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Mr. Rick Breitenbach
CALFED Bay/Delta Program
1416 Ninth Street, Suite 1155
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Re: Comments on DEIS/EIR

Dear Mr. Breitenbach:

Thank you for this opportunity to comment on the DEIS/EIR. A viable solution to problems in the Bay/Delta is of upmost importance and I fully support efforts to restore environmental conditions in the watershed, while incorporating reasonable human resource needs. However, the current DEIS/EIR provides insufficient information and analysis for an informed decision making process to select a preferred alternative and proceed with program implementation. Substantial additional analysis, including consideration of a wider range of alternatives for Bay/Delta water management and water conservation practices, should be undertaken before proceeding to select a preferred alternative.

Water Conservation

The water conservation and efficiency measures relied on in the DEIS/EIR are insufficient and the newly revised Urban Water Best Management Practices BOPS and agricultural Efficient Management Practices are too vague and weak. The potential savings from appropriate and cost-effective conservation measures is underestimated.

Decorative Landscapes

For urban areas, where in California about half of water use is for landscape irrigation, greatly increased landscape water conservation is appropriate and possible. The revised BOPS are too generous in allocating 100% ETo for urban landscape water use. It is unreasonable to send a signal to the public that wall to wall use of water guzzling turf grass in landscapes is acceptable, while the Bay/Delta ecosystem declines from excess water diversions. Turf areas in ornamental landscapes should be limited to a maximum of 25% of the total landscape areas, and turf should no longer be allowed in unnecessary areas including road, highway, and parking lot medians. Widespread use of turf should only occur in necessary areas such as playgrounds and ballparks. Low-water-use plantings and ground covers that use about one third the water of turf grass and are irrigated by highly efficient irrigation systems should become the standard for most ornamental landscapes.

Newly installed landscapes and irrigation systems should undergo stringent plan reviews, before installation begins, to assure use of low-water-use plants and efficient irrigation design practices. The plan review process should access and require separately valved stations for different plant hydrozones and microclimates, appropriate pressure regulation, matched precipitation rates within a valve circuit, no more than 5% overspray, low precipitation rates for areas with slopes exceeding 15% or soils with low infiltration rates, and widespread use of drip irrigation in appropriate areas. Irrigation controllers should be required to have multiple program capability, multiple start times, and a water budget feature. Once landscapes are installed, controllers should be labeled with valve circuit information including circuit location in the landscape, plants types and water need, and circuit precipitation rate. Without these fundamentals, it is not possible to efficiently manage landscape water use at a site, and currently no controls are in place to assure these essential practices in urban areas. These are easy measures to incorporate before a landscape and irrigation system is installed, but difficult to correct after installation. Therefore, controls should be instituted to address these issues before installation occurs. Holding the landscape and irrigation designers accountable for the standards of efficiency of new and remodels design will have a trickle down benefit throughout the landscape industry improving efficient use of this large block of water. The issue of preinstallation landscape plan reviews has not been addressed in the urban BOPS or AB 325 requirements, and represents a major oversight in urban landscape conservation.

Swimming Pools and Fountains
Swimming pools are known to use about the same amount of water per square foot of surface area as turf grass and are in widespread use, yet the urban BOPS do not address this issue. A BMP addressing efficient water use practices including pool covers and regular leak detection and correction procedures should be developed and instituted. Decorative fountains should be required to use recycling water system. This represents another serious oversight in urban water conservation.

Cooling Towers
Programs to address inefficient cooling towers should be instituted. At a minimum, cooling towers should be checked for cycles of concentration of cooling tower water and adjusted to minimize unnecessary bleed off of cooling water. Often existing cooling towers, and almost always newly installed cooling towers, are adjusted with maximum bleed off water which unnecessarily wastes large amounts of water. Automatic sensors can be cost-effectively installed to maximize cycles of concentration of cooling tower water allowing maximum water efficiency and no decline in cooling tower heat transfer operation. Furthermore, routine installation of cooling towers should be disallowed in situations where air cooled condenser coils are adequate for anticipated heat loads. Again, the urban BOPS do not adequately specify that water agencies address this issue.

Bifurcation of Administration
In addition to the issues discussed above, aggressive installation of 1.6 gallon ULF toilets and high quality low-flow showerheads should occur in urban areas. To help assure aggressive implementation of conservation programs in urban areas and minimize the wasting of resources on the currently proposed BMP certification process, bifurcation of the program implementation administration should be evaluated and seriously considered. Some BOPS, including conservation rate structures, landscape plan reviews, and water efficiency site audits are appropriate for local implementation by local water suppliers. However, many of the BOPS, including ULFT rebates, efficient clothes washer rebates, public information programs, and school education programs could be implemented by a regional or statewide administrator. This would provide many economies-of-scale in databasing, paperwork processing, and program marketing and advertising.

