

From: Robert Pyke [mailto:bobpyke@attglobal.net]
Sent: Sunday, February 12, 2012 5:25 PM
To: Patrick Johnston
Cc: Isenberg, Phil@DeltaCouncil; Grindstaff, Joe@DeltaCouncil
Subject: expanded response to your excellent question

Pat,

I am attaching an expanded response to your question regarding the extent to which the ESP and the DPC proposal to the DSC is not only consistent with the co-equal goals but satisfies the co-equal goals. Because the discussion includes reference to my Western Delta Intakes Concept I am also enclosing updated materials on that.

Regards,

Bob

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Pat,

I am writing to expand my response to the very good question that you asked at the DSC meeting on Thursday and am copying Phil because this discussion bears on an odd remark that he made on Friday, which suggested that I am the center of my own universe, the omphalos of my own being if you will. I also will write separately to him about that and question its relevance to bringing people together to solve the problems of the Delta and California. Because I have already written this for other purposes, I am embedding the expanded response to your question in a more general response to some of the staff comments on the DPC proposal, which comments in my judgment were an embarrassment to the Council, although in defense of the staff, they had very limited time to prepare them. I have also dusted off my Ouija board so these comments include some suggestions about prioritization of levees improvements which we thought were inappropriate for inclusion in the ESP.

The DPC proposal does nothing to impede the DSC's present legislative mandate (85306): "in consultation with the CVFPB, shall recommend in the Delta Plan priorities for state investments in levee operation, maintenance, and improvements in the Delta, including levees that are a part of the State Plan of Flood Control and nonproject levees". It is in fact unclear whether the DSC staff thinks that the DPC recommendations go too far or do not go far enough with respect to prioritization.

But more importantly, prioritization, and even financing, are secondary issues relative to the fact that in order to meet the co-equal goals, including the second sentence, the Delta levee system must be improved and maintained. The Delta must be protected and enhanced, and because improvement of the existing levee system with the addition of vegetation along the waterside of the levees, makes a significant contribution to all of water supply reliability, water quality, flood risk reduction and ecosystem restoration, improvement of the Delta levee system must be a central part of the Delta Plan. No rational person can argue with that. Does that mean that improvement of levees alone is adequate to achieve the co-goals of water supply reliability and ecosystem restoration? Probably not, although that is hard to judge because of the DSC's failure to so far "include quantified or otherwise measurable targets associated with achieving the objectives of the Delta Plan". If the targets for water supply reliability and ecosystem restoration were set at a low level, then improvements to the Delta levee system alone might in fact meet the goals. However, targets at that level would not satisfy the Contractors, in part because they likely would not be sufficient to allow the fish agencies to support the granting of incidental take permits, and would not be sufficient to satisfy the environmental lobbyists. Thus, improvement of the Delta levee system should be viewed as a very cost-effective first step in meeting the co-equal goals including the

second sentence. This is a very cost-effective building block because it addresses not just the three basic elements of the co-equal goals but water quality and flood risk reduction as well. Levee improvements are cost-effective not just in the judgment of the consultants who prepared the ESP but also according to the calculations of the consultants involved in Phase 2 of the DRMS study. Financing would rise from being a secondary issue to being a primary issue if the estimated cost of an improved levee system and improved emergency preparedness, response and recovery had a total price tag of say \$100 billion in 2012 dollars, but it does not and to argue that anything is impractical because of the current slow recovery from a recession, is very short-sighted, to say the least.

But in addition to the need to meet the charge to the DSC by the legislature in the Delta Reform Act, there are additional reasons why the Delta levee system must be improved and maintained. No responsible registered civil engineer can accept that the HMP standard is an adequate engineering standard for Delta levees. It has been the policy of the State and federal governments since 1982 to raise the Delta levee system to the Delta-specific PL 84-99 standard. Failure to do that exposes the State to significant inverse condemnation liability. The argument that putting in State money at this point exposes the State to inverse condemnation liability is totally upside down in terms of the history of the doctrine of inverse condemnation. When the State accepted federal lands under the terms of the Swamp and Overflowed Lands Act, the state assumed certain obligations which it cannot pass to the reclamation districts. See footnote number 43 in the ESP report. Ever since the Way Bill, the State has in fact been contributing to levee maintenance and because of that, and because of the Kimball decision, the State has inverse condemnation liability regardless of what Phil might think. In fact, any reduction in State spending or failure to complete the previously agreed plan to improve Delta levees to the delta-specific PL 84-99 standard, increases the State's inverse condemnation liability rather than reducing it (see Halls of Santa Monica and subsequent cases including Paterno)! Further improvement of the Delta levee system beyond the Delta-specific PL 84-99 standard is likely neutral with respect to the State's inverse condemnation liability, especially if it is financed on a beneficiary pays basis. But threats to the Delta posed by earthquakes, more extreme floods and possible more rapid sea-level rise are real, even though they have been exaggerated by some commentators. Failure to properly address these threats in the Delta Plan would be a critical omission and will drive a stake through the heart of the EIR and the plan itself. In other words, it would result in a Delta Plan that is not enforceable.

