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TO: Dick Daniel

SUBJECT: Comments on CalFed Ecosystem Program

I have four general concerns about the Ecosystem Program:

There still seems to be too much reliance on the idea that the water projects are the sole significant cause of the fish problems.

To the extent that there has been movement away from that idea, it has been toward the concept that physical habitat improvements in the Delta should be a priority. Yet, there has been no critical analysis of just what could be expected for fish from physical habitat improvement in the Delta.

The CalFed Ecosystem Program seems to be paying little attention to factors other than flow and physical habitat improvements that could be having important adverse effects on fish. How do we know, for example, that Delta physical habitat or lack of additional water project operational constraints are limiting the abundance of any fish? Put another way, we should at least consider making our first priority the control of things that are harming or killing fish; providing additional habitat may not work (or work as well) if we cannot control those other factors.

The program seems to have an unnecessarily complex intellectual framework consisting of its own special terminology and various levels of abstraction that few of the rest of us can understand.

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Given these concerns, I recommend that before proceeding any further with development of the Ecosystem Program, we do two things:

We engage in a process of better defining the problem we are trying to solve. We have never done that, at least not in a cooperative fashion. The problem statement, "ecosystem quality" (why not "fish?") was adopted without much critical thought. Many of us participating in the development of the Ecosystem Program have never bought into that definition of the problem. Even if we accept the premise that the problem is ecosystem quality, we still need to examine just which facets of the ecosystem are most deserving of attention.

Although the program is nominally broad in scope, in fact it appears to be focused almost entirely on flow changes and physical habitat improvements. We need a more balanced approach. We should be critically examining all of the factors affecting ecosystem quality and deciding which could be most effectively controlled, managed, or improved.

I fear that if the Ecosystem Program continues on its present course, we could spend large sums of money (\$1+ billion) without much improvement in the state of the Bay-Delta fishery.

Consider, for example, the following questions:

How do we know that the problem with fish in this estuary is not toxics? How do we know that, say, hormone-mimicking substances have not reduced the reproductive success of fish?

How do we know that legal and illegal harvest have not been the major factors causing the decline in populations of salmon, steelhead, striped bass, and other harvested species? (The fraction of Winter Run salmon legally harvested $[\text{harvest}/(\text{harvest} + \text{escapement})]$ increased from about 55% in 1970 to about 70% by 1990.)

How do we know that ocean conditions have not been a major factor?

How do we know that the increase in boating in the Delta has not caused damaging levels of pollution from boat exhausts, habitat disruption in shallow areas, and physical damage to fish from propellers?

What if one or more of these factors have been primary causes of the declines in fish populations? Then, neither additional water project operation constraints nor physical habitat improvements would produce much benefit.

I do not believe that we have answers to any of these questions. Yet, the Ecosystem Program is developing targets and objectives and actively discussing such issues as performance measures. Without first analyzing the problems, how can we develop valid objectives, targets, performance measures, and the like?

Water users might see two general approaches with respect to the Ecosystem Program:

1. The Ecosystem Program, as defined by environmental interests, could do whatever it wants, but water users would be assured of adequate water supplies of adequate

quality from the Delta; the quantity and quality of these Delta supplies would not be linked to the success of the Ecosystem Program, however success is ultimately defined. If, for example, \$1+ billion was spent and desired benefits to fish were not produced, the water users would still get the quantity and quality of Delta water that would have been necessary for them to support the CalFed Program.

2. There is some linkage between future Delta water quantity and quality and the success of the ecosystem program in producing fish. If water users are expected to agree to this, then they are going to have to be satisfied that the technical basis for the Ecosystem Program is sound. So far, we have our doubts.

Whenever this latter point is raised, the CalFed staff assures us that these analyses will be done, that we just haven't gotten to that stage yet.

If we have not gotten to that stage yet, then why is the Ecosystem Program busily setting goals and objectives and targets and performance measures and the like? What if the analyses show that the fish declines were caused primarily by a combination of increasing harvest rates and toxics? A pretty good case can be made for that hypothesis. Will we then go back and change all of the goals, objectives, targets, performance measures, and the like to reflect this new information? We do not see how this could be done.

To reinforce this point, consider the following example of how \$1 billion might be spent to improve the Bay-Delta fishery:

Execute agreements with 2,300 boats licensed to harvest salmon at, say, up to \$100,000 per agreement. In return for this payment, license holders would agree to curtail fishing in designated years. **Cost: \$230 million.** (This is only one example. People like Nat Bingham could probably think of more productive ways to spend \$230 million. My point is that, for \$230 million, you could, with a high degree of certainty, control harvest and double the population of anadromous fish in just a few years.)

Put \$70 million into programs to control illegal harvest. **Cost: \$70 million.**

Screen all of the 1,850 unscreened diversions in and upstream of the Delta at, say, \$100,000+ each. **Cost: \$200 million.**

Allocate about \$100 million to measures to reduce toxic discharges from urban areas. **Cost: \$100 million.**

Pay each farmer growing the 1 million acres of trees and vines in the Delta watershed \$250 per acre as an incentive to implement the BIOS Program or something similar. **Cost: \$250 million.***

Implement a program to reduce the adverse effects of boating by reducing fuel consumption and wakes. Ten patrol boats at \$100,000 each plus 50 employees at \$100,000 per year for 30 years. **Cost: \$200 million.**

* Obviously, before implementing this program, we would have to have more data to confirm that there really is a problem from agricultural runoff. (For that matter, more data would be needed for all other programs.) We would also have to have more information on the nature of the problem if there is one. If such data are produced, then control of the problem would be much more effective if there were financial incentives to carry out necessary actions.

Spend any additional funds on physical habitat improvements.

With these programs, costing about \$1 billion, we could:

Control legal harvest of salmon (and other fish if the program were expanded) while at least partly offsetting the accompanying economic effects.

Substantially reduce illegal harvest.

Screen all unscreened diversions.

Reduce toxic discharges from urban areas.

Substantially reduce the discharge of pesticides from those lands which appear to be the major contributors to pesticide runoff to the Delta.

Substantially reduce the adverse effects of boating in the Delta.

In other words, we could make a substantial improvement in those factors directly contributing to fish mortality and, assuming that more than \$1 billion would be available for the Ecosystem Program, improve physical habitat. It is hard to believe that \$1 billion spent primarily on physical habitat reduction could be expected to produce as much benefit.

One might justifiably ask whether we have enough data on which to base spending a billion or so dollars on programs such as those listed above to control factors that are damaging or killing fish. I would say we have more data to justify that expenditure than we do to justify flow changes

or physical habitat improvements, especially physical habitat improvements in the Delta. (Upstream improvements are another matter; most of those seem to have adequate scientific justification.)

We might also consider the cost of, say, another 500,000 acre-feet per year of water re-allocated from water users to the environment. If the replacement cost of that water were, say, \$100 per acre-foot (probably low), then the cost of that water over 30 years would be \$1.5 billion. This would not account for the secondary economic effects of taking agricultural land out of production to generate that water.

Again, it is hard to believe that this \$1.5 billion worth of water could be expected to produce as much benefit as the mortality-reduction programs listed above.

If you would like to discuss any of this further, please give me a call. I think we could develop some joint environmental, water user, and CalFed efforts, under your leadership, to produce a more thorough analysis of the problems and a more balanced approach to solving them. I believe such a cooperative effort would go a long way toward ensuring broad support for the Ecosystem Program.

Thanks,

B.J.