

**Robert Pyke, Consulting Engineer**

May 15, 2013

Mr. Phillip Isenberg  
Chair, Delta Stewardship Council  
980 Ninth Street, Suite 1500  
Sacramento, California 95814

**Re: Council Direction Regarding Levee Priorities  
Agenda Item 7 - May 16-17 Council Meeting**

Dear Phil,

The Delta Reform Act of 2009 states, in Section 85306, that “the council, in consultation with the Central Valley Flood Protection Board, shall recommend in the Delta Plan priorities for state investments in levee operation, maintenance, and improvements in the Delta, including both levees that are a part of the State Plan of Flood Control and nonproject levees.” I don’t see that you have done that any more than you delivered a Delta Plan by the deadline set in the same legislation that includes “quantified or otherwise measurable targets”, but that is not my principal reason for writing. Rather it is that you now propose to do an overly detailed study that likely will not be completed until the proposed deadline of January 1, 2015, to accomplish what could and should have been done already.

I am not opposed to the concept that there should be some rational prioritization of levee expenditures, on all of improvement, inspection and maintenance and emergency preparedness and response, but much of the groundwork for that has already been done in the Economic Sustainability Plan of the Delta Protection Commission and I have previously suggested to the Council that to extent it to a more complete prioritization is not that complex or lengthy a task. Further, this is a task that might best be left to the proposed Delta Flood Risk Management Assessment District which the Delta Plan envisions to be the entity that will establish a rational beneficiary pays system for funding the local component of the sums needed for the improvement and maintenance of the Delta levee system.

Oops, there I said it! The Delta levees and channels comprise a system. That is why ranking individual levees and islands is of limited value. Because the levees act as a

system, all maintained levees need to be brought as soon as possible up to a minimum standard that provides reasonable protection against flood loadings and significantly increases the robustness of the levee system under earthquake loadings. Then the levees that protect land below sea level need to be improved to a higher standard that will make the system quite robust under more extreme floods, earthquake and sea level rise. In both cases there needs to be some prioritization as funds are not unlimited and even if they were, work should be scheduled in an orderly fashion, but prioritization is a relatively simple task. High priority should be given to the eight western islands that serve as a bulwark against salt water intrusion and to the islands and levees that contain critical infrastructure. To the extent that the export water contractors contribute to the funding, that critical infrastructure would include the principal paths for export water conveyance through the Delta. Whether islands that contain legacy towns should be given equally high priority, or whether the legacy towns should be protected by ring levees in order to facilitate rehabilitation and economic development, is an issue that does need further study but that I don't see on the staff's proposed scope of work. Indeed, one might argue that benefit-cost studies of various categories of levee upgrades would be a more effective use of whatever funds you have available for studies of this kind than the prioritization exercise that you are contemplating and would provide additional muscle to the proposed Delta Flood Risk Management Assessment District.

Relative to that proposed scope of work I have the following comments. In theory an asset exposure analysis is a fine thing, but in practice it is of limited value, like all reliability analyses, unless you have sufficient data to make accurate calculations. One of the principal components of an asset exposure analysis in this case has to be an evaluation of the probability of levee breaches and flooding. When that was attempted by DRMS it was not very accurate in spite of having something like a \$5 million budget and several years to perform the work. In part that is because it was data limited and when the consultants pointed out the critical data gaps to DWR, they were told to proceed regardless because schedule was paramount. As has been pointed out to you previously, one of the results of that was that the levees protecting the Brookside development in Stockton, which are relatively modern and sound, were said to have an annual probability of failure of 7 percent whereas the adjacent levees on the Wright-Elwood tract, which include a lot of construction debris, were said to have an annual probability of failure of 2 percent. Without adequate data, it is debris in, debris out in this kind of analysis.

Also, I guess as a simple soils engineer I do not really understand terms like tiered ranking structure and cost allocation structure for apportioning ... costs to the appropriate beneficiary. I understand that under current State law assessments have to be apportioned in proportion to the benefits but again this seems to imply a level of

prioritization and apportionment that is more detailed than the readily available data will justify. If the Council members fully understand these terms and think that the implied level of effort is necessary, I wish you well, but be warned that if your staff and consultants try to bite off more than they can chew, I will be back to tell you that I told you so!

But back to the appropriate levee standards for the Delta levee system. There already is an appropriate minimum standard that provides reasonable protection against flood loadings and significantly increases the robustness of the levee system under earthquake loadings. It is called the Delta-specific PL84-99 standard and for many years, through the time of CalFed, was the standard that both DWR and USACE were agreed on. As I understand it, the USACE are unwavering in their support for this minimum standard although DWR have become wishy-washy for reasons that are not entirely clear, but are thought to have something to do with water politics. Regardless, I believe that there was sufficient money in the bonds that the voters approved as Propositions 84 and 1E to improve all actively maintained Delta levees to this standard. I know that bond sales were suspended at some point because of the State's fiscal crises, but even so, those improvements could and should have been made by now, just as the \$195 million available from USACE through the CALFED Levee Stability Program should also have been expended by now. Notwithstanding the fine work done by many individual staff members, this might suggest that the bureaucracy of the DWR and USACE in fact poses a greater threat to the Delta levee system than floods or earthquakes. It would be unfortunate if the Council continues to exacerbate this problem, rather than helping to streamline levee improvements and improvements in inspection and maintenance and emergency preparedness and response. I say continues because, essentially without discussion, the Council failed to adopt the first two recommendations regarding the Delta levee system that were contained in the Economic Sustainability Plan. These were that the PL84-99 standard needed to be confirmed as the minimum standard for actively maintained Delta levees and that selected levees need to be improved to a higher standard, now known colloquially as the "fat levee" standard. Subsequent construction on Jones Tract has not only shown that excellent co-operation between the local reclamation district, an owner of critical infrastructure, in this case EBMUD, DWR and DFW is possible, but also that the cost estimates included in the Economic Sustainability Plan were valid. I have never understood the reasons that the staff gave for rejecting these two recommendations unless it was simply a desire to show a united front with DWR and USACE and impede the implementation of simple and practical solutions.

In this context it would be most unfortunate if an overblown levee investment prioritization study contributed to further delays in making the needed investments in the Delta levee system and so, as much as I abhor delays, I would urge you to table the

draft motion and rethink it. But, without delay, you should work in cooperation with the Delta Protection Commission to help the legislature fashion appropriate legislation to create the Delta Flood Risk Management Assessment District.

With acknowledgment to the Eagles and to Professor Michael Campana, who brought it to my attention, the final verse of Hotel California sums up the levee issue, and more generally California water issues, rather well.

Last thing I remember, I was  
Running for the door  
I had to find the passage back  
To the place I was before  
"Relax," said the night man,  
"We are programmed to receive.  
You can check-out any time you like,  
But you can never leave!"

I think it's time for some real leadership and problem-solving rather than just more regulations and bureaucracy. Show us the way out!

Sincerely,

A handwritten signature in black ink that reads "Bob". The letters are cursive and slightly slanted to the right.

Robert Pyke Ph.D., G.E.