The regional or statewide administrator could be funded by mandatory contributions from water agencies and fees assessed on water diversion projects. An agency's good faith effort to implement these BOPS would be easy to determine based on contributions to the regional or statewide pool, and individual program certification would be narrowed to fewer local programs. Program penetration in individual service areas could be determined based on participation levels reflected in the program administrator database and conducting baseline studies (similar to the water conservation baseline study technique pioneered by the Marin Municipal Water District) every five years or as necessary. This would put more emphasis on program implementation for many of the major programs and reduce resources allocated to fighting over the assessment of implementation in the certification process.

Integrated Floodplain Management

Consideration of a wider range of alternatives than the three currently identified alternatives is necessary to bringing the CALFED process to a successful conclusion. None of the three alternatives in the DEIS/EIR provides a 30 year solution for Bay/Delta problems or justifies the expenditures identified by CALFED.

Integrated Floodplain Management (IFM) is a Bay/Delta management model and analytical technique that meets all of CALFED's objectives and solution principles and has the potential for durability beyond CALFED's 30 year planning horizon. This concept was presented to CALFED in a timely manner in 1997 but, thus far, not thoroughly evaluated by CALFED. I urge CALFED to seriously consider Integrated Floodplain Management as a viable alternative to the three alternatives identified in the DEIS/EIR.

It is essential to address the fundamental conflicts between flood control practices, as currently conducted in the Bay/Delta watershed, and water supply management to resolve hydrological problems in the Bay/Delta system. Simultaneously, the groundwater component of the hydrologic cycle, declining water tables, lack of adequate aquifer recharge, and the issue of declining instream baseflow accretion in northern California rivers and streams must also be addressed. These are the keys that are essential to unlocking new progress in Bay/Delta water management potential and resolving existing conflicts among stakeholders.

IFM addresses these existing conflicts and issues by providing an analytical tool to identify appropriate areas for multiple symbiotic land use and water management practices where the whole equals more than the sum of the individual parts. IFM also emulates natural processes that historically occurred in the Bay/Delta watershed and were essential to the development of the Bay/Delta ecosystem and are important for ecosystem recovery. Although much is known about the Bay/Delta environment, a great deal is still not well understood. The more we can emulate naturally occurring processes, the more likely the ecosystem will be able to successfully repair itself and CALFED restoration projects will have greater chance of maximum success.

IFM also provides the bases for economic incentives for voluntary implementation of the necessary measures whereby all stakeholders benefit from the outcome. Californians and the federal government spend billions of dollars on flood control efforts in California and then spend billions of dollars cleaning up the aftermath of flood disasters. By employing widespread use of nonstructural flood protection bypasses (shallow seasonal flooding of appropriate multi-criteria areas), we could more effectively protect developed and inappropriate areas from undesirable flooding and free up capital for use as seasonal flood easement payments.

IFM is an analytical technique and management model that links flood management, water supply planning, water quality management, agricultural land use, habitat enhancement, and land use planning objectives in a mutually beneficial manner. The concept integrates restoration of natural floodplain processes with consideration of land use options, economic values, and hydrological modeling. The most fundamental categories of inputs analyzed in the model include increased seasonal wetland and groundwater recharge opportunities, economic and hydraulic assessments of flood protection bypasses, increased riverine baseflow opportunities, water supply yield values for groundwater and surface water, land use opportunity value, and agricultural crop value per acre. The analysis provides practical information useful for making responsible and sustainable water resource and land use decisions.

IFM analysis serves to identify geographic areas meeting multiple criteria that make the areas more valuable for seasonal flooding benefits, and land uses compatible with seasonal flooding, than other single purpose land uses. The basic coinciding geographic conditions sought in IFM include: agricultural or undeveloped/lightly developed floodplains, high value areas for flood protection bypasses, increased reservoir yield potential due to decreased dam flood freeboard requirements, increased groundwater recharge and baseflow returns contributing to increased instream flows and water quality, seasonal agricultural potential, potential to capture and prevent agricultural silt and contaminants from discharging into streams and rivers, and potential for riparian and seasonal wetland habitat enhancement.

IFM provides an overall framework that is now largely missing from the CALFED process that would held guide ecosystem restoration projects. Without this overall framework, isolated single purpose projects may not achieve maximum success due to additional limiting factors that are not adequately addressed within the scope of limited, isolated projects.

