

**WORK IN PROGRESS**

**STAFF DRAFT - For Discussion Only**

# Water Project Operations for Stage 1

CALFED intends during Stage 1 to provide conditions that promote substantial recovery of threatened and endangered species, which will involve a comprehensive program to address all important ecosystem problems, and achieve continuous improvement in water supply reliability and water quality.

## The Operations Problem

Water project operations have traditionally been affected by: (1) infrastructure; (2) regulations; and (3) demand management. Infrastructure defines how much water can physically be diverted and either stored or delivered for use, ignoring regulations and demand. Regulations define constraints on the use of infrastructure and are designed to protect the environment, water quality, or other beneficial uses. Demand management defines how much water will be requested and, if possible, delivered to water users.

A key problem facing CALFED is the potential conflict between (1) fishery agencies who seek to improve hydrological conditions for fish in the Delta by modification of operational patterns; and (2) water users, who seek to increase the amount of water diverted, compared to current conditions. This conflict arises because if traditional fishery protections are implemented, improvements in water supply and quality do not occur because these protections typically allocate water away from water users, and water users are not satisfied. On the other hand, if water users achieve the supply and quality benefits they desire, traditional environmental protections cannot be implemented, and fishery agencies and environmentalists are not satisfied.

These two goals have historically been in conflict. There is a high level of concern that if only the traditional tools are available -- the combination of infrastructure, regulation, and demand management -- there may not be enough shared benefits as of the Record of Decision in late 1999 to generate broad stakeholder and agency support for the CALFED solution. Therefore, in addition to looking at infrastructure, regulations, and demand management, CALFED has been working with stakeholders to explore a new approach, called the Environmental Water Account (EWA), designed to provide greater environmental improvements through modifications to project operations with less effect on water supplies.

If CALFED can generate enough benefits for the environment and the water users through infrastructure improvements, regulatory shifts (including provision for the EWA), and demand management, then both sides can be satisfied and the "baseline argument" will become largely irrelevant. The key, then, is to generate both environmental benefits and water user benefits and to generate them quickly.

*Problem  
set up  
is baseline  
water ops*

CALFED Bay-Delta Program  
Revised Phase II Report

Draft EWA  
December 15, 1998

*Reality is  
water users (and environ-  
ment) gain from aspects  
of the program  
other than  
water ops.*

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**Background of EWA**

The concept of developing an EWA came out of a longer much broader process involving multiple CALFED agency and stakeholder teams. For the last year these teams have been evaluating the effectiveness of CALFED's proposed infrastructural alternatives on promoting the recovery of aquatic resources. These teams engaged in 1) a biological evaluation of entrainment effects relative to the three alternatives 2) a biological evaluation of entrainment effects relative to a through Delta approach 3) development of a range of scenarios ranging from a "prescriptive" approach to a "flexible operations" approach and finally to a "salvage based" approach.

*not  
etc*

The teams identified that there is a range of approaches to addressing the conflict between water supply reliability and fish protection in the Delta. They developed such a range which included a standards based approach, the use of standards and flexible operations, as well as a salvage based approach. The technical teams determined that the goals of water supply reliability and fish recovery could be achieved under any of the scenarios, however, the time frame would be the critical difference.

Focusing on the first seven years (Stage 1) greatly limited the infrastructural changes, habitat changes, and even demand management changes that could be included. Therefore, the teams focused primarily on operational changes to protect aquatic resources. These operational changes ranged from new sets of regulations, to direct reductions of exports whenever fish were entrained, to the identification of blocks of water that could be actively managed by the regulatory agencies. After much discussion, the use of a block of water (the EWA) has come to be seen as a tool that would allow any of the protective measures that have been considered. In addition, the EWA could set a definable limit on impacts to other users while maximizing opportunities and incentives to learn more about the biology of the ecosystem.

**The Environmental Water Account (EWA)**

*No discussion  
of what account is*

The EWA is based upon the notion that flexible management of water operations could provide better fishery and ecosystem benefits than a regulatory approach. Regulations require that, under "x" condition, the projects are limited to doing "y". In general, "x" could include hydrological, seasonal, and biological inputs. Thus, for example, the projects are limited to taking 35% of Delta inflow during February - June of most years.

