

Comments on the 24 September internal draft of the DEFT Evaluation of a Revised Through-Delta Scenario from the salmon team (compiled by Halupka)

Executive overview

Page ii

2nd ¶, end of first sentence: The policy group direction included the proviso that the DEFT group accomplish the task of improving the through-Delta alternative “while considering” water costs. This was an important proviso that played a central role in our deliberations and should be mentioned in this ¶.

3rd ¶, first sentence; delete repetitive “that would improve.”
3rd ¶, second sentence; the evaluation was done by the species subteams, not the DEFT per se.
3rd ¶ general comment on consistency. The 1st sentence refers to the DEFT “array of actions” which is later referred to as a “scenario.” The term “scenario” probably should be used from the outset.

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¶ beginning “In addition...”
End of 2nd sentence; replace “comparison for alternatives” with “comparison of alternatives.”
Middle of last sentence: replace “then” with “than.”

After the list of NoName action, I recommend adding a heading such as “Scenario assessment by species teams” to highlight this segment.

¶ on salmon team results. I do not feel this ¶ adequately captures the central points of our evaluation. I suggest the following rewrite, which has been reviewed by other members of the salmon team.

“The salmon team evaluated the contribution of the new scenario to in-Delta survival of Sacramento River, San Joaquin River, and Eastside tributaries, as well as the effects of proposed upstream and harvest-management actions. Compared to Alternative 1, the salmon team’s assessment of the proposed scenario indicated relatively little change in Delta conditions for Sacramento salmon, and moderate improvements for San Joaquin and Eastside tributaries. Improvements were attributed to reduced exports and improved flow distribution in the Delta, particularly for San Joaquin salmon. The experimental diversion at Hood has opposite net effects on different populations. San Joaquin salmon benefit from improved westward flow. Sacramento and Eastside tributary salmon are adversely affected due to exposure to the diversion screen (Sacramento fish), or potential displacement toward the export pumps resulting from outflow of the Hood diversion (Eastside tributary salmon). Given the experimental nature of the facility at Hood, and the potential negative impacts on specific fishery resources, it is imperative that a comprehensive monitoring effort, focused on determining the impacts of the Hood facility on Sacramento and Eastside tributary salmon, be implemented coincident with the construction of this facility.

The effects of restoration actions upstream of the Delta were evaluated for each race of salmon. The team concluded that 1) full implementation of the CALFED Ecosystem Restoration Program had a high probability of creating upstream conditions sufficient to support salmon recovery, except for fall-run salmon in the San Joaquin system, and 2) many upstream benefits of the program would be due to actions taken subsequent to Stage 1.

Upstream and harvest-management actions, that are the same across all alternatives and the new scenario, provided a larger proportion of total benefits of the CALFED program than Delta actions. The combined evaluation of all components over the life of the CALFED program suggests a moderate likelihood of achieving program goals for all runs of salmon, with San Joaquin fall run having slightly lower likelihood of successful restoration than the other runs.”

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The following comments are concerned with specifics of content and wording, not the major structural revisions discussed when this draft was passed out at the 24 Sep DEFT meeting.

Approach ¶, next to last sentence. The habitat team designed a Delta habitat plan, but they did not have an evaluative function. Upstream actions were evaluated by the species teams, most comprehensively by the salmon team.

Last sentence. The approach described in this paragraph deals with Delta evaluation, but does not deal with issues related to upstream and harvest-management evaluation. I suggest including separate paragraphs that briefly outline 1) how the harvest-management team accomplished their task, and 2) how the salmon team dealt with upstream actions and harvest management. This second paragraph could be done largely through reference to the salmon appendix, because the other species teams did not delve into either of these issues in much detail.

Discriminating factors

Introductory line; please make it clear that these factors were used for evaluating the in-Delta effects of the new scenario. Other factors were employed in the evaluation of harvest and upstream actions.

Cross-delta flow, last line, suggested correction: “as well as the amount of high quality (low salt content) Sacramento River water entering the Delta.”

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Species team assessments, last sentence; “on” should be “one”

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1st sentence. As written the sentence implies that several “arrays of actions” for the Delta were evaluated. Only scenario A was evaluated.

Subsequent paragraphs; the phrase “looked into” sounds too informal; perhaps “developed” would work better. Again, the harvest-management team had an evaluative function, but the habitat team dealt mostly with design.

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First ¶, next to last sentence; I do not understand what this sentence means. Maybe an example would help. In most cases making assumptions allows you to address issues that cannot be explicitly addressed because data are limited or technical information is incomplete. If the sentence stays, insert “be” in “to ___ made.”

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First ¶ heading and text. Delete “recommended”

Structural Changes

3. A new Hood Diversion Demonstration/Testing Facility on the Sacramento River capable of diverting up to 2,000 cfs 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. A comprehensive monitoring program to address the potential negative impacts identified below needs to be implemented coincidentally with the operation of the test facility. The facility would be operated for the following purposes:

- I. Test screening efficiency, cleaning, and bypass mechanisms.
- ii. Test upstream passage mechanisms.
- iii. Test impacts on migration through the delta.
- iv. Enable closing the Delta Cross Channel without compromising interior Delta water quality.
- V. Improve Delta water quality.
- Vi. Improve cues for migrating fish.

