

Date: May 12, 2010
To: Delta Stewardship Council
From: Dr. Russ Brown, ICF International

I would like to submit the Delta Corridors Plan as a coordinated near-term action for the Interim Delta Plan. The Delta Corridors Plan provides an integrated set of near-term channel modifications that have both water supply and ecosystem protection benefits. Two reports have been prepared by ICF International (Jones & Stokes) to evaluate the tidal hydraulics and salinity benefits of the DC Plan. The likely fish benefits are generally described, but should be further compared with existing conditions and with proposed long-term BDCP measures. These studies were funded by Central Delta Water Agency and South Delta Water Agency and the Delta Corridors Plan is generally supported by other Delta landowners and stakeholders. For a variety of reasons, the BDCP steering committee has not fully considered the Delta Corridors Plan features and benefits. I urge you to give the Delta Corridors Plan your full consideration. Here is a short summary of the basic features and potential near-term benefits of the Delta Corridors Plan. The answers to your general questions about recommended actions for the Interim Delta Plan follow. A copy of the most recent evaluation report "The Delta Corridors Plan and Its Benefits" is attached for possible posting on your website, to allow interested Delta stakeholders to further evaluate this plan.

- 1) The basic idea of this Delta habitat conservation strategy is to separate the San Joaquin River (SJR)-estuary corridor to restore natural functions of the river-estuary habitat and eliminate all entrainment of SJR fish (fall-run and future spring-run Chinook, splittail, and delta smelt migrating upstream from the estuary).
- 2) All migrating Sacramento River fish would also be protected from central Delta predation losses by two large fish screens at the Delta Cross Channel and at Georgiana Slough near Walnut Grove. The DCC would be opened to allow full exports to be diverted from the Sacramento River without any fish being diverted from their migration pathway.
- 3) The efficiency (i.e., performance) of the CVP and SWP fish salvage facilities could be improved because the majority of fish and debris (i.e., water hyacinth) originating from the SJR will be separated from the salvage facilities, and the bypass flow from the primary louvers would be released (without holding or trucking) to the Old River-estuary corridor.
- 4) The Delta channels would be divided with four barriers between Old River and Middle River to separate the water supply corridor on Middle River from the SJR-estuary corridor on Old River. Following a major seismic event, repairing this 50-mile section of levees would allow the Delta to be more rapidly flushed and exports to resume (within a few months).
- 5) The SJR salt load (from agricultural drainage) would no longer be pumped into the CVP and SWP exports. The annual salt load of the CVP and SWP exports (of 5 maf) would be reduced by more than 25% (by about 400,000 tons/year).
- 6) The water supply reductions during the 1-month VAMP period (or the 2-month NMFS BO period) would no longer be necessary to reduce entrainment of SJR Chinook, steelhead and delta smelt.
- 7) A major fraction (40%) of the existing estuarine habitat (50,000 acres upstream of Chipps Island) located along the lower SJR (confluence to Jersey Point), in Franks Tract, and in Old River would be fully separated from export entrainment risk, increasing the fully protected freshwater habitat available for delta smelt and longfin smelt spawning and rearing.

The Delta Corridors Plan

Who (which agencies and/or entities are involved - and how are they involved)?

This idea was originally developed by Dr. Russ Brown, a water resources engineer working for Jones & Stokes (now ICF International). This idea was proposed to the Delta Vision Stakeholders and Blue Ribbon Panel in 2007 and was also introduced to BDCP Steering Committee members in 2008. South Delta Water Agency and Central Delta Water Agency have funded two DSM2 modeling studies to determine the tidal hydraulic feasibility and salinity benefits, with a discussion of potential fish benefits. Both of these studies are available from the Delta Corridors Website at www.Deltacorridors.com.

What (describe project or recommendation)?

The Delta Corridors Plan (DC Plan) would divide the Delta into a “two way street” to allow the water supply corridor from the Sacramento River to be separated from the San Joaquin River (SJR) corridor down Old River to the estuary. The DC Plan would provide three basic benefits: fish protection from entrainment at the CVP and SWP exports, salinity reduction in the Delta and in the exports, and increased water supply because fish would be separated from the exports and pumping would not need to be reduced for fish protection (during VAMP and reverse OMR restrictions). These are substantial and important benefits that will improve fish migration, reduce fish entrainment, reduce in-Delta and export salinity, and increase water supply reliability.

The DC Plan would eliminate most of the “recycle” of SJR salt that is currently pumped back to irrigated land along the Delta-Mendota Canal (DMC), and allow most of the SJR and Delta agricultural drainage salt to reach the Ocean. The export salinity would be reduced by about 25%. The separation of the Middle River and Old River channels would reduce the threat of seawater intrusion following a levee failure because once the levees separating Old and Middle River were repaired, the Delta could be flushed and exports resumed.