*what does  
this mean  
for the  
BCEP  
Infrastructural  
proposal?*

The EWA approach is quite different. Initially the fishery agencies would jointly manage an EWA. However, at some time in the future a new water agency may be created, one that has the fish as its customers. The EWA would consist of a portfolio of assets including rights to water diversion facilities, aqueducts, storage, water transfers, options and acquisitions. Water could be pumped to refill its storage facilities using those rights. Water could be secured by paying for

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water use efficiency or reclamation projects. Variances in export standards could be granted in the interest of generating additional EWA water. Finally, funding would be available to make use of these assets.

Fisheries agencies could use the EWA to modify project operations in real-time. For example, if fish were detected in the vicinity of the export pumps, reductions in export pumping to protect the fish could be required. In return, the water projects could be compensated out of EWA assets, if the reduced project pumping would otherwise result in water shortages to the state and federal water contractors. An example of how EWA would be operated over the course of a year is presented below:

Assume that the EWA managers decided to extend the export reductions called for within VAMP for an extra month in order to protect salmon and Delta Smelt. The result for the state and federal projects would be reduced storage within San Luis Reservoir. The EWA would commit to filling up that hole in storage, if necessary, out of its water assets.

If the state and federal projects were unable to move water out of storage north of the Delta to fill San Luis, then the EWA would probably be required to fill some or all of the hole in San Luis by the end of the growing season. EWA would do so using water it controlled -- a combination of surface and groundwater storage, production from conservation or reclamation projects, and market purchases.

Or, if the EWA manager felt that relaxation of the E/I ratio would have minimal fisheries impacts, it might allow the project to pump water out of the Delta above the E/I ratio for some period.

If the state and federal projects could replenish San Luis using upstream storage later in the summer, then the hole created by the export reduction would be moved upstream. If the next winter is wet and the upstream reservoirs spill, then the debt owed by the EWA to the users would be wiped clean. However, if the reservoirs do not spill, then the EWA would be required to fill in the upstream storage shortfall using its assets the following year.

Of course, real operations would be much more complicated with the EWA manager spending assets to protect fish part of the year; diverting water to rebuild assets over other parts of the year; shifting water between surface storage and groundwater storage; and trying to project biological needs.

Clearly, a high quality fisheries monitoring program through the CMARP program is a essential for the ultimate success of the EWA approach.

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<sup>in</sup> <sup>would</sup> EWA is not a substitute for regulation, but <sup>could be</sup> a supplement to regulation. It is a way <sup>to</sup> provide additional environmental benefits above the current regulatory baseline with reduced impacts to the water users. A key issue yet to be worked out within CALFED is how to define the regulatory standards upon which the EWA will build.

*→ We really do have a current  
my dates last time for logs  
we could start by implementing  
part.*

**The Advantages of the EWA**

For a given quantity of environmental water dedicated to environmental protection, the EWA appropriately sized and with the appropriate combination of assets can be more protective than a classic standards approach for the following reasons:

- 1. Protect fish other than those targeted by standards-** The operations decision-making process, which is inherent in the EWA, could protect fish other than those for which standards would be set under ESA. The analysis conducted to date has demonstrated that currently non-listed native species, such as splittail, could be protected from diversions effects under the EWA approach.
- 2. Protect species when entrainment is a problem despite favorable hydrological conditions-** As an example, Delta smelt adults following a dry year are believed to be particularly vulnerable. Entrainment of such fish in January or February could be a population level problem, despite apparently beneficial hydrologic conditions.
- 3. Focus on species most at risk-** It is difficult to predict which species will be at greatest entrainment risk at a given time in the future. EWA operations decisions provide the ability to tailor operations to protect the species that is most at risk in a given time and situation.
- 4. Can apply the amount of water for circumstances at hand-** Because of the wide range of hydrologic and environmental conditions that can be encountered in the Delta, it is difficult to craft a standard that protects efficiently under all circumstances. EWA will allow operations to be tailored to the specific circumstances at hand.
- 5. Classic standards tend to be non-flexible-** The traditional approach to standards setting is to set minimum requirements under specified conditions, e.g. full closure of the Delta Cross Channel for a fixed time periods or a specific E/I ratio for a given month. The flexibility to provide the greatest level of protection at a time when the fish are actually most threatened maybe difficult to craft as a fixed standard. EWA operations can be a more protective and efficient tool for handling such situations for certain species.
- 6. Learn from previous operations-** Standards are usually based on the science at the time the standard is adopted. Revising the standard is normally the only means of incorporating new

*All theoretical -  
All assumed  
if anything  
is true.  
Advocacy  
improvement  
mistake*

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information. In contrast, an EWA approach would allow translation of new scientific understandings and insights into improved operations very quickly. The information provided by CMARP will be critical for the success of this adaptive approach.