So, what is likely to be required in terms of both conveyance facilities and ecosystem restoration, beyond improvement and maintenance of the Delta levee system as recommended in the ESP and the DPC proposal to the DSC? I have

previously argued that the Council does not need to include the specifics of these measures in the Delta Plan because there are ongoing studies of these issues by the BDCP and the Delta Conservancy, but that the Delta Plan **MUST** include a range of quantified or otherwise measurable targets that in your judgment would satisfy the co-equal goals. You cannot expect the BDCP or the Delta Conservancy's strategic plan to do this because one is focused more on conveyance (regardless of protests to the contrary) and the other is focused on ecosystem restoration. It is not clear to me what the Water Board is focused on, but I think it is supposed to be flows and water quality rather than conveyance as such. It is in this context that you need to put some meat on the co-equal goals. Define what water supply reliability means. Suggest a range of exports and a range of environmental flows, which taken in conjunction with other ecosystem restoration measures, might satisfy the co-equal goals. If your existing staff and consultants are unable to help you on that, I would be pleased to help because I believe that it can be done without a whole lot of effort and I have already had constructive conversations on this subject with both state and federal contractors, Delta interests and the NGO community. In this connection I note that "reduced reliance on the Delta", even if taken at face value and interpreted according to common English usage, does not necessarily mean lower long-term average exports from the Delta. It might well be possible with improved plumbing to actually increase average long-term exports while reducing the stress on the Delta.

So, not for inclusion in the Delta Plan but as an example of how the co-equal goals might be achieved at a relatively high level of both water supply reliability and ecosystem restoration, I am attaching three documents detailing the latest version of the Western Delta Intakes Concept which I first suggested on Christmas Day 2010, in a Contra Costa Times Op-Ed. This concept is based on two principles, which you might well include in the Delta Plan: (1) restore more natural flows through the Delta; and (2) extract more water during periods of high flows and little or no water during periods of low flow. You could include these principles in the Delta Plan and no reasonable person or organization will object. I know. The detail of how I would meet these objectives is included in the attachments. Note that the two-page attachment has a graph on the second page which indicates that balancing water exports and environmental flows is an optimization exercise. It would be helpful if you did some of the calculations to put more definitive numbers on that graph but you do not have to solve the entire problem within the initial version of the Delta Plan. But you do have to come up with some targets, which in my judgment can be a range, that my plan or any BDCP plan should fall within if they are to meet to co-equal goals. This should

not be seen as dictating to BDCP. Since the co-equal goals are otherwise not quantified, BDCP should welcome the provision of some boundaries within which they have to work. Boundaries serve the purpose of protecting the players as well as the spectators.

The Western Delta Intakes Concept makes a significant contribution to ecosystem restoration by restoring more natural flows through the Delta and extracting little or no flow during periods of low flow in the rivers. But it also includes restoration of the existing western portion of Sherman Island as tidal or sub-tidal marsh and the restoration of the submerged more westerly portions of Sherman Island as tidal marsh. It would not include restoration of the Suisun marsh as tidal marsh but that is a logical extension. The historic and logical location for tidal marsh that is most beneficial to a variety of fish species is west of Sherman Island in the tidal mixing zone. When you suggested on Thursday that at least some Delta interests appear to think that “habitat is a bad thing”, you may have been correct for a tiny minority but that is not the basis for the ESP questioning the value of thousands of acres of tidal marsh in the interior Delta. That is part of the BDCP conservation measures at the behest of the Nature Conservancy and its value is disputed by other environmental NGOs. In addition such tidal marshes would have very adverse impacts on water quality and vector control. As you know, many Delta farmers already operate their properties in a wildlife friendly manner. I have some wonderful photos of snow geese resting on Jones Tract that I wanted to show as part of my presentation on Thursday but I was forced to omit them for lack of time (and because Senator Machado thought they were a distraction from the discussion on levees).

Finally, on the subject of the continuing conversion of agricultural land in the secondary zone to urban use once the recession is over: this is in my judgment neither desirable or in any sense a goal of the ESP. My understanding is that is included in the ESP as an economic impact only because it is allowed by current law. Although it was well received by some local interests, I was appalled by the speech that the Mayor of Stockton made to the DPC which suggested that further restraints on the growth of Stockton into the Delta crippled confidence and the economic vitality of Stockton. That is fundamentally not true and it is a distraction that should not be viewed as part of the ESP which is about the Delta rather than the City Of Stockton. My personal view is that the economic future of the City of Stockton, using Dr Michael’s definition of economics as being about measuring and growing social welfare rather than just monetary wealth, would be much enhanced by redeveloping run-down areas of the city rather than by advancing much further into the Delta.

