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THE ENVIRONMENTAL WATER ACCOUNT
CONCLUSIONS TO DATE AND AN IMPLEMENTATION PLAN
July 21, 1999

This paper sets forth conclusions to date regarding creation of an Environmental Water Account. Important issues are identified. An approach for implementing the Environmental Water Account in year 2000 is described.

I. CONCLUSIONS

A. General

- *Useful Environmental Water Account assets include surface storage capacity, groundwater storage, capacity in pumping plants and canals, funds that can be used to purchase water, including options for future purchase and efficiency or reuse measures by water users, and funds that can be used to purchase other environmental benefits.*

- *"South Delta improvements," consisting of increased permitted pumping capacity at the Banks Pumping Plant, and joint use of Banks and Tracy Pumping Plants would be key features of the Environmental Water Account.*

- *Screened intakes remote from and directly connected to Delta pumping plants are especially useful.*

- *In the early stages of the Environmental Water Account, funds to purchase water are essential.*

- *Numerous innovative options for maximum use of Environmental Water Account assets have yet to be fully evaluated.*

- *It is unlikely that enough Environmental Water Account assets will be available in Stage 1 provide the Delta fishery protections desired by environmental interests and fishery agencies and the water supply desired by agricultural and urban users of water exported from the Delta.*

- *Considerable disagreement exists concerning the science on which existing and future environmental protections in the Delta and operation of the Environmental Water Account are based. However, these differences have been clearly described, and some of them could be analyzed within the next several months.*

B. Specific

8. The Environmental Water Account would provide significant fishery improvements.

Using model simulations we demonstrated that using EWA assets or capabilities to severely reduce exports at key times significantly reduced salvage of all races of chinook salmon from the Sacramento River and the San Joaquin River systems, as well as delta smelt, splittail, and steelhead.. In addition, actions involving increased flows in rivers and through the Delta would likely further benefit fish. The most significant benefits were to delta smelt and San Joaquin fall-run chinook salmon.

9. The EWA would be more effective on an AF per AF basis than prescriptive standards approach in reducing fish salvage.

The EWA provided for actions at time when prescriptive standards would not have been activated, and thus reduced total salvage in model simulations over that of prescriptive standards. While overall salvage may have been lower under prescriptive standards for some species, salvage reductions per acre-foot of export reductions was substantially lower under the EWA approach than the prescriptive approach.

10. Surface water storage south of the Delta was most useful asset of the EWA.

South of Delta storage either a collateral or debt was most useful for reducing exports when fish salvage risks were high. North of Delta storage was not always available to repay debt in San Luis Reservoir before the summer low-point. Ground water resources south of Delta were likewise not sufficiently "liquid " to repay debts before the summer low-point. In-Delta storage if connected directly to project pumping plants is of similar value as south of Delta storage.

11. There were synergies between Delta and Upstream actions such that water costs between the two were less than the sum of the two.

Often upstream actions provided additional benefits in the Delta in the form of extra Delta inflow that could be captured as EWA storage in In-Delta storage or South of Delta storage for later use or for immediate repayment of debt.

II. PROBLEMS/ISSUES/CONSTRAINTS

1. EWA actions generally resulted in water supply goals being short by several hundred thousand acre-ft in critical years and lessor amounts on average in other years.

Export constraints from implementing EWA actions limited exports allowed under various baseline scenarios such that target deliveries for water supply were shorted as much as 300-400 TAF per

year in critical periods and 100-200 TAF per year average over 73-year simulation.

2. Shifts in export patterns to reduce fish salvage would have mixed effects on urban water quality.

Reductions in February and March exports would result in lower dissolved organic carbon in urban water supplies. Higher summer and fall exports could increase salt concentrations of export water.

3. EWA constraints on exports at times took on such rapid and substantial debts in San Luis Reservoir (up to several hundred TAF per month) that the ability to repay debt was in doubt and the summer low-point in San Luis was put at risk as was the next year's water supply.

