

DEFT Team Recommended Programmatic Actions

Draft

For Discussion Purposes Only

September 18, 1998

- A. Restore a wide range of depleted habitat types for spawning, rearing, holding, and migrating resident and anadromous fish.

Triggers:

- Did we create a wide range of habitat?
- What types and quantity of habitats have we created? And how is the habitat changing over time?
- Did the species we targeted use that habitat?

- B. Manage the volume, durations, and pathways of flow, nutrient inputs, and other factors to support lower trophic level dynamics in the Delta.

Triggers:

- Did abundance and diversity of primary and secondary trophic levels improve?
- Did food uptake (gut fullness) and growth rates increase?

- C. Improve screens, screen unscreened diversions, change diversion locations, and consolidate diversions to improve survival of fish at the point of diversions.

Triggers:

- What fraction of the population is being lost to entrainment?

- D. Change operations to improve survival of fish and to protect and improve appropriate lower level productivity.

Triggers:

- Did we improve survival of fish?
- Did we improve lower level productivity?

- E. Establish appropriate environmental cues to improve survival of migratory fish through the Delta.

Triggers:

- Did migration success increase?

- F. Identify, reduce, eliminate, and/or sequester inputs of toxins throughout the watershed to reduce or eliminate toxicity of water and sediment in Delta channels.

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Triggers:

- Are fish and other aquatic organisms suffering from acute or chronic toxicity?

- G. Reduce loadings and mobilization of contaminants and metals to reduce body burdens of contaminants and metals in higher trophic aquatic organisms as necessary to eliminate human health risks from eating these organisms.

Triggers:

- Are fish and other aquatic organisms safe to eat?
- Are body burdens of toxins decreasing in fish?

- H. Manage exploitation rates and associated mortality of wild stocks of Sacramento and San Joaquin salmon.

Triggers:

- Are exploitation rates and associated mortality satisfactory for wild stocks?
- Are body burdens of toxins decreasing in fish?

- I. Flexible Operations (Bruce Herbold)

DEFT Recommended Triggers for Programmatic Actions

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General: (Mike Fris)

Specific:

A.

B.

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C.

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DEFT Recommended Actions for Stage 1 Implementation

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The DEFT team recommended Stage 1 actions include actions identified in the Common Program, CVPIA program, and actions developed specifically by DEFT. Actions are described below by category.

Structural Changes:

1. A new Hood Diversion Demonstration/Testing Facility on the Sacramento River capable of diverting up to 2,000 cfs water from the Sacramento River to the Mokelumne River.

The facility would have an alignment as defined for Alternatives 2 and 3, so that those options would not be precluded in the future. Screen operation would be under criteria established by NMFS, FWS, and DFG. The facility would be operated for the following purposes:

- i. Test screening efficiency, cleaning and bypass mechanisms (Programmatic Action: D).
- ii. Test upstream passage mechanisms (Programmatic Action: E).
- iii. Enable closing the Delta Cross Channel without compromising interior Delta water quality (Programmatic Action: C).
- iv. Improve Delta water quality (Programmatic Action: F).
- v. Improve cues for migrating fish (Programmatic Action E).

This action also has some potential negative effects:

- exposes young salmon to a new screen system
- may impair cues of migrating fish
- may block or impair upstream passage of migrating fish

2. A Barrier at the Head-of-Old-River. The facility will be used for the following purposes:

- i. Improve San Joaquin salmon survival (Programmatic Action E).
- ii. Improve water quality in lower San Joaquin River below the Barrier (Programmatic Action F).

This action also has some potential negative effects:

- May impair upstream migration of San Joaquin salmon in the fall
- May increase entrainment of organisms living in the central and southern Delta

3. A new Tracy Demonstration/Testing Fish Screen and Handling facility capable of

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screening 2,500 cfs at 0.2 fps through-screen velocity and 5,000 cfs at 0.4 fps through-screen velocity. Screen operation would be under criteria established by NMFS, FWS, and DFG. The facility would be operated for the following purposes:

- i. Will improve survival of salvaged fish at the Tracy pumping plant (Programmatic Action C).
- ii. Will reduce entrainment at the Tracy pumping plant (Programmatic Action C).
- iii. Will provide valuable information for design of future fish facilities.

This action also has some potential negative effects:

- There may be some stranded costs if the point of diversion is moved sometime in the future.

4. A new Clifton Court Screen and Handling facility at the northeast entrance to Clifton Court Forebay capable of screening 6,000 cfs at 0.2 fps through-screen velocity and 12,000 cfs at 0.4 fps through-screen. Screen operation would be under criteria established by NMFS, FWS, and DFG. There two primary options to consider:

- Design the screens and low head pumping facilities to screen 6,000 cfs at 0.2 cfs approach velocity. For pumping above 6,000 cfs use a combination of the screens and the existing intake gates. Operate both the salvage facilities at the new screens and at Skinner.
- Design the screens with the capability to operate at 0.2 to 0.4 fps approach velocity and the low head pump station at 10,300 cfs. To achieve the 10,300 cfs capacity through the new screens at particular times, the approach velocity would be increased to accommodate the total flow (approach velocity around .33 cfs).

DEFT recommends that the facility be designed not to preclude either option and to continue with the research at UC Davis Treadmill and the Research work at Tracy to help guide the use of flexible criteria. The facility would be operated for the following purposes:

- i. Improve survival of fish in the south Delta near the State export pumping plant (Programmatic Action D).
- ii. Reduce predation of fish in Clifton Court Forebay (Programmatic Action D).
- iii. Provide constant export rates (less gulping) to reduce disruption of fish migrations (Programmatic Action E) and reduce exposure of fish residing in or migrating through the central and south Delta to entrainment (Programmatic Action C).

This action also has some potential negative effects:

- There may be conflicts with higher pumping rates (e.g., over pumping screens or

exporting water that is not first screened).

Operational Changes

Suggested Changes (9/17/98) to be fleshed out by Bruce.

Manage export rates to reduce diversion effects (for example lower rates when San Joaquin River flows are low). The export rates would be altered for the following purposes:

Seasonally:

- Increase rate for environment purposes.
- More restrictive at times for environment.
- Less restrictive at times for environment.
- Shift high pumping to seasons of high flows.
- Shift high pumping to seasons of low fish sensitivity

Real-Time Flexibility-Monitoring Response:

- Increase rate for environment purposes.
- More restrictive at times for environment.
- Less restrictive at times for environment.
- Shift high pumping to periods of high flows.
- Shift high pumping to periods of low fish sensitivity

Greater flexibility may be possible through identification of water to be committed to an environmental water account.

5. Allow higher or lower export rates and changes to export-to-inflow ratios. Shift pumping rates seasonally and on a real-time bases such as reducing pumping when inflow is low or fish are present in large numbers, or increasing pumping when outflow is high or few fish are present in the south Delta. Greater flexibility may be possible through identification of water committed to environmental actions that could be placed in an environmental account. The export rates would be altered for the following purposes:

- iv. Reduce entrainment (Programmatic Action: C).
- v. Improve foodweb productivity (Programmatic Action: B).
- vi. Protect fish migrating through the Delta (Programmatic Action E).

This action also has some potential negative effects:

- Impacts may shift to other species or life stages.
- May locally impact water quality.

Elise how do we want to change item 6.

Modify flows (volume, duration, frequency) to improve habitat (e.g. floodplain innundation, low salinity habitat location). Flows would be altered for the following purposes:

- To improve cues
- To improve water quality

6. Modify flow volumes, distributions, and pathways. Flows may be changed by altering inflows, exports, barriers (e.g., DCC, Head of Old River barrier, Montezuma Slough salinity barrier, etc.). Flow would be altered for the following purposes:

- Reduce entrainment (Programmatic Action: C).
- Improve foodweb productivity (Programmatic Action: B).
- Protect fish migrating through the Delta (Programmatic Action E).
- Improve fish habitat - (e.g., alter salinity, water temperature, inundate floodplain) (Programmatic Action A).
- Improve water quality - (e.g. reduce concentrations of toxins, areas of low dissolved oxygen) (Programmatic Action F).

This action also has some potential negative effects:

- Impacts (such as water temperature) may shift to other species or life stages either in-Delta or upstream.
- May locally impact water quality.

Habitat Actions

The following are specific Stage 1 habitat restoration actions that address Programmatic Action A.

- Restore tidal freshwater, riparian and seasonal and permanent wetland habitat in the area of the proposed Yolo Bypass National Wildlife Refuge including Prospect, Liberty, and Little Holland island-tracts, and tidal portions of the Yolo Bypass.
- Create large areas of shallow tidal wetland habitat in the vicinity of Suisun Bay, Sherman Lake, and Big Break.

9. Restore and rehabilitate riparian and SRA habitat along all practicable reaches of major fish migration corridors including the Sacramento River, the San Joaquin River, Georgianna Slough, and Steamboat Slough.
10. Restore and rehabilitate riparian, SRA, tidal freshwater, and seasonal and permanent wetland habitats along the North and South Forks of the Mokelumne (including dead-end sloughs of the Eastern Delta) to bolster migration and rearing of salmon from the Mokelumne and Cosumnes rivers.
11. Restore the habitat corridor of the lower Cosumnes and Mokelumne rivers within and above the Delta including floodplain, riparian, SRA, and wetland habitats to bolster salmon populations in these rivers.
12. Restore a large area of tidal freshwater, riparian, and marsh habitat in the South Delta as a pilot project to test concept of “interceptor habitat”.
13. Restore tidal freshwater, riparian, and marsh habitats along the lower San Joaquin River between Stockton and Mossdale as a pilot project to test tidal river floodplain restoration.
14. Restore freshwater, riparian, SRA, and marsh habitats in the floodplain of the Sacramento River below Sacramento as a pilot project.
15. Restore Frank’s Tract’s fish habitat values including creation of a broad expanse of shallow water and wetland habitats within the tract.
16. Evaluate habitat restoration options in the non-tidal portion of the Yolo Bypass that are consistent with its present flood control and agricultural uses.

Harvest Actions

The following are specific Stage 1 habitat restoration actions that address Programmatic Action H.

17. Explore “bubble fisheries” to protect weak stocks. Requires unique genetic markers to identify weaker wild stocks.
18. Evaluate the feasibility of restricting harvests of weaker stocks by expanding existing restrictions in fishing times and locations for winter run salmon to other weaker stocks including spring-run and San Joaquin fall-run. Requires expanded tagging and recovery program, cwt tag recovery data analysis, and DNA microsatellite marker analysis.
19. Evaluate the feasibility of selective fisheries to protect weaker stocks by evaluating marking hatchery fish, restrictions on fishing methods that have high hooking mortality

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rates, and abundance of hatchery fish at times and locations in coastal and inland fisheries. Requires expanded tagging and recovery program, cwt tag recovery data analysis, and DNA microsatellite marker analysis.

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