On the question of who should complete the detailed prioritization of spending on the Delta levee system, there is at present no clear answer. The Delta Reform Act requires that the Delta Plan shall recommend priorities for state investments in levee operation, maintenance and improvements in the Delta, but recommend to whom and in what detail? That language can easily be satisfied by the following recommendation:

1. Improve all levees that fall below the HMP standard to at least the HMP standard;
2. Improve the 325-350 miles of Delta levees that do not at present meet the geometric requirements to the Delta-specific PL 84-99 standard, but with a minimum 22-foot crown width. First priority in achieving this goal should be given to the eight western islands that serve as a bulwark against salt water intrusion (Franks Tract is the ninth of the eight western islands and it should also be reclaimed but that lies outside the present discussion); the second priority should be to ensure that all islands that protect state highways, the BNSF railroad, the Mokelumne aqueduct, the two pathways through the Delta that convey water from the Sacramento River to the South Delta pumps, and the two deepwater ship channels (the precise order in which those improvements are made is a matter of detail – the improvements to protect the Mokelumne Aqueduct and coincidentally the BNSF railroad are already underway – but all of these are high priority, second only to shoring up the eight western islands and reclaiming Franks Tract); third priority is anything that is left.
3. Improve from 300-600 miles of Delta levees to the proposed higher Delta levees standard (the fat levee concept). This would encompass most “lowland levees” as defined by the ESP but might include certain other levees. First priority would be lowland levees that are not part of the State Plan of Flood Control (project levees), but project levees that are also lowland levees would not be excluded from the program. Within the category of non-project lowland levees, the detailed plan of improvement should generally follow the priorities list above for improvement to the Delta-specific PL 84-99 standard, that is the eight western islands plus Franks Tract first, the islands that protect critical infrastructure second, and the remainder third. But superimposed on that ranking, priority should be given to improving those levees that are demonstrated to contain significant amounts of liquefiable sands and those levees that in the judgment of the DFG would make immediate and measurable contributions to restoration of the Delta ecosystem by providing shaded riverine habitat on the water side of fat levees. Improvement of lowland levees that are also project levees to the fat levee standard is also important and should be pursued simultaneously with the improvement of non-project levees but that requires coordination with the CVFPB and the USACE, and likely Federal studies and appropriations which may take years.

Beyond the inclusion of language like this in the Delta Plan, the most significant thing that the Council can do on these issues is to whole-heartedly endorse levee and public safety recommendation No. 4 in the DPC proposal to the DSC, which recommends transfer to a regional agency with fee assessment authority etc., etc. Only a regional agency with appropriate authorities can make a rational allocation of funding to improvement of levees and investments in emergency preparedness, response and recovery, and determine the detailed prioritization of spending within each of these areas. That would of course require legislation, but legislation is required anyway to clean up the oddity that the subventions program, which is mostly but not wholly directed to non-project levees, is administered by the CVFPB, whose primary focus is the State Plan of Flood Control levees and not the Delta.

Regards,

Bob

Robert Pyke, Consulting Engineer

Western Delta Intakes Concept

Two keys: (1) Recognition that manmade alteration of the Delta in combination with larger export flows has turned the Delta from an estuarine environment into a more lacustrine environment which favors invasive species over native species; and (2) Recognition that precipitation in California is extremely variable and that past and future variability, which many climate scientists predict might be greater, must be addressed in any sustainable water management plan.

Therefore, two principles: (1) That natural flows through the Delta should be restored to the maximum practical extent; and (2) That much more water should be extracted at periods of high flow and much less, or zero, water should be extracted at periods of low flows.

