions denoted by stars.

Identifying the Suite of Actions

The actions included in this Strategy represent a suite of habitat restoration management actions necessary to improve the immediate and long-term resiliency of Sacramento Valley salmonids. Not all

known stressors affecting each life stage are addressed, and not all restoration actions already committed to or being actively pursued are included. Rather, this Strategy is intended to focus the State and its partners on habitat restoration actions critical to improving population resiliency to known and future stressors associated with spawning habitat, rearing habitat, through-Delta survival, and adult fish passage. Other known stressors critical to Sacramento Valley salmonids are addressed in complementary planning documents, action plans, and recovery strategies.

Actions included in the Strategy are listed by relative geography, beginning with rearing habitat in the upper watersheds and tributaries.

Proposed Actions

Implement Multiple Actions on Battle Creek

Multiple actions are being pursued in Battle Creek to improve winter-run and other salmonid resiliency. Implementation of actions will be coordinated to ensure that critical fish passage and other habitat improvements are made prior to winter-run reintroduction.

a. Complete Battle Creek Salmon and Steelhead Restoration Project

- Action and objectives: Provide improved instream flow releases and safe fish passage to prime salmon and steelhead habitat on Battle Creek for winter-run Chinook, spring-run Chinook, and Central Valley steelhead.
- Linkage to SAIL Conceptual Models: Not applicable – SAIL conceptual models focus on the existing population spawning in the Sacramento River.
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action; required Action I.2.6, pursuant to the NMFS 2009 biological opinion for the long-term operations of the Central Valley Project and State Water Project; NMFS Species in the Spotlight Winter-run Chinook Salmon Acton Plan.
- Current estimate of additional funding need: \$24 million over four years.
- Funding sources: Reclamation, DWR and other State agencies. Potential funding sources are being explored, including federal infrastructure funding.
- Timing: With additional funding, project construction can be completed in 2021.

b. Implement Battle Creek Reintroduction Plan

- Action and objectives: Support establishment of an additional population of winter-run Chinook salmon; expand and enhance spring-run and steelhead spawning and rearing habitat.
- Linkage to SAIL Conceptual Models: Not applicable – SAIL conceptual models focus on the existing population spawning in the Sacramento River.
- Consistency with existing priorities: Action would implement DFW's August 16, 2016, Battle Creek Winter-Run Chinook Salmon Reintroduction Plan, Priority 1 NMFS Recovery Plan action, NMFS Species in the Spotlight Winter-run Chinook Salmon Acton Plan.

- Estimated costs: \$3.7 million one-time; \$650,000 ongoing annual operations and management costs.
- Funding source: To be determined.
- Five-year target outcome: Fully implement Phase 1 of DFW's 2016 Battle Creek Winter-run Chinook Salmon Reintroduction Plan. The primary goal of phase 1 is to establish a return run combination of at least 500 hatchery and natural origin winter-run Chinook salmon to Battle Creek.
- 10-year outcome: Fully implement Phase 2 of CDFW's 2016 Battle Creek Winter-run Chinook Salmon Reintroduction Plan. The primary goal is to phase out contribution of artificial production and establish a return run size greater than 500.

c. Remove Battle Creek Natural Barrier

- Action: Improve fish passage at natural barriers on the North Fork of Battle Creek downstream of Eagle Canyon Dam (at River Mile 4.46 and River Mile 5.06), and a barrier just upstream of Eagle Canyon Dam (at River Mile 5.41).
- Linkage to SAIL Conceptual Models: Not applicable – SAIL conceptual models focus on the existing population spawning in the Sacramento River.
- Objectives: Support establishment of additional population of winter run Chinook salmon. Expand access to available spawning habitat.
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action.
- Estimated costs: \$6 million.
- Funding source: DWR, Reclamation, state and federal water contractors, others.
- Timing: Complete by 2022.

Implement McCloud Reintroduction Pilot Plan

- Action and objectives: Complete 2009 Biological Opinion required actions to guide establishment of an additional population of winter-run Chinook. Identify benefits and risks of reintroduction for spring-run Chinook and steelhead in McCloud River and/or upper Sacramento River.
- Linkage to SAIL Conceptual Models: Not applicable – SAIL conceptual models focus on the existing population spawning in the Sacramento River.
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action; required Action Suite 5 Near-Term Fish Passage Actions, pursuant to the NMFS 2009 biological opinion for the long-term operations of the Central Valley Project and State Water Project; NMFS Species in the Spotlight Winter-run Chinook Salmon Action Plan.
- Current estimate of additional funds needed: \$35 million.