To conduct an IFM analysis of a watershed, GIS technology is utilized for evaluating floodplain geographical and geological data, hydrologic data, and economic data. Key model outputs are a ranking of the opportunity value of geographic areas, and associated economic thresholds and hydrological impacts. Once set up, the model can be utilized to analyze floodplain land use decisions for a variety of scenarios based on easily varied assumptions and input values.

The approach provides a tool to identify the most efficient and beneficial management approach of a watershed system based on integrating natural floodplain and riverine processes and human resource needs.

For the San Francisco Bay/Delta region, most, if not all of the geographical, hydrologic, and economic data and values necessary for the analysis appear to presently exist in public domain sources (USBR, DWR, USBR, CALFED, census, economic indicators, etc). Software necessary for conducting the full analysis exists as ArcView, and ARCINFO.

Seasonal Wetlands

Historically, extensive seasonal wetlands existed in the Central Valley and alluvial fans in the eastern portion of the valley. The seasonal wetlands provided primary productivity for the food web, habitat for foraging, nesting, breeding and rearing for many native species, areas for flood waters to reside, natural filtering mechanisms for improving water quality, and recharge of valley aquifers. Extensive seasonal wetlands were a fundamental component of the Bay/Delta watershed ecosystem. It is estimated that 90% of seasonal wetlands in the valley have been lost.

Restoration of seasonal wetlands is an important step in restoring the Bay/Delta watershed's ecosystem. IFM provides a management model and analytical tool to significantly increase seasonal wetlands and maximize seasonal wetland benefits while still allowing for seasonal agriculture. The wildlife friendly winter flooding techniques of an increasing number of rice farmers in the valley, which in 1997-98 grew to 184 growers flooding about 140,000 acres under the Ricelands Habitat Partnership, provides evidence of the benefits for both wildlife and farming. The Yolo Bypass also serves as an example that demonstrates the practically of this approach for both flood management benefits and seasonal agriculture. Seasonal wetlands are a way to link habitat enhancement, flood management, water supply planning, and agricultural land use in a mutually beneficial manner. In the DEIS/EIR, CALFED needs to conduct a thorough investigation of this possibility.

Groundwater

The issue of groundwater management and aquifer recharge is not adequately addressed with any of the alternatives in the DEIS/EIR. As the water table has dropped in the Central Valley and the valley's eastern side alluvial fans, northern California rivers and streams have, or are in the process of rapidly shifting from their historical state of gaining instream flows from groundwater accretion during summer and fall, to a state of depletion of flows to the aquifers throughout the year. Instream flows are now largely maintained with reservoir releases of surface water and the flows lost to aquifer recharge, though reducing carry forward storage levels in the reservoirs, have proven inadequate for effectively recharging the aquifers. The problem of dropping groundwater tables is usually blamed on excessive pumping of water for agricultural and urban use. However, the bigger problem is not the pumping, but rather, the lack of adequate annual recharge of the aquifers. Developing a mechanism to recharge the aquifers, particularly where the recharge will contribute to summer and fall flow accretion into streams and rivers, is an essential step in restoring natural Bay/Delta processes and leading to ecosystem restoration and improved water management of groundwater and surface reservoir water.

IFM provides the model and analytical tool to identify the most valuable groundwater recharge areas for restoring the aquifers and increasing instream flow accretion in dry months. The identified areas could also serve multiple duty as flood protection bypasses, season wetlands, habitat reserves or seasonal agricultural land, while improving reservoir yield of the existing system. Since groundwater that has had residence time in the aquifers typically emerges as high quality water at a temperature between 10 and 15 degrees celsius (below the salmon and steelhead mortality threshold), instream flow accretion will help substantially improve instream flows and physical and chemical water quality. Increased accretion into streams and rivers could also significantly contribute to rewatering riparian habitat corridors without requiring increased reservoirs releases.

Reservoir Yield
Currently, flood control dam freeboard requirements significantly impact the yield of the extensive reservoir system that exists in the Bay/Delta watershed. Recent flood disasters in California have led to pressure to increase flood control space reserved in the reservoir system which would likely further reduce water supply yield and carry forward water available for maintaining instream flows in normal runoff years and dry years. Widespread use of flood protection bypasses, as proposed in IFM, to manage floods could reduce the need to reserve space in reservoirs for flood control purposes thereby increasing the yield of existing reservoirs. IFM provides the analytical tool to identify appropriate geographical areas for flood protection bypasses that would allow maximizing the reoperation of existing reservoirs for increase water supply yield. In addition, the increased groundwater accretion to instream flows would help reduce the burden on reservoir releases to maintain instream flows thereby allowing increased reservoir storage carryover into dry years. This would serve to further increase the water supply yield of our existing reservoir system. These cumulative increased yield benefits, along with increased groundwater supplies, have the potential to significantly increase the water available for beneficial uses including maintenance of instream flows and urban and agricultural water supplies without the need for major new facilities.