All of the San Joaquin River fish would be completely separated from entrainment (i.e., salvage and loss) at the CVP and SWP export pumps. The Mokelumne River channel would be connected (through Middle and Snodgrass Sloughs) to the Sacramento River upstream of Walnut Grove. All of the Sacramento River and Mokelumne River migrating fish would be separated from the water supply diversions at the Delta Cross Channel (DCC) and Georgiana Slough with large in-river fish screens. About 20,000 acres of fish habitat along the SJR and Old River estuary corridor (40% of existing Delta channel habitat) would be protected from entrainment risk at the CVP and SWP export pumps.

The DC Plan would allow increased CVP and SWP exports that are currently limited for fish protection. By separating the migrating fish from entrainment and separating most of the existing Delta fish habitat from entrainment risk at the CVP and SWP export pumps, the DC Plan would allow winter and spring export pumping (during VAMP or reverse OMR restrictions) to be increased to the existing D-1641 objectives (required outflow and export/inflow ratio).

When (describe the timeframe to begin and how long to implement)?

Portions of the Delta Corridors Plan could be constructed within a year and tested as a demonstration project. The full project features could be completed within 3 years. The main project features are channel barriers and dividing walls with small boat locks and a floodgates. These facilities can be constructed using concrete pilings and modular panels, much like the railroad bridge/trestle in Santa Fe Cut between Woodward and Bacon Islands. A portion (1,000 feet) of the Georgiana Slough fish screen could be constructed and tested with different screen elements, cleaning systems and fish behavior barriers to minimize fish damage and loss. The Old River “crossing” at Victoria Canal could be constructed and demonstration testing at a combined pumping of about 5,000 cfs could be conducted without the 10 million yards of dredging that would be necessary in Victoria Canal and Middle River for full export pumping

capacity. The temporary barrier at the head of Old River could be placed in the SJR channel so this portion of the Delta Corridors Plan could be demonstrated during VAMP 2011 or 2012. The Mokelumne connection to the Sacramento River to improve outmigration survival of Chinook and steelhead could be demonstrated during VAMP 2011 (See attached proposal).

Priority (prioritize among your projects and recommendations)?

This is an integrated and coordinated plan for modifying the Delta channels. This is the quickest possible way to see a change in the survival of fish migrating through the Delta and a reduction in fish entrainment and loss at the CVP and SWP exports. An immediate water supply benefit would be achieved by eliminating the VAMP and OMR restrictions. This should be given a very high priority by the Council.

Who pays (how will the recommendation or project be paid for)?

Because the estimated costs for the Delta Corridors Plan are moderate (\$500 million to 1 billion), the new Delta Corridors facilities could be paid for through existing water bonds or BDCP funding mechanisms. Dredging costs could be included in a comprehensive Delta levee strengthening program using the approved flood protection bonds. The demonstration costs would likely be about \$50-100 million.

How will the performance be measured (what does success look like)?

The performance can be measured with established fish and water quality monitoring programs in the Delta. Coded wire and/or acoustic fish tags can be used to track the survival of SJR fish into Franks Tract, past Jersey Point and Antioch to Chipps Island. Coded wire and/or acoustic fish tags can be used together with underwater cameras to track survival of Sacramento and Mokelumne fish migrating past the Georgiana Slough fish screens. The improved performance (i.e. fish survival) at the Tracy and Skinner fish facilities can be measured with the reduced debris loads and lower fish numbers. Special fish studies should also be conducted to confirm the fish benefits of these new Delta flow pathways.

Consequences (what happens if the project or recommendation is not implemented, or fails to produce expected outcome)?

The Delta Corridors facilities are completely reversible. If the anticipated benefits are not observed and measured, the barriers and gates and walls and the Old River "crossing" over Victoria Canal can be removed and the existing Delta conditions returned. If the Delta Corridors Plan is not demonstrated and tested as part of the Interim Delta Plan, we will miss an opportunity to increase the survival of migrating fish, reduce the entrainment of estuarine fish at the exports, and reduce the recycle of 1,000 tons/day of San Joaquin River drainage salt. The risk of failure is much less than the likely success and benefits.

Relationship to other projects in the Delta?

The Delta Corridors Plan is compatible with most other Delta projects. It is compatible with the CCWD Alternative Intake on Victoria Canal. It is compatible with the Paradise Cut floodplain restoration. It requires no agricultural lands to be purchased (i.e., restored) as aquatic habitat or wetlands. It provides a separation of most (but not Sacramento's) treated wastewater discharges from our drinking water supply. The Stockton deep water ship channel low dissolved oxygen conditions would be eliminated because Stockton's wastewater would be tidally transported south to the head of Old River and be pumped into the Old River-estuary corridor. Easy to operate boat locks would allow quick access to all Delta channels for recreational boating and fishing. Once constructed, there are no moving parts in the Delta Corridors Plan. Fish would be physically separated with gates and barriers (SJR) or screens (Sacramento) from the export pumping facilities. No real-time fish monitoring would be required for tidal gate operations. The Delta Corridors Plan would allow everyone in the Delta to continue whatever they are doing, while greatly improving the survival of migrating fish and reducing the entrainment and loss of estuarine and pelagic fish.