- Funding source: To date, the project has been supported with federal funds.
- Timing: 2018 – 2027.
- Five-year target outcome: Permitting in place; exploratory hatching/juvenile/adult studies conducted with winter-run Chinook salmon upstream of Shasta Dam.
- 10-year outcome: Continue pilot studies with adult fish to inform decisions on long-term reintroduction effort.

Provide Instream Flows to Support Chinook Salmon and Steelhead in Mill, Deer, Antelope, and Butte Creeks

- Action and objectives: Provide instream flows in Mill, Deer, Antelope, and Butte creeks to increase spring-run and steelhead access to spawning and rearing habitat, and increase winter-run access to non-natal rearing habitat. The instream flows should meet flow criteria identified in recent technical flow studies by DFW's Instream Flow Program. Potential actions to provide instream flows include agreements with water users, water transfers, water rights purchases, and regulatory measures through Phase IV of the State Water Resources Control Board's Water Quality Control Plan Update.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the Upper Sacramento River to migrating into the Middle River (CM2). Reduced access to and quality of non-natal rearing habitats limit food availability and production and lead to reduced fish growth and subsequent survival (H4).
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action.
- Estimated costs: Costs will vary depending on the action taken.
- Funding source: DFW, Wildlife Conservation Board, others.
- Timing: Complete by 2020.

Restore Fish Passage and Habitat in Upper Sacramento Tributaries

- Action and objectives: Fund construction of various upper tributaries fish passage and habitat projects to benefit spawning and rearing potential:
 - Upper Dam Fish Passage – Mill Creek
 - Deer Creek Irrigation District Fish Passage – Deer Creek
 - Stanford Vina Ranch Irrigation Company Project – Deer Creek
- Linkage to SAIL Conceptual Models: Not applicable – the conceptual models were developed for winter-run and sturgeon and this action is primarily intended to benefit spring-run and steelhead.
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan actions.

- Estimated costs:
 - Upper Dam Fish Passage: \$3 million
 - Deer Creek Irrigation District: \$2.5 million
 - Stanford Vina: \$3.5 million (construction and planning)
- Funding sources: Reclamation, DFW, others.
- Timing: Completed by 2020.

Restoration of Instream Habitats in Upper Sacramento River

- Action and objectives: Enhance and maintain 80 acres of spawning and rearing habitat in the upper Sacramento River for winter-run Chinook, spring-run Chinook, and Central Valley steelhead.
- Linkage to SAIL Conceptual Models: Conceptual models of drivers affecting the transitions from winter-run adult holding to spawning (CM7), egg to fry (CM1), and juvenile rearing in the Upper Sacramento River to migrating into the Middle River (CM2). Multiple habitat attributes are hypothesized to affect spawning success, early life stage survival, and growth including spawning habitat quantity and quality (CM7, H4), redd quality (CM1, H3), and refuge habitat (CM2, H3).
- Consistency with existing priorities: NMFS salmonid recovery plan actions; CVPIA Restoration Fund priority actions.
- Current estimate of additional funds needed: \$14 million to \$17 million.
- Funding source: To date, the program has been supported with federal, states, and private funding. Historically, these activities were primarily funded through the CVPIA Restoration Fund. The project partners, including Reclamation, continue to explore coordinated funding to address funding need.
- Five-year target outcome: 25 acres restored.
- 10-year outcome: 80 acres restored.

Improve Fish Passage by Removing Sunset Pumps Rock Dam on the Feather River

- Action and objectives: Remove rock weir and agricultural pump infrastructure to improve adult and juvenile salmonid passage, improve adult sturgeon passage, and reduce entrainment risk.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the upper Sacramento River to migrating into the middle River (CM2). Impaired upstream passage of juveniles to non-natal rearing habitats limits food availability and production and leads to reduced fish growth and subsequent survival (H4).
- Consistency with existing priorities: Very high priority project across multiple salmonid restoration planning efforts.

- Estimated costs: Up to \$25 million total.
 - \$2 million for rock dam and pump infrastructure removal
 - Up to \$23 million for water delivery infrastructure improvements
- Funding source: Local agencies/partners, DFW, DWR, Reclamation, others.
- Timing: Complete by 2020.

