

Stressor Table for CV Salmonids to be developed for Each Division

Mark “X” for affected by components of the PA, or N/A (to indicate which ones will be discussed in the section)

Primary Stressors from RP	<i>List of PA components (from deconstructed action figure)</i>						
1. Passage Impediments/Barriers							
2. Harvest/Angling Impacts							
3. Water Temperature							
4. Water Quality							
5. Flow Conditions							
6. Loss of Riparian Habitat and Instream Cover							
7. Loss of Natural River Morphology and Function							
8. Loss of Floodplain Habitat							
9. Loss of Tidal Marsh Habitat							
10. Spawning Habitat Availability							
11. Physical Habitat Alteration							
12. Invasive Species/Food Web Changes							
13. Entrainment/Impingement							
14. Predation							
15. Hatchery Effects							

**This list of 15, were identified as Primary Stressors in the CV Recovery Plan for salmonids. Your analysis will determine which Stressors are affected by the PA (positive/negative), by separating the action into components (using the deconstructed action figure for your division).**

**Under each Stressor below are suggested specific effects to species, which you may discuss in your “Effects of the PA” sections (there are likely many more). For critical habitat analysis, focus on PBFs affected.**

1. Passage Impediments/Barriers
  - Flow/temperature-related barriers to migration
  - Temporary barriers
2. Harvest/Angling Impacts (likely N/A)
3. Water temperature (affected by flows)
  - Egg survival
  - Spawning Adult survival
  - Late season juvenile emigration
  - Pathogen risk
4. Water Quality
  - Contaminants (herbicides in CCF)
  - Flow related
5. Flow Conditions (flood releases, pulse flows)
  - Redd scour

- Redd dewatering
  - Juvenile stranding (fluctuations)
  - Floodplain inundation juvenile growth
  - Travel time affecting survival
  - Routing affecting survival (riverine vs. tidal transition zone, channel junctions [i.e. Georgianna Slough, open DCC gates])
  - Delta survival
  - Upstream survival (Temp related - spawning/egg incubation)
  - Unnatural hydrograph (summer/winter)
6. Riparian vegetation (flows supportive)
    - Geomorphic processes
  7. Loss of Natural River Morphology and Function
    - Timing and magnitude of flows
    - River channelization
  8. Loss of Floodplain Habitat
    - Yolo
  9. Loss of Tidal Marsh Habitat (NA?)
  10. Spawning Habitat Availability
    - Funding source for gravel augmentation
    - Temp/flow-related (ops)
  11. Physical Habitat Alteration (e.g., lack of instream gravel supply, watershed disturbance)
    - Gravel augmentation, restoration?
    - Barrier installations (creating low channel velocity flows in riverine reaches)
  12. Invasive Species/Food Web Changes
    - Food/prey availability
    - Pathogens
  13. Entrainment/Impingement at water diversions
    - Entrainment – unscreened CVP/SWP divisions; Impingement – screened CVP/SWP divisions.
  14. Predation
    - At CVP/SWP structures
    - flow-related
    - routing-related
  15. Hatchery
    - Nimbus hatchery *O. mykiss* spawning with natural-origin steelhead in the American River and in other CV streams

Monitoring, Maintenance, Research Studies, etc – may only describe effects to PBFs?

- Capture and handling