7. Allows more easy experimental manipulations-The opportunities to conduct experimental manipulations would be far greater under an EWA approach because anticipated impacts on other objectives could be managed or mitigated by EWA resources. Having immediately available resources and information from CMARP is one of the strengths of the EWA approach.

8. Creates incentives to be more efficient for both water supplies and the environment-The incentive for getting maximum benefit from a given resource comes from having finite resources.

9. Allows better coordination of maximum benefits-An EWA will provide opportunity to coordinate actions of others (ERP, CVPIA, etc). EWA decisions can take into account diverse other events taking place at the same time, such as hatchery releases, large natural production of juveniles, unexpected toxicity events, etc.

10. Reduces conflict between the environment and water uses - The EWA and water users would have a common interest in improving system infrastructure, system flexibility, biological monitoring, and scientific analysis (win/win).

**Environmental Risks Associated with EWA**

Even though EWA <sup>and in an ideal world</sup> provides more environmental protection at a lower water cost than regulatory standards, it does carry some risks. A particular concern is how environmental protection can be assured when protective needs exceed the available water? Such a condition could come from either an overall shortage of water, an EWA with inadequate assets, or a year of exceptional fish sensitivity.

The adequacy of the EWA to deal with most environmental conditions that are expected to arise is a function of the amount and type of the assets controlled by the EWA and its operating and financial rules. The more assets included in the EWA, the less frequently it would be short of water and financial resources needed to protect the environment. The EWA can also hedge against particularly stressful years by being more conservative in the use of its assets when conditions are favorable. Finally, the EWA could maintain a reserve fund or insurance policy to back it up during occasional periods when its normal resources are unequal to the task of environmental protection. Ultimately, however, there still may be periods when environmental protection is below that desired by regulatory and environmental interests.

*This is inadequate. See Letter to Sen. Bobbitt.*

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**Initial Evaluation of an EWA**

To gain insight into how and whether an EWA could provide adequate fish protection, water quality, and water supply benefits, a group including CALFED Agency staff and stakeholders walked through a simulation of EWA operations for water years 1984-1987. The simulation was conducted using a base operation study to serve as a default for SWP and CVP operations in the absence of an EWA. Changes in operations were simulated considering the assumed assets of the EWA and historic fish salvage records.

The EWA was assumed to have several hundred thousand acre-feet of assets, primarily in the export areas, consisting of surface and groundwater storage, water option contracts, production from an urban efficiency program, and the right to flex the E/I export standard to generate additional water. Moreover, it was allowed to use the excess SWP diversion capacity, up to 8,500 cfs, to generate additional water.

In the base run, the state and federal projects were granted an unlimited joint point of diversion (JPOD) and controlled an additional 200 TAF of groundwater storage beyond current conditions.

The four years simulated included a variable hydrologic sequence of alternating wet years and dry years. The simulation was conducted only once, without foresight as to hydrological or biological conditions. A longer simulation and additional experience would lead to more efficient operations and use of EWA assets.

This preliminary simulation led the group to conclude that improvements in both environmental protection and water supply benefits could be provided through implementation of an EWA with assets similar to those considered in this exercise. It is likely that additional EWA assets may be necessary to provide both fishery protection and water supply benefits at desired levels.

The following insights and findings resulted from this exercise:

1. With the proper mix of assets, both fisheries protection and water supply benefits can be improved with implementation of an EWA.
2. Experience will allow more efficient use of EWA assets.
3. Monitoring data provided through CMARP would help guide EWA decision-making. CMARP would have to be closely linked to operation of the EWA to help anticipate and prevent impacts of project operation.
4. Surface storage facilities allow more flexibility than groundwater storage. Groundwater recharge rates limit opportunities to refill the account, while groundwater extraction rates limit use of the account.
5. In-Delta storage would provide significant flexibility.
6. There are benefits to holding options on water north as well as south of the Delta, just as

*7. This was only 4 years*

*Not appropriate to draw conclusions yet.*

*possible for other ways to do this.*

*No agreement at this time*

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there are benefits to having access to storage north and south of the Delta. The EWA assets considered in this exercise limit the ability to fill local storage deficits at key times both north and south of the Delta.