Restore Off-Channel Rearing, Streambank, and Riparian Habitats and Migratory Conditions along Upper/Middle/Lower Reaches of the Sacramento River

- Action and objectives: Restore 6,000 acres of floodplain and riparian ecosystems along both banks of the upper, middle, and lower Sacramento River – including within the Sutter Bypass, if feasible – at scale necessary to provide abundant and diverse salmonid rearing habitat and improved migratory conditions. Potential project delivery mechanisms include but are not limited to the implementation of a Request for Proposals (RFP), purchase of conservation bank floodplain habitat credits, and construction of levee set-back projects or other multi-benefit flood risk reduction actions that create beneficial rearing habitat.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the upper Sacramento River to migrating into the middle river (CM2). Lack of floodplain connectivity limits food availability and production and leads to reduced fish growth and subsequent survival (H4).
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action, Central Valley Flood Protection Plan Conservation Strategy.
- Estimated costs: Modest costs for potential RFP development. Significant costs for implementation/purchase of conservation banking credits.
- Funding source: DWR, Reclamation, U.S. Army Corps of Engineers, state and federal water contractors, others.
- Five-year target outcome: Restoration Implementation Plan developed, 1,000 acres restored.
- 10-year outcome: 6,000 acres of restored or enhanced floodplain habitat across the upper, middle, and lower reaches of the Sacramento River, including the Sutter Bypass.

Complete Fish Screen Construction on Major Diversions along the Sacramento River

- Action and objectives: Complete the remaining high-priority Sacramento River fish screen projects (Meridian Farms Water Company, Natomas Mutual Water Company and M&T Ranch), as identified by state and federal fishery agencies.
- Linkage to SAIL Conceptual Models: Conceptual model of drivers affecting the transition from winter-run juvenile rearing in the upper Sacramento River to migrating into the middle River (CM2, H8 entrainment risk) and in the middle Sacramento River to migrating into the Bay-Delta (CM3, H8 entrainment risk).

- Consistency with existing priorities: CVPIA and Priority 1 NMFS Recovery Plan action.
- Estimated Costs: \$50 million.
- Funding Source: Proposition 1 (2014), CVPIA, local contributions, others.

Improve Sutter Bypass and Associated Infrastructure to Facilitate Adult fish Passage and Improved Stream Flow Monitoring

- Action and objectives: Sutter Bypass provides opportunities for large-scale fish passage, floodplain restoration, and flood risk reduction improvements. Specific actions include but are not limited to multi-benefit Tisdale Weir modifications that address both flood management and fish passage deficiencies, modifications to Sutter Bypass Weir #1 to improve fish passage, and installation of real-time streamflow monitoring equipment in Butte Creek to facilitate comprehensive multi-benefit Sutter Bypass water management planning.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from migrating adults to holding adults (CM6). Insufficient adult fish passage at flood bypass weirs combined with attraction flows leads to stranding risk and reduced fish survival, timing, and condition (H3). Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the middle Sacramento River to migrating into the Bay-Delta (CM3). Lack of floodplain connectivity limits food availability and production and leads to reduced fish growth and subsequent survival (H4).
- Consistency with existing priorities:
 - Tisdale fish passage improvement: Priority 1 NMFS Recovery Plan action.
 - Sutter Bypass Weir #1: Central Valley Salmon Habitat Partnership priority.
- Estimated costs:
 - Tisdale fish passage improvement: \$12 million to \$20 million
 - Sutter Bypass Weir #1: \$1.8 million
- Funding source: DWR, DFW, local agencies, others.
- Timing: Complete Sutter Bypass improvements by 2022.

Improve Yolo Bypass Adult Fish Passage

- Action and objectives: Improve adult salmonid and sturgeon passage through the Yolo Bypass – including the Fremont Weir – by modifying or removing barriers. Block straying at Wallace Weir, improve several agricultural road crossings, improve Lisbon Weir, improve existing Fremont Weir fish ladder. Reduce migratory delays and straying of adult salmonids and sturgeon.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from migrating adults to holding adults (CM6). Insufficient adult fish passage at flood bypass weirs combined with attraction flows leads to stranding risk and reduced fish survival,

timing, and condition (H3).

- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action; Required pursuant to the NMFS 2009 biological opinion for the long-term operations of the Central Valley Project and State Water Project; NMFS Species in the Spotlight Winter-run Chinook Salmon Acton Plan.
- Estimated costs: \$30 million.
- Funding source: State and federal water contractors.
- Timing:
 - Wallace Weir: Complete in 2017
 - Fremont Weir Adult Fish Passage: Complete in 2017
 - Lisbon Weir: Complete in 2019

Increase Juvenile Salmonid Access to Yolo Bypass, and Increase Duration and Frequency of Yolo Bypass Floodplain Inundation

- Action and objectives: Increase juvenile salmonid access to the Yolo Bypass and improve adult fish passage by constructing an operable gated structure in the Fremont Weir. Operate facility to increase duration and frequency of Yolo Bypass inundation between November 1 and mid-March. Enhance 17,000 or more acres of floodplain habitat.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the middle Sacramento River to migrating into the Bay-Delta (CM3). Lack of floodplain connectivity limits food availability and production and leads to reduced fish growth and subsequent survival (H4).
- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action; required pursuant to the NMFS 2009 biological opinion for the long-term operations of the Central Valley Project and State Water Project, NMFS Species in the Spotlight Winter-run Chinook Salmon Acton Plan.
- Estimated costs: \$60 million.
- Funding source: State and federal water contractors.
- Timing: Begin construction by 2021.
- 10-year outcome: Construction completed.