EWA directed export reductions particularly after the VAMP period in wet years resulted in substantial debt being carried into the summer. The debt was particularly substantial in the cases where it was derived from limiting the expanded Banks capabilities. In some simulations the combined export capacity reached 21,000 cfs (including In-Delta storage), which if constrained by taking on EWA debt in San Luis resulted in rapid and substantial debt. Adding VAMP to EWA's responsibility futher burdened the EWA.

4. Higher demands-deliveries and resultant higher exports than historical levels used in the DWRSIM simulations caused a significant additional burden on the EWA.

The EWA was forced to reduce exports that were greater than historical levels, which burdened assets of the account and reduced the potential effectiveness of assets in the account to provide protections to fish. Higher demands also reduce the ability of the EWA to gain assets, essentially competing with demands for available water supply.

5. Uncertainties relative to the benefits and impacts of EWA actions.

For any given amount of Environmental Water Account assets, the desired Delta fishery protection requirements and the desired export water supply cannot both be provided.

6. Potential impacts of EWA on water transfers market.

EWA in combination with CVPIA and ERP activities in the water transfers market would disrupt the market to the detriment of all who depend upon that market.

III. STEPS IN IMPLEMENTATION

A. Resolving Issues

1. Lack of Water Supply Benefits - EWA along with various CVPIA (AFRP, b(2), b(3), and Trinity) and ERP actions constrain water supply benefits - various assets could be added to the CALFED mix to provide additional water supply:
   a. In-Delta Storage - Webb and Bacon complexes could add several hundred TAF of water supply assets.
   b. Relaxation of existing standards could add additional supply.
   c. A portion of the expanded Banks capacity and relaxing restrictions on such use.

d. Additional north and south of Delta surface and ground water storage.
e. Additional water transfer capabilities.
f. Making In-Delta AFRP requirements the responsibility of the EWA rather than water contractors.

2. Water Quality Effects - responsibility for any water quality effects caused by EWA actions should be resolved. Specifically, shifts in export timing that result in a decline in average or specific delivered water quality should be mitigated.
3. EWA Debt in San Luis - there are several measures to limit EWA debt in San Luis.
   a. EWA should not be burdened with debt of restrictions on use of expanded Banks.
   b. Increasing groundwater assets south of Delta and the potential rate of extraction of ground water assets.
   c. Ability to shift demands from before summer low-point to after low-point. Options include transfers, borrowing MWD storage, paying farmers to pump groundwater rather than demand surface water, etc.
   d. Providing EWA a share in expanded Banks capacity to be used at the discretion of EWA to repay debt in San Luis or further reduce exports.
4. Water Supply Demands - an appropriate level of water supply demands must be set before determination of the size and assets of the EWA are established. If demands are set to increase during Stage 1, then the size of the EWA and its assets should increase as well.
5. Additional Simulations and Analyses - Conducting additional simulations will help resolve uncertainties as to EWA function and effectiveness.
6. Analysis of Technical Issues - Conducting additional analyses of technical issues will further help to resolve issues relating to priorities of EWA asset use and uncertainties relative to effectiveness of actions toward helping toward recovery of ESA species.

B. Developing EWA Assets

1. Share in Expanded Banks - to be effective the EWA should receive a share in the water supply generated from expansion of the pumping capacity of the SWP Banks Pumping Plant.
2. Access to Project Facilities - to be effective the EWA should have access to project facilities to move and store water when necessary. At a minimum the EWA should be allowed access and use of surplus capacity.
3. Ability to Adjust Upstream Project Operations - to be effective and efficient the EWA should have upstream assets and capabilities including ability to retain EWA water in upstream storage, borrow water in upstream storage, and release water from upstream storage to effect changes in the Delta.
4. Ability to assume (take-on) debt - to be effective the EWA needs an ability to borrow water or take on debt in San Luis and upstream project reservoirs. The amount of credit could be tied to the extent of EWA assets (e.g., water held in groundwater) as well as existing or future forecasted system conditions (e.g., water storage, inflows, snow pack, etc.)
5. Real Assets - to be effective the EWA needs real assets. The EWA storage, pumping, and conveyance assets must be secured and agreements must be developed with the owners of those assets concerning payment for and operation of the assets. Agreements or contracts must be executed for water transfers (including options), efficiency, and reuse assets of the Environmental Water Account For example: water assets could be in the form of contracts with the projects. Other assets would include guaranteed funding through appropriation, user fees, etc. Other guarantees may

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include contracts or rules for access to and use of project facilities. Guarantees may also include water rights or exemptions from water quality standards for specific actions.