- 7. Additional option contracts with south of Delta exporters would be helpful.
- 8. A better mix of tools is needed to provide assurances.
- 9. Consideration must be given to how management of the EWA could affect attraction flows needed for upstream migrant salmon.
- 10. More water would be necessary to consistently maintain some of the parameters (e.g. QWEST) believed by some to provide basic ecological benefits.
- 11. While flows and exports were managed in this simulation to benefit fisheries, the exercise did not allow for directly evaluating potential biological benefits or impacts of actions taken.

**General Acceptance**

*Should all be struck out.*

Concerning the EWA, the following points now have general acceptance among federal and state agencies and stakeholders.

- ~~1. An Environmental Water Account will be established.~~
- ~~2. The Environmental Water Account will begin operation on October 1, 1999.~~
- 3. The intent of operation using this account is to achieve continuous improvement in environmental protection and water supply/quality benefits satisfactory to the state and federal agencies and stakeholders.
- 4. A large-scale demonstration of an account will be implemented this water year (October 1, 1998 through September 30, 1999). Implementation discussions are under way.
- 5. Ultimate authority for decisions on how the Environmental Water Account is used will rest with the state and federal agencies whose legal authorities cover such decisions.
- 6. The Environmental Water Account will be used to achieve flexible operation of existing and proposed environmental protections.
- 7. Given the ultimate authority of state and federal agencies, a process will be established to achieve the following:
  - Coordination with operation of the state and federal water projects
  - Meaningful involvement of stakeholders with the intent of achieving consensus on decisions about how the Environmental Water Account is used.
  - Application of the current best information on relevant underlying science.
- 8. Water must be available from the account for environmental use on day 1 of Stage 1.

*What does this mean for the EWA entity proposal?*

*Give The Bay does not concur with this. We support the CalFed water supply reliability program and by others. We have never agreed to an objective of*

*This is different from "will" above. Prerequisite to commit to "established by" an account be for this and other assurance issues are resolved.*

*"continuous improvement" in water supply benefits to water users without limit.*

*As on previous page*

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- 9. Funding must be assured through time and must be adequate to secure water needed through Stage 1.
- 10. To the extent that operation of the Environmental Water Account involves purchase of water, those purchases must be feasible and timely. *code for what?*
- 11. Decisions on the use of Environmental Water Account water will require monitoring and research.

**Conclusions**

Despite the fact that the four year simulation conducted to test the EWA concept was not fully successful, it came relatively close to meeting fish protection benefits and water user demands for increased supply. As a result, agencies and stakeholders appear to agree that a Stage 1 program involving: (1) infrastructure improvements (e.g., south Delta improvements sufficient to allow increased use of pumping capacity in the south Delta); (2) regulatory shifts (e.g., JPOD and possibly some prescriptive environmental standards); and (3) an EWA, endowed at the appropriate level could provide enough fisheries protection and water supply benefits to win the support of all sides. The articulation of this approach will occur during 1999 as CALFED works to implement a pilot program to demonstrate how the EWA will work. This program will include the following actions:

*No EWA contract agreed to here.*

- 1. Establish an EWA and begin operating it on October 1, 1999.
- 2. Determine which environmental protections will be provided through prescriptive standards and which will be provided through the EWA.
- 3. Determine how much (1) surface and groundwater storage; (2) water purchase contract water; and (3) efficiency water will be needed by EWA starting October 1, 1999. Acquire rights to control this portfolio of facilities and water.
- 4. Determine how the portfolio will shift and grow during Stage 1.
- 5. Determine initial water export improvements (e.g., South Delta improvements)
- 6. Determine Stage 1 water export improvements.
- 7. Determine and secure EWA rights to use existing and future facilities.
- 8. Develop accounting methodologies and baselines
- 9. Assure that water quality impacts of operational changes to protect fish are adequately dealt with within the CALFED water quality program.
- 10. Secure adequate, assured funding to support EWA operations at defined levels.
- 11. Allocate costs of this program using CALFED's cost allocation program.
- 12. Define institutional control of EWA, including governance, public participation, linkages to CMARP, and decision making process.
- 13. Conduct a demonstration project during the 1999 water year, both to test out institutional concepts and to store water for use by the EWA in water year 2000.

*Agree that these should be addressed - But without commitment - as described and in context of alternative approaches to setting up an account. See EDF letter on file.*