Construct Permanent Georgiana Slough Non-Physical Barrier

- Action and objectives: Increase overall through-Delta survival by reducing juvenile salmon entry into the interior Delta.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the Bay-Delta to migrating into the ocean (CM4). Multiple hypothesized

habitat attributes affecting juvenile survival are relevant to this action including predation and competition (H2), outmigration cues (H5), and entrainment risk (H9).

- Consistency with existing priorities: Priority 1 NMFS Recovery Plan action, required pursuant to the NMFS 2009 biological opinion for the long-term operations of the Central Valley Project and State Water Project, NMFS Species in the Spotlight Winter-run Chinook Salmon Action Plan.
- Estimated costs: \$7.6 million to \$12.8 million.
- Funding source: State and federal water contractors.
- Five-year target outcome: Construction completed. Implement effectiveness studies.
- 10-year target outcome: Review effectiveness studies, implement adaptive management as necessary.

Restore Tidal Habitat in the Delta

- Action and objectives: Restore 11,000 acres of tidal habitat for improved rearing and reduced reverse tidal flows in critical migratory channels. Action includes existing U.S. Fish and Wildlife Service biological opinion requirements for tidal habitat restoration, additional California EcoRestore tidal habitat restoration goals, and restoration pursuant to California WaterFix Proposed Action. Potential project delivery mechanisms could include but are not limited to the existing or modified RFP process for tidal habitat restoration.
- Linkage to SAIL Conceptual Models: Winter-run conceptual model of drivers affecting the transition from juvenile rearing in the Bay-Delta to migrating into the ocean (CM4). Multiple hypothesized habitat attributes affecting juvenile survival and growth are relevant to this action including predation and competition (H2), refuge habitat (H3), and food availability and quality (H4).
- Consistency with existing priorities: California EcoRestore, California WaterFix consultation.
- Estimated costs: To be determined.
- Funding source: DWR, Reclamation, state and federal water contractors, others.
- Timing: Completed by 2025.

Additional Actions to Improve Salmon Resiliency in the Sacramento Valley and Beyond

- Continue and enhance various ongoing actions to improve salmon hatchery operations, practices, and fishery activities to benefit wild populations as well as commercial fisheries.
- Evaluate opportunities for improved survival, minimized impingement, and improved salvage operations at state and federal Delta pumping facilities to reduce vulnerabilities related to predation and other related stressors.

- Where applicable, implement policies and state funding guidance to incentivize multi-benefit infrastructure (e.g. flood management) project outcomes that include improved habitat conditions for Central Valley salmonids and other at-risk species.
- Evaluate impacts and mechanisms of predation on rearing and out-migrating juvenile Chinook salmon along the upper, middle, and lower Sacramento River.

Action Effectiveness Monitoring and Adaptive Management

Implementing entities will consult with the Collaborative Science and Adaptive Management Program (CSAMP) to:

- 1) Assist with the research design – including evaluation of the existing scientific basis – and development of a monitoring and evaluation program to assess the performance of selected actions.
- 2) Review proposed research, monitoring plans and evaluations prepared by others as requested for select actions.
- 3) Periodically report back to the CSAMP Policy Group and interested parties on the implementation of all actions.

CSAMP will focus on actions that are contentious and/or involve scientific disagreements regarding effectiveness.

Implementation and Funding Commitments

Except in the event that new science or feasibility assessments support amendments to the Strategy, the State intends to work collaboratively and effectively with its local and federal partners to fully implement these actions by 2027. By 2022, the State will assess progress towards the implementation of each of the Strategy's actions and will assess whether modifications to the Strategy are needed, including the addition of new actions.

The State, working in close coordination with its federal and local agency partners, will further refine and determine feasible and appropriate resources to implement each of the actions included in this Strategy. Examples of potential funding sources include but are not limited to Proposition 1 (2014), State General Fund, private sector (e.g. philanthropic contributions), local public agencies, and the state and federal water contractors. Actions that address existing or future state and federal water project operations will be funded by the state and federal water contractors via DWR and Reclamation. In all cases, funding to support design, permitting, construction, and long-term operations and maintenance will be identified and secured.