C. Operational Capabilities, Governance, and Rules

1. EWA Entity -
   a. The EWA contracting entity must be identified.
   b. Its relationship to the governance structure must be spelled out.
   c. The structure for governing the EWA must be developed.
   d. If existing agencies are going to govern, agreements must be negotiated between these agencies. If the contracting entity differs from the governance structure, an agreement must be negotiated between the governance structure and contracting entity.
2. Decision Making - The decision-making process for the EWA must be developed, including the rules governing operation of the EWA and the roles of various stakeholders, the water project operators, and the CalFed Ops Group.
   a. The relationship between the Environmental Water Account and state and federal water project operation must be determined.
   b. If there is to be an Environmental Water Account manager, this person's job description must be developed, this individual must be selected, and arrangements must be made for his or her employment.
   c. If the EWA uses both state and federal facilities, DWR and BuRec must develop an agreement on the sharing of those facilities and EWA water supply effects.
3. Additional Infrastructure - Agreements must be developed and permits must be obtained for South Delta improvements.
4. In-Delta Storage - If the Delta Wetlands project is to be part of EWA, drinking water issues concerning that project must be resolved.
5. Regulatory Constraints on EWA - The degree to which operation of the EWA satisfies existing and future regulatory requirements must be determined.
6. Water Transfer Market - The effect of EWA (and ERP and CVPIA) water transfer actions on other water transfers must be evaluated and, if this evaluation shows that problems will occur, those problems must be resolved.
7. Coordination of EWA with CVPIA and ERP - The Environmental Water Account must be coordinated with the ERP. If attempts to develop this coordination reveal problems, these problems must be resolved.
8. Stakeholder Buy-In - A negotiating structure is needed to ensure that key agency and stakeholder representatives buy in to the EWA. This negotiating structure could oversee the resolution of issues listed above and integrate the results into a coordinated EWA.

IV. Negotiation Issues

- Define default operating requirements. Define the flow, water quality, diversion, and storage rules that will govern operations in the absence of action by the EWA. Existing defaults include the X2, E/I ratio, and Shasta carryover requirements. Default rules could change in the future. For example, COE requirements currently limit Banks pumping to about 6.6 kcfs

during most circumstances. However, as part of the CALFED Program, the limits on Banks pumping might be relaxed. Such a relaxation would create a new default.

- Define new Stage 1 assets and divide them between the EWA and the water users. Assets are physical, institutional, and financial mechanisms for modifying water operations. Possible assets include: (1) rights to a share of allowable diversions; (2) rights to a share of conveyance capacity; (3) rights to a share of storage capacity; (4) the right to grant variances to default operating requirements; (5) contracts for water deliveries or purchases. Implicit is the notion that usable assets must be backed by adequate financial resources. As an example, the right to increased Banks pumping might simply increase SWP assets, or the right (the asset) could be shared with the EWA. Coupled to JPOD, the increase in Banks pumping might also represent a new asset for the CVP. A key issue will be the relationship between b(2) water and the EWA. Can b(2) water be operated within or in coordination with the EWA?
- Define the relationship between the EWA and the state and federal projects. A large percentage of EWA actions will affect or utilize state and federal facilities. The relationship between EWA and the Projects should, therefore, be spelled out in detail. What rights does the EWA have to use surplus capacity. What priority do EWA operations have compared to water transfers or the delivery of unscheduled water? How will the costs of EWA operations be calculated? How much debt will EWA be allowed to take on at various location? How much debt will the EWA be allowed to carryover into succeeding water years? What are the repercussions if the EWA cannot repay a debt in a timely manner?
- Decision making and the Relationship to ESA and CVPIA agencies. The EWA Mission. The governance of the EWA will be heavily determined by the EWA's role within the broader CALFED solution. Is the primary goal of the EWA to enhance general ecosystem conditions and processes? Or is the primary goal to protect and enhance endangered species? Will the EWA be required to find replacement water for some or all ESA actions? Or will the EWA be part of a "no surprises" regulatory assurance and be used as a substitute for separate EWA actions. Will the EWA have upstream responsibilities or be confined to the Delta?
- Financing. The EWA must have a reliable revenue stream. How will that revenue be provided? Who will provide the revenue?

