

From: Ken Trott [ktrott@cdfa.ca.gov]  
Sent: Tuesday, October 03, 2006 11:33 AM  
To: Svetich, Ralph  
Subject: Comments on ITF Papers

Attachments: Ken Trott.vcf

Ralph:

My apologies for getting these comments to you a day late; just ran out of time yesterday. I was able to review most of the ITFs, and have the following comments on four additional papers for your/URS' consideration.

#### Flood Hazard Analysis

On page 5, third paragraph in section 2.2.1 (Data gathering, Analysis and Compilation), the paper discusses changes in the watershed that could change historic inflows into the Delta. New dams are noted as one such change. The analytical team may also want to consider the effects on inflow of additional impervious surfaces in the watershed from urbanization and other significant changes in vegetative cover that could affect infiltration. A possible approach for capturing the urbanization information, at least for the past twenty years, is the California Department of Conservation's GIS-based Important Farmland Map series, which maps urbanization based on a defined density. DWR's own land use mapping, I believe, also captures changes in land use, including urbanization. Further, the Department of Forestry and Fire Protection's FRRAP program may have large scale land use change information for much of the watershed, including urbanization and other vegetative cover changes.

#### Environmental Risk Assessment

1. On page 26, the paper lists species that will be selected for analysis of this risk. It is likely that the Sandhill Crane will be one of the wildlife species analyzed. While, the results of the research will be too late for this study, you may find it useful to know that the USGS has proposed a study of crane habitat in the Delta that has been recommended for funding by the Ecosystem Restoration Program of CALFED under its proposal solicitation program for projects that "assist farmers in integrating agricultural activities with ecosystem restoration." The study, "Sandhill Crane Use of Agricultural lands in the Sacramento-San Joaquin Delta Region," should provide valuable information on both the impacts of levee failure on the crane's habitat, as well as on recommendations for mitigation and response. This proposal, if granted final approval by the Bay Delta Authority and the Department of Fish and Game, builds on earlier, unpublished monitoring of Sandhill Crane on Staten Island by Ducks Unlimited that may be more useful for your immediate work.

2. Related to the first comment, the assessment of adverse changes in habitat conditions due to levee failure should include the wildlife benefits of agricultural landscapes for terrestrial species that would be lost with the flooding of an agricultural island. The USDA's Natural Resources Conservation Service offers a number of programs for private

landowners that improve habitat on agricultural lands. The NRCS, as well as USFWS and CDF&G ? agencies that also offer such programs ? may have at least anecdotal information on wildlife use of various agricultural landscapes.

3. The paper notes that it will not be assessing the introductions of non-native invasive species to the Delta as part of this risk assessment. It is not clear whether this is a reference to the future introduction of new invasive species, or the spread of existing invasive species to new areas of the Delta. We would suggest, to the extent that data is available, that the risk of levee failure from the spread of existing aquatic invasive plant and animal species to new areas of the Delta be considered in the analysis. As with the effects of levee failure on native habitat, a levee failure could have both adverse and beneficial effects on invasive species. Changes in water quality could limit certain species, while the potentially dramatic influx of water up the Delta as a result of a "big gulp" could spread invasive species up the Delta. Information on the existing extent of invasive species is limited, but this department, as well as the Departments of Fish and Game and Boating and Waterways, and others, have information on selected species.

4. On page 36 and 37, information requirements are discussed. We recommend that the analytical team include interviews with both public and private land managers (including growers); i.e., people who are daily interacting with the landscape. Where information about wildlife habitat and the presence of invasive species is lacking, land managers may be able to contribute anecdotal information of value to your analysis.

Upstream Reservoir Management/Delta Water Operations/Delta Island Water Use 1. Under section 3.0, on page 8, water quality risk issues that will be considered are discussed. Salinity, DOC, DO, temperature and toxic contaminants are listed as water quality constituents that will be considered. Depending on the nature of the levee failure, another constituent that may be of concern could be microbial contamination from wildlife and livestock carcasses if levee failure results in animal mortality before a response can rescue them.

