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Water Operations Summary: Gaming Exercise
 March 16, 1999 Draft

Scenario #:1A	Description: Strict Accounting/Contract Approach			Target Year: 4
Possible Water Supply Measures	Used ?	Details	EWA/ Users Division	How to Model How to Game
Interim South Delta Program - 8.5 kcfs	Y	8.5 kcfs	Users below E/I EWA above E/I	Operate as reduced Project constraints. EWA gets water through contract (see below)
South Delta Program - 10.3 kcfs	N			
JPOD. State/ Federal sublimits remain	N			
JPOD. No individual State/ Federal sublimits	Y	Only 15 kcfs limits apply	Projects below E/I. EWA above E/I	Operate as reduced Project constraints. EWA gets water through contract (see below)
Allow E/I Variances	N			
Trade E/I for Contract	Y	Eliminate E/I in return for contract	EWA	Operate as reduced Project constraint. EWA gets water through contract (see below)
Trade in-Delta AFRP measures for contract	Y		EWA	Operate as reduced Project constraint. EWA gets water through contract (see below)
EWA contract with Projects	Y	Contract with Projects in return for benefits derived from eliminating E/I and in-Delta AFRP.	EWA	Model with and without E/I + in-Delta AFRP. Average difference is allocated to EWA each year. Treat as highest priority Project demand each year. Delivery at San Luis before low point, then remove from model. Distribution of water will be dealt with during game. Projects have right to borrow net EWA San Luis storage to get through low point.
Kern Water Bank	Y	300 kaf storage. 20 kaf/month in. 10 kaf/month out.	EWA	Do not model. Operate by hand in game.

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Possible Water Supply Measures	Used ?	Details	EWA/ Users Division	How to Model How to Game
Gravelly Ford Groundwater	Y	200 kaf storage? 20 kaf/month in. 10 kaf/month out.	Projects/ EWA split	Operate Project share in model. Operate EWA share by hand.
Shasta Dam Expansion	Y	290 kaf storage	USBR	Operate as USBR facility
Delta Island Storage	Y	240 kaf storage. 120 kaf *2 islands	Projects/ EWA split	120 kaf operated as forebay to export intakes. Can be filled from Clifton Court at 2 kcfs using Project rights, plus 2 kcfs when Delta out of balance. Remaining 120 kaf can fill only when Delta out of balance. Operate by hand in game.
ET reductions on Delta storage islands	Y	30 kaf/year average	Projects/ EWA split	Operate by hand in game.
Semitropic high priority storage	Y	200 kaf storage	EWA	Operate by hand in game
Semitropic low priority storage	N	200 kaf storage		
SOD water purchase options	Y	100 kaf. Usable 3X every 10 years	EWA	Operate by hand in game
NOD water purchase options	Y	100 kaf. Usable every year.	EWA	Operate by hand in game
Spot Purchases	Y	Max of 200 kaf per year. Limited by EWA funds.	EWA	Operate by hand in game
Demand shifting	Y	100 kaf. Short term storage lease in San Luis.	EWA	Operate by hand in game
Access Surplus Capacity	Y		EWA	Operate by hand in game
Urban efficiency purchase	Y	15 kaf/yr from 500 ktoilet replacements	EWA	Operate by hand in game

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Initial Conditions

Assume that:

- o All storage is 50% full at the beginning of the game.
- o EWA is funded at the initial level only (e.g., \$30 million)

EWA Fiscal Budget

All capital costs (e.g., facilities) and recurring costs (e.g., routine option costs) are outside the game. Discretionary expenditures will be dealt with within the game. Discretionary expenditures are: (1) cost of deposits and withdrawals from storage; (2) cost to call options; (3) cost to purchase water on the spot market. Related expenditures such as conveyance cost and power costs will not be dealt with yet. EWA may build up its fiscal reserves by selling or leasing its rights to water or facilities.

Assumed prices:

All purchases	\$100/af
Sales by EWA	\$100/af
Kern Water Bank deposit	?
Kern Water Bank withdrawal	?
Semitropic deposit	?
Semitropic withdrawal	?
MWD delivery shift	
fast payback	\$100/af
delayed payback	\$1000/af

EWA budget for purchases: \$30 million initial + \$30 million per year. Unused expenditures may be accumulated for use in later years. (This number was derived using some basic assumptions about costs and the frequency of use for various options).

Modeling Basis

Modeling will be based upon a combination of pre existing policy, new prescriptive rules from the bio team (no such changes are assumed), elimination of existing prescriptive rules (elimination of E/I and in-Delta AFRP are assumed here), new facilities, new actions, etc. Based upon the matrix above, the modeling upon which the game would be founded would be run with the following assumptions:

- o 1995 Level of Development?
- o Accord + VAMP - E/I
- o Upstream AFRP

- o Trinity
- o Interim South Delta Improvements (8.5 kcfs)
- o Unlimited JPOD
- o New in-Delta storage (50% share)
- o Gravelly Ford storage (50% share)
- o Enlarged Shasta
- o Contract for delivery of water to EWA

Water Supply Evaluation

The results from the modeling basis do not represent actual estimated Project deliveries. Contract deliveries to EWA must be subtracted. Supply benefits from ET reductions on Delta island storage islands represent an increase of 15 kaf in average deliveries. Project operation of Project share of Delta storage will take place during the game and likewise must be added.

Game Rules

- o EWA has the right to carry debt and to use Project facilities, provided it can assure no harm, unless arrangements for compensation are agreed to in advance. Thus, the EWA may borrow against future water supplies, may shift Project storage from upstream storage to downstream storage, etc., provided that it can make the Project's whole with high probability.
- o Unless otherwise specified, EWA has the low priority access to Project facilities.
- o EWA receives its annual income at the beginning of each water year. EWA may borrow up to one year of future income (e.g., an additional \$30 million) at an interest rate of 8% per year.

Shifting to Other Target Years

A shift from Target Year 4 to earlier years will result in the loss of Shasta storage, Gravelly Ford storage, and Delta island storage. Additional purchases might be incorporated to compensate, if deemed feasible.

A shift from Target Year 4 to later years might result in the inclusion of the full South Delta Program (10.3 kcfs), additional efficiency and reclamation purchases, additional groundwater storage projects, and (over time) additional surface storage projects.