V. A Sample Solution

- Default operating requirements. Existing regulatory requirements. Relaxation of COE requirements on Banks pumping as south Delta improvements are implemented. AFRP flows not part of default baseline.
- Stage 1 assets. Over the course of Stage 1, the following assets come on line:
  - o b (2) water is incorporated into the EWA.
  - o The EWA and the SWP share rights to part of expanded Banks pumping capacity.
  - o The EWA gains rights to unused state and federal pumping, conveyance and storage

capacity.

- o The EWA and the SWP share rights to new Delta storage.
- o The EWA, through contract, acquires water purchase and groundwater storage rights in various locations.
- o JPOD is implemented.
- o The EWA gains the right to grant export variances in order to export EWA water.
- o The EWA gains to right to allow variances to the X2 standard in any given month, but must assure that average February - June X2 does not move upstream.
- o CALFED investments in urban efficiency (conservation and reclamation) are tied to a requirement to deliver a portion of the water saved during wetter than average years to the EWA.
- o The EWA is funded most heavily during early years, with funding tapering off to the extent that new non-market assets with lower operating costs come on line.

- The relationship between the EWA and the state and federal projects. State and federal operations have the highest priority access to state and federal facilities, including the delivery of unscheduled water. Next in priority will be a limited capacity reservation for market purchases (e.g., 60 TAF/month during the summer). The EWA will have the next priority for unused capacity. Finally, other transfers will have the lowest priority. However, EWA has the highest priority for its share of new Banks capacity and may sell access to this capacity. EWA may carry debt as long as the likelihood of a water consumption impact on water users remains below 5%. Any impact on water consumption patterns will be reimbursed by the EWA at the rate of $1000/AF.
- Decision Making and the Relationship to ESA and CVPIA agencies. The EWA Mission. EWA will balance the need to provide protection for ESA species with the need to support ecosystem functions, non ESA species, and the CVPIA fish doubling requirements. EWA will be required to reserve and, if necessary, allocate a portion of its assets for the protection of endangered species above all other priorities. If impacts occur beyond this level, the EWA will be responsible for repayment (via water or money) of 50% of the impacts. The second priority is meeting CVPIA anadromous fish doubling requirements. Other priorities may be specified. However, the EWA will retain flexibility to determine needs on a real time basis to the extent possible. The EWA will be governed by a Board of Directors composed of the fish agencies, the state and federal projects, and stakeholder groups. The Board will hire an executive director and delegate considerable operational discretion to the manager, within limits established by the Board.
- Financing. The EWA will be funded at $50 million per year initially, declining to $40 million per year as new infrastructure comes on line. Water users will pay user fees into the account, in recognition of the EWA responsibility to buffer the impacts of ESA actions. Additional funding will come from the state and federal governments. Capitol costs and the cost of CALFED's efficiency incentives will not come out of EWA funds.

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EWA Functions

EWA must be able to:

- Make rapid decisions
- Be able to gain near instantaneous E/I variances.
- Gain near instantaneous access to surplus capacity in state and federal facilities.
- Analyze near real-time monitoring data on species distributions.
- Generate and expend water, and carry secured debt.
- Write contracts for water purchases and storage leasing.
- Pay for EWA activities.
- Be responsive to ESA needs.
- Be accountable to the stakeholders and the public.
- Begin planning during 1999.

Implications for EWA Structure

Given the short timeline, we must use existing institutional arrangement to the extent possible. Fortunately, the machinery exists to carry out all of these activities, provided that the CALFED agencies cooperate with each other. In the long term EWA operations should probably become institutionalized via legislation and contracts. The EWA needs described above imply the following