2. On page 19, under "WAM Context and Input Requirements," an additional factor that may be important as a limiting factor for rate of island flooding and pump out is the nature of the agricultural crop being grown on an agricultural island. In other words, tree and vine crops may contribute a roughness/impedance factor that slows in- and out-flow to and from an island, and perhaps reduces scour. The trees and vines may also contribute debris that could impede pumping and increase the cost and time of clean-up after pump-out.

3. As you consider availability of upstream reservoir supplies for flushing flows, will prior commitments under water transfer agreements be considered? Water transfers from north to south of the Delta could be considered both an economic consequence of a levee failure, depending on the length of time that exports from the Delta are halted, as well as a legal constraint on the availability of stored water behind reservoirs.

4. On page 33, under "Water Resource State at Time of the Incident," San Joaquin inflow is listed. Will the recent San Joaquin River restoration settlement be accounted for in the sub-model for this River and the Friant?
5. Under section C.4 in Appendix C, information for the DICU model is listed. Among the items of information identified is Evaporation Rates. Will crop and non-crop plant ET also be an input?
6. The last sentence on page 53, under section C.4.9, states that it is assumed that "agricultural operations (DICU) will return to "normal" immediately upon pumping out of the island." Depending on the nature of the agricultural operation affected, or to be resumed following recovery, this may or may not be a safe assumption. Damage to agricultural infrastructure, depending on the crop, could take some time to repair. It is also possible that some agricultural operations may not resume or may switch to other crops (e.g., from row and field crops to tree or vine crops), which could affect post-event agricultural water use. However, we understand that this kind of uncertainty, given changing markets and agricultural economics, may not be able to be captured in the models developed for this risk analysis.
7. Rice is not a significant crop in the Delta, but there has been recent interest in rice or other wetland crops being grown in the Delta to slow or reverse subsidence and/or to sequester carbon. A wetland-based crop could alter agricultural ET, and possibly have a small affect on island volume to be filled in the event of a levee breach. While rice/wetland biomass cultivation is probably an insignificant factor for this analysis, it may be a consideration at the strategy development stage of DRMS. For the analysis of land use, including crop categories, DWR's land use maps should be included under section C.11 on page 56 of Appendix C.

Sacramento-San Joaquin Delta Risk Analysis Approach and Basis of Analysis Please excuse any redundancy in the following comments with our comments on other ITF papers.

1. Table 1 lists Delta Infrastructure. Should "urban infrastructure" be added to this list, or is it intended to be captured in the other categories, e.g., Highways and Roads?
2. Table 2, page 25, lists events and variables. Under "States/Values" in the first row, "State of Nature", should "land use" be included? In other words, should urban versus agricultural (including different crop types such as tree crops versus field/row crops) versus wildlife habitat be variables that are factored into the analysis?
3. Table 3, page 28, lists "Preliminary Summary of Consequences to be Considered in the DRMS Project." The first category includes in-Delta agricultural losses. Will this include both crop and infrastructure losses? For example, agricultural production may be capable of resuming following island pump-out, but may not be able to process or ship the crops produced if transportation to markets or processors is impaired, or if in-Delta shipping and processing facilities are damaged. The second category includes disruption

of water exports. Will this category assess losses to crop production resulting from loss of irrigation water to South-of-Delta farmers following exhaustion of stored water in those agricultural areas? Finally, will this category assess costs to water users upstream from the Delta as a result of water losses due to redirected reservoir storage for flushing flows? If flushing flows will be constrained by pre-existing water commitments, this may not be a factor.

4. Table 4, page 29, lists events/conditions changing in and around the Delta. Under Land-use in the Delta, in addition to increasing development there may be shifts in the nature of agriculture in the Delta that should be considered. For example, vineyard production has been increasing statewide, including in the Delta, replacing other, seasonal crops, or grazing uses. County Agricultural Commissioners' annual crop reports should provide fundamental information on trends.

5. Table A1, page 1 of Appendix A, lists Delta Assets. Under Islands and Land uses, an additional benefit of wildlife habitat and agricultural uses is carbon sequestration. Though not a significant benefit at this time, energy production from biomass could be a future benefit of Delta land use.

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