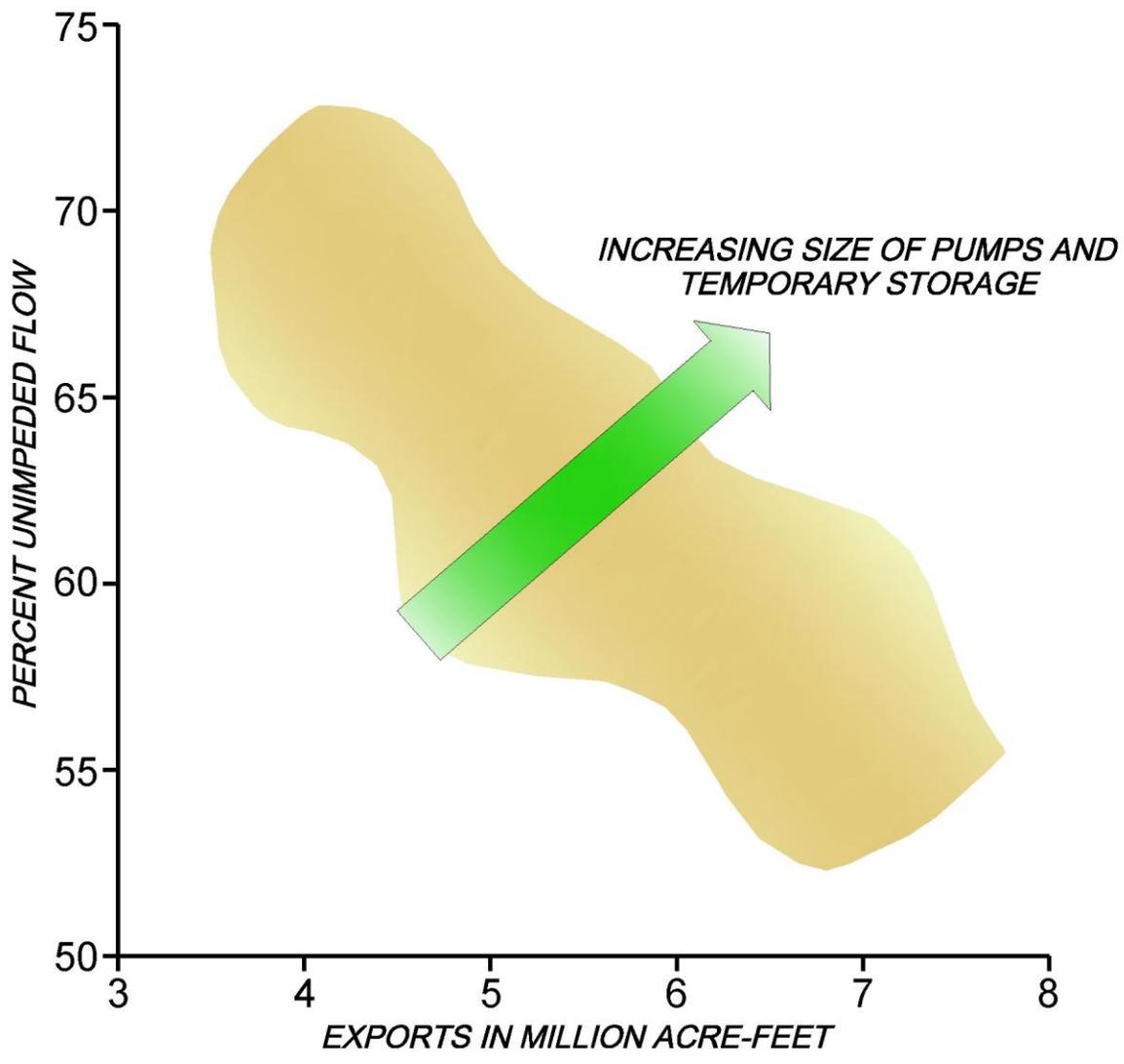
Adherence to these principles, with appropriate pumping and temporary storage facilities, will allow simultaneous recovery of the Delta ecosystem and sustainable exports at existing levels.

Four physical elements:

1. Restoration of floodplains on the Sacramento and San Joaquin Rivers and their tributaries in order to provide flood storage and stretch out the flood hydrograph in addition to providing significant flood management benefits;
2. New intake facilities somewhere in the West Delta to allow flows to pass through the Delta in a natural way before surplus flows are extracted;
3. One or more tunnels that can move the extracted water to additional storage facilities that would likely be located adjacent to the existing Clifton Court Forebay;
4. Additional south-of-Delta storage, much of it likely as groundwater but also including new Westside surface storage.

During periods of very high flow, the new intakes and the existing South Bay intakes could be used simultaneously.

Let's Get California Working Again!



Cartoon illustrating the trade-off between flows out of the Delta and the level of sustained exports. The size of the pie can be increased by increasing the size of the pumps and storage facilities.

The Big Gulp Conveyance Plan
Operational Criteria and Scenarios
February 1, 2012

1. During periods of low flow in the San Joaquin River, extract water only at Sherman Island. Ensure minimum flow of x,xxx cfs at Vernalis either by releasing more water upstream or by recirculating water taken out at Sherman Island and sent down the California Aqueduct.
2. Extract water at Sherman island only when inflow exceeds, say, 15,000 cfs. If inflow drops below 11,000 cfs make up flows by releases from Oroville and Shasta. But otherwise extract up to 15,000 cfs plus and move it south at that same rate.
3. When flows in the San Joaquin River at Vernalis exceed x,xxx cfs, operate South Delta pumps on a sliding scale maxing out at 15,000 cfs when flows at Vernalis exceed xx,xxx cfs. At that point all Sherman Island water is stored temporarily in Los Vaqueros Reservoir enlarged to 1 maf and in a 1 maf “surge tank” adjacent to the Clifton Court Forebay.

WESTERN DELTA INTAKES CONCEPT

FEBRUARY 2012