Soils and Water Quality
Shallow seasonal flooding of agricultural land has considerable potential to not only recharge aquifers while providing flood protection of developed areas as flood protection bypasses, but to also to improve soil structure and fertility. Shallow wetlands in nitrogen, phosphorus, and potassium enriched soil areas would be ideal for supporting primary productivity and development of organic biomass that could be tilled into the soils before the planting of seasonal crops. The tilling of the soils with organic material would also act to maintain upper soil layers with high water infiltration rates promoting the recharge rate of aquifers in future years of seasonal flooding.

Capturing overland runoff in rainy periods and retaining the water to provide shallow seasonal wetlands on agricultural lands could significantly reduce the undesirable influx of sediment fines and agricultural contaminants into streams and rivers. It could also reduce erosion of agricultural land thereby improving soil fertility. Land with excessive salt buildup could be either better flushed or, if necessary, excluded from consideration for seasonal flooding.

As noted before, increased groundwater accretion of high quality, cool water could provide significant improvement in dry season water quality. Also, the increased instream flows from groundwater accretion and reoperation of the reservoirs could also serve to mitigate water quality impacts from agricultural tailwater and NPDES permitted discharges.

Seasonal Flooding Easements
There are many ways of structuring easement payments for flood protection bypasses on private reserve and agricultural lands. Rather than outright buying the land, which front loads the cost and limits the amount of land which can be obtained, it may be possible to structure 10 year to 15 year contracts and annual payments for seasonal use as flood protection bypasses to be more attractive for all parties involved. For example, an acre of agricultural land may be worth $2,000 an acre as agricultural land, but $30,000 as urban development land. An IFM analysis then determines the land is highly valuable as seasonal wetland, groundwater recharge, and a flood protection bypass area. If so, rather than purchase the land outright for $30,000 per acre, a flood easement contract

may be obtained for a 15 year term with a renewal clause at $2,000 per year adjusted for inflation. Depending on the seasonal crop value and other issues associated with the land, the easement may be obtained for significantly less or perhaps more based on the value identified in the IFM analysis and other external factors. Funding for the ongoing easement payment could come from avoided costs for flood control projects costs and subsequent disaster cleanup costs, and water supply yield value. The economic thresholds need to be evaluated and the incentive levels tested, but the point is that it may be possible to structure the easements in ways that are much more attractive than title purchasing and front-loaded capital costs. Landowners would have incentives for long-term utilization of their land to achieve maximum resource benefits. Easement payments of this nature would be much more compatible with an adaptive management policy and the possibility of long-term change in watershed conditions due to impacts by global climate change.

Assurances
The issue of assurances in moving forward with the present alternatives has presented itself as a major unresolved problem for the CALFED process. The DEIS/EIR and its alternatives decouple the various plans to address the major issues including ecosystem restoration, water quality, and water supply reliability issue. Given the history of water resources development in California, it is unlikely that this issue can be resolved with any degree of comfort level for many of the stakeholders as long as the plans for ecosystem restoration, water quality, and water supply remain decoupled. Even if stakeholders become comfortable with the assurances made by the present negotiators in the process, an implementation process that takes years to play out can result in new players gaining control of the process and good faith assurances made in the present time may not be followed through on in the future.

However, the issue of assurances can be resolved by making the solution to the water reliability and quality issues integral with the environmental restoration. By coupling the solution measures for water quality, water supply reliability, and environmental restoration so that the same projects and measures contribute to advancement and improvement in all three areas, the problem of assurances is largely resolved. This is a significant benefit to the IFM alternative since it does help couple the individual projects and measures so that all objectives are simultaneously addressed during implementation rather than moving along with individual planning and implementation pathways, schedules, and financing.

Integrated Floodplain Management offers potential benefits for all the major stakeholders including restoration of natural watershed processes, increased seasonal wetland habitat and improved riparian corridors, increased flood protection with decrease flood stage and flow velocity risk to Delta levees, restored aquifers, increased instream flows and improved physical and chemical water quality, and increased groundwater and surface water yield. The approach is based on comprehensive integration of generally accepted scientific and water management principles and has substantial potential to resolve environmental and resource management problems in the Bay/Delta watershed.

I would be happy to provide more details on IFM than is included in this brief summary of a few key points. I urge CALFED to broaden its consideration of alternatives to include Integrated Floodplain Management.

Thank you for this opportunity to provide comments.

Sincerely,

James Fryer

(hardcopy to follow)

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