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## Critical Considerations for Optimized Alternative 1

Optimized Alternative 1 is based on Alternative 1C. The critical consideration with this alternative is how to maintain Delta exports at some level while reducing fish entrainment to acceptable levels. This quandary is the primary issue facing the system as it currently exists, and is at the core of CALFED program objectives.

Because, under current conditions, export pumping from the South Delta will inevitably result in fish entrainment, it is currently necessary to curtail exports during periods critical to fish movement through the Delta estuary. Optimized Alternative 1 seeks to alleviate this problem, primarily through a combination of improved water use efficiency, water transfers, and storage. Appropriate changes in water project operations (reoperation) will be a consequence of these improvements.

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**Water Use Efficiency, Water Transfers, and Storage** A central issue to Optimized Alternative 1 is to determine how much storage, if any, is needed to provide system flexibility to maintain water supply while avoiding fish entrainment during periods critical to fish life stages. More efficient use of water will result in reduced need for exports and reduce conflict in the system. Urban water use provides the most opportunity for efficiency improvements and is an important component of this alternative.

The CALFED definition of water use efficiency does not include retirement of agricultural lands to produce water savings; it does mean finding ways to use existing supplies more sparingly in ways that result in less need for Delta exports. Agricultural water use provides opportunity for efficiency improvements, though a smaller percentage of agricultural water use is subject to efficiency measures that will actually result in reduced export requirements. Even though the percentage of recoverable agricultural use is smaller than is the case for urban use, the overall volume of agricultural water use is sufficiently large that even smaller percentage gains are important in terms of quantity of water saved. Therefore, included in this alternative is a strong agricultural water use efficiency element. The Water Use Efficiency appendix of the Programmatic EIR/EIS provides additional information on the urban and agricultural water use efficiency components of the program.

While critically important to the CALFED program, improved water use efficiency by itself cannot eliminate the conflict between the need to maintain exports while avoiding fish entrainment. Therefore, in addition to these measures, it will be necessary to add water transfers to the mix. In theory, water transfers could largely accommodate water needs for the CALFED program. But, large scale redirection of water supplies could have devastating effects on people employed in agriculture, landowners, local agricultural communities, and on local and regional governmental entities. Clearly, such effects cannot be an acceptable consequence of implementing the CALFED program. Accordingly, CALFED imposes some limitations on water transfers as part of the solution mix.

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*The CALFED approach is to establish conditions favorable to increased water transfer opportunities, and to strongly encourage the occurrence of transfers to the extent that the financial and economic cost of transfers is less than the cost of new storage.*

This approach recognizes that water purchases from willing sellers can play a large role in satisfying water needs for the CALFED program and for water users throughout the watersheds of the Delta estuary. However, it also recognizes that there are direct and indirect costs that accompany water transfers. Apart from the direct financial cost to a purchaser, the economic cost to be compared is the overall cost to local areas and to all of California.

Implementation of Optimized Alternative 1 will result in increased certainty of water supply which, in turn, will certainly enhance the marketability of water within the Delta estuary. Therefore, for CALFED decision making purposes, the question is how much of the water needed to make the alternative work can reasonably be expected to come from water use efficiency and water transfers, given the economic limitations CALFED imposes on transfers? The simple answer is that we cannot yet know with certainty, and CALFED decision making must acknowledge that our estimates are subject to continuing study in Phase III of the program.

Implementation of Alternative 1 will result in the need to re-evaluate, and probably modify, Delta salinity standards. Changed standards will require operational changes for Delta exporters, which will have impacts on water supplies. Although assumptions can be made concerning possible new standards, and evaluations can be made using these assumptions, such estimates will be speculative. As a result, it is not possible to accurately compute the benefits of storage to potential users of the water which are needed to be able to compare the cost to water transfers.

About 200,000 Acre-feet of water per year from the Sacramento and San Joaquin River systems will be required for flow enhancements to restore the Delta estuary ecosystem as planned. About half of this requirement is anticipated to be available through water use efficiency and water transfers. A minimum of 70,000 AF storage on the Sacramento River watershed and 30,000 AF in the San Joaquin River watershed is recommended to accommodate the balance of the requirement. These water purchases and facilities would be a largely public expense.

Storage projects on the Sacramento and San Joaquin River watersheds are likely to be more financially feasible and will provide wider benefits to Delta water users and local interests if their sizes are increased above the minimum needed to implement the CALFED ecosystem restoration plan. Sizes of facility enhancements will depend on the ability and willingness of potential beneficiaries to pay for facilities enlargements, and these decisions cannot be made in the absence of certainty as to Delta salinity standards and other economic factors. A wide range of sizes might be financially feasible, depending on various factors, the range being as large as 3 million acre-feet on the Sacramento River and 1 MAF on the San Joaquin River. Because there is concern that storage facilities near the upper limit of supposed financial feasibility may be associated with increasing and potentially unacceptable environmental costs, upper limits of 2.0

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MAF on the Sacramento River and 0.75 MAF on the San Joaquin River are included in CALFED Optimized Alternative 1. This selection does not preclude future evaluation and preparation of environmental documentation by other entities on the need for improved storage capability.

Optimized Alternative 1 also relies on the need for storage to maintain exports during periods when South Delta exports must be curtailed to avoid fish entrainment. In-Delta or near-Delta storage is desirable as it will enable rapid reaction to real time fish monitoring that is anticipated to be possible in the foreseeable future. Also, such storage provides the capability of being filled while exports are maximized, an important capability for impounding water when flows are very high and fish entrainment consequences of pumping relatively minor.

A major consideration is what storage capacity will be required to provide adequate flexibility to protect fish from entrainment during critical periods while being able to maintain reasonable export volumes. There is no exact answer because, in general, the more flexibility the better with respect to protection of fish. At the same time, environmental considerations and cost will impose limitations. Taking these considerations into account, it has been determined that 30 days of in-Delta or near-Delta pumping capacity would provide an acceptable level of operational flexibility to maintain reasonable export while protecting fish from entrainment. Historical experience has been that export requirements have usually been on the order of 6,000 cfs during periods when export curtailments have been necessary. About 300,000 AF of useable impoundment would be required to provide this level of export during a 30 day export curtailment period and is, therefore, included in Optimized Alternative 1.

Unlike in-Delta or near-Delta storage, off-aqueduct storage South of the Delta does not enable water to be impounded independently while supplying system demand. Off-aqueduct storage can, though, be an important tool for further increasing system flexibility to withstand export curtailments during periods of ecological importance. Because the feasibility of such facilities will be heavily dependent on user needs, ability to finance, and constraints, it is not possible for CALFED to dictate sizes of possibly feasible facilities. Instead, the range of off-aqueduct storage South of the Delta that is included in Optimized Alternative 1 is 0 to 2.0 MAF, the latter figure representing a supposed upper limit on size that would be environmentally acceptable.