HANDOUT #3

DRAFT
DRERIP Coarse-Level Evaluation Summary: Deep Water Ship Channel Floodplain Restoration

Highlighted Text = Evaluator comments

Evaluation Date: July 29, 2008

Coarse-Level Evaluators:

Dennis McEwan—DFG	Bill Harrell—DWR
Pete Rhoads—Met	Jim White—DFG
Dan Kratville—DFG	Tim Smith—DWR
Neil Clipperton—DFG	Pete Rawlings—SAIC
Rick Wilder—SAIC	

Action Description

Create a new flood bypass that provides up to 3800 acres of inundated floodplain habitat adjacent to and east of the Sacramento Deep Water Ship Channel (DWSC) and that floods in 30% of years during late winter to early spring for 45 consecutive days.

Approach: The approach includes:

1. Lower 500 linear feet of the west levee on the Sacramento River located upstream of Freeport near the Pocket area (see Attachment) to an elevation of 9 feet (NAVD88) to allow at least 3000 cfs (triggered by the Freeport gage) and up to 5000 cfs under managed flooding into the DWSC Bypass for 45 consecutive days in 30% of years during late winter to early spring (see Attachment B).
   - Would allow additional flood bypass protection for the Pocket area.
   - Floodplain would be approximately 16 miles long and 2000 feet wide (3800 acres).
   - Freeport, Clarksburg, and other areas downstream to Rio Vista.
   - Preliminary hydrologic modeling predicts that 3000 cfs would inundate approximately 2560 acres of the DSWC floodplain to a mean depth of 2 feet, with a mean water velocity of 1.1 ft/sec. A flow of 5000 cfs would flood the entire bypass (3800 acres) with similar velocity and depth.

Note: This action is submitted for coarse-level evaluation of its likely biological performance in achieving BDCP conservation objectives. This action has not yet been evaluated for its financial or institutional feasibility.

2. Install an operable bypass diversion structure where the levee was lowered. The structure would be designed to accommodate upstream passage of covered species. Further, the structure will be operated to optimize timing of floodplain inundation to maximize benefits native species and minimize benefits to non-native species.

3. Construct a new levee adjacent to and east of the DWSC floodplain to confine bypass flows between the DWSC and the new levee.

4. Modify landform to prevent stranding of covered fish species.

5. Remove levees between Miner Slough and Prospect Island to provide for tidal connectivity at the south end of the DWSC floodplain.

6. The new floodplain could be vegetated with riparian vegetation to provide structure for a fish refuge and potentially slow water flow if necessary.

Outcomes: Expected outcomes of this action include:

1. Increased frequency and success of Sacramento splittail spawning.

2. Improved growth rate of larval and juvenile splittail and Chinook salmon (winter-, spring-, and fall-run).

3. Improved survival of larval and juvenile splittail and Chinook salmon (winter-, spring-, and fall-run). Survival of steelhead—if acts as a better corridor for steelhead than existing channels—reduced entrainment, predation exposure.

4. Increased primary and secondary production in the DWSC Bypass available to larval and juvenile splittail and Chinook salmon (winter-, spring-, and fall-run) that are in the DWSC Bypass.

5. Increased export of primary and secondary production to the Delta ecosystem downstream of the DWSC Bypass available to delta smelt, longfin smelt, sturgeon, splittail, and fry and juvenile salmonids in the Delta downstream of the DWSC Bypass.

6. Provide a high quality and reliable migratory pathway for improved passage for juvenile and adult fish during inundation periods.

Outcome Evaluation

Chironmid production high in Yolo Bypass adjacent to this site. In Yolo, exported and picked up in screw traps downstream. Salmonid stomachs full (Harrell, pers. Com)

Pdf pg 18 (xvii), for steelhead on floodplains, documentation in CV is lacking—(Williams 2006)—Sommer et.al., may use Sutter Bypass (pg. 11), use Sutter bypass (pg 11). (pg 13, 14 is more)

1. Increased frequency and success of Sacramento splittail spawning

Mag: 3: Cert. 4 = ***High Worth, Medium Risk***

2. Improved growth rate and survival oof larval and juvenile splittail and Chinook salmon (winter-, spring-, and fall-run).

Mag 3; cert 2 Chinook = ***Medium Worth, High Risk***

3. Improved survival of larval and juvenile splittail and Chinook salmon (winter-, spring-, and fall-run).

Mag-4, Cert-3: Chinook = ***High Worth, High Risk***

4. Increased primary and secondary production available to larval and juvenile and adult splittail, potentially ststeelhead, and Chinook salmon (winter-, spring-, and fall-run), and possibly delta smelt (they are in toe drain spawning).

Mag-3, Cert-2: Chinook = ***Medium Worth, High Risk***

5. Increased export of primary and secondary production to the Delta ecosystem available to delta smelt, longfin smelt, sturgeon, splittail, and fry and juvenile salmonids in the Delta.

Mag 2, Cert 3 = ***Medium Worth, Medium Risk***

6. Provide a high quality and reliable migratory pathway for improved passage for juvenile and adult fish during inundation periods.—Inadvertently not evaluated.

Additional Positive Outcomes

1. Possible benefits to juvenile sturgeon if get on floodplains (Zoltan)—Pg 20 green sturgeon, says unlikely used floodplains.

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2. Longfin smelt adults have been captured in Yolo—spawned (Harrell).—cld happen here, but likely rare

3. Food for longfin and delta smelt (stressor tables)—Corbula may eliminate benefits

4. American/Feather River salmonids may benefit with additional corridor—value of Yolo for these fish is likely low

Negative Outcomes

1. Potential for transport of selenium into floodplain from splittail

2. Flows may attract adult salmonids into bypass, but may not be sufficient to attract over the weir, so they waste energy coming back down stream.

3. Methylation of mercury

4. Potential for initial (at least) pulse of contaminants from newly inundated farm fields

5. Increased temperatures could cause delta smelt issues(?) uncertain. ET would reduce temps to compensate (?)

Other Comments

1. Head differential is much greater coming into DWSC—design issue, can fish be effectively moved into the bypass—need to pass fish upstream as well. Ability to get juveniles into bypass with head differential w/o harming fish if velocities are too great.

2. May not get upstream attraction flows because water dissipates in marsh.

3. Design opportunity to allow for riparian veg and accompanying hydrodynamic diversity.

4. Concern about how much would be floodplain vs. subtidal.

5. Unsure of cost effectiveness

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