This action also has some potential negative effects:

- Exposes young salmon to new screen system.
- May impair cues of migrating fish.
- May block or impair upstream passage of migrating fish.
- Depending upon the location of the conveyance to the Mokelumne, may create flow conditions that would increase the exposure of Eastside tributary (Mokelumne) salmon to the export pumps.

8. Modify flow volumes, distributions, frequency, and pathways.

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.
- May force salmon fry out of the tributaries.
- May attract striped bass into the salmon fry upstream rearing habitat.

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Salmon team evaluation.

See my rewrite (above) of the paragraph for the Executive Overview.

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I am unclear about how the particular issues bulleted here were selected. Were these issues highlighted by Management or Policy? These do not strike me as “primary questions” raised by our previous analysis. What follows is a revised list of “primary issues.” I think the point of this segment was to illustrate the degree to which evaluation of Scenario A benefitted from improved resolution and lessons learned in the initial process. The list presented here does not provide a very positive view. Nonetheless, I think our efforts to evaluate upstream and harvest actions represented a major step forward.

1) *Difficulty in evaluation of habitat restoration benefits to rearing and outmigrating salmon due to a) lack of siting specificity and low implementation certainty, b) uncertainty about the relative merits of restored habitat and restored hydrodynamics, and c) concern about the potential for introduced predators to benefit from restored habitat.*

The habitat restoration plan proposed for the new scenario improves the level of detail about preferred siting, but uncertainty remains about the other issues.

2) *San Joaquin and Eastside tributary salmon face greater risks associated with water exports from the south Delta than Sacramento salmon, but less protective restoration activities are proposed for the San Joaquin basin.*

Conflicting hypotheses about the merit of south-Delta habitat restoration could be addressed through an adaptive management experiment proposed by the habitat team. Until such an experiment is conducted, the working hypothesis of the salmon team remains that habitat creation in the south Delta is unlikely to reduce entrainment substantially.

3) *Differences in interior-Delta survival drive evaluation scores of alternatives, but there is a general lack of information regarding specific causes of increased mortality of smolts in the central Delta.*

Long-term research offers some potential for addressing this difficult issue. However, sources of Delta mortality are likely to remain uncertain into the foreseeable future.

4) *Differences in flow below a Hood diversion drive evaluation of alternatives for Sacramento salmon (along with interior-Delta survival). However, considerable uncertainty surrounds the relationship between mainstem flows in the Sacramento River below a Hood diversion and survival of outmigrating fish that remain in the mainstem.*

The new scenario reduces the volume of water diverted at Hood, reducing the importance of this effect, and provides an opportunity to learn more about the hypothesized effects of this point of diversion.

- 5) *Delta Cross Channel gate closure to improve survival of salmon emigrating down the Sacramento River will continue to be in conflict with water quality objectives during low-flow periods.*

Including the small scale Hood diversion in the new scenario increases the likelihood that water quality conflicts would not inhibit closure of the DCC when needed to protect fish. For the Eastside tributaries, it will be important to locate the conveyance from the small scale diversion at Hood so it does not force more salmon into the Mokelumne South fork, where they would be more vulnerable to entrainment at the export pumps.

- 6) *Effects of the Hood diversion on upstream migrants is adverse for Sacramento River and Eastside tributary salmon, but the severity of this effect may be more easily ameliorated for salmon than for other anadromous species.*

The new scenario, with a small-scale version of the Hood diversion, provides an opportunity to address this issue in an experimental setting.

- 7) *Lack of specificity regarding operational criteria for new structures renders evaluation of effects difficult.*

Considerable effort was expended devising, modeling, and evaluating specific operational criteria in the new scenario. However, operation of the proposed Hood diversion was not modeled. Time constraints permitted evaluation of only one operational scenario, rather than bookends and a suite of intermediate scenarios.

- 8) *Inability to assess adequately the effects of the CALFED Common Programs (especially Levee System Integrity, Water Quality, Water Transfers) on overall effects in the Delta. This is particularly true of changes in contaminant loads on water quality.*

No substantive progress was made on this issue during evaluation of the new scenario.

- 9) *Potentially important biological variation was hidden or lost in our analysis due to a) reliance on monthly time step simulation models, b) requests to distill information down to unreasonably simplistic summaries, and c) insufficient time to adequately review variation in effects among water-year types.*

All of these issues remain, or were exacerbated, during evaluation of the new scenario.

- 10) *Aggregation of all Sacramento salmon races in the evaluation may obscure important differences among races regarding program effects.*

This issue remains relevant regarding evaluation of the new scenario in the Delta. Evaluation of upstream actions was race-specific.

- 11) *The effects of upstream and downstream habitat restoration and Common Program actions relative to in-Delta actions was not assessed, but may differ substantially among races.*

This issue was addressed during evaluation of the new scenario through a combination of race-specific evaluation of upstream actions, and inclusion of explicit weighting factors when combining upstream, Delta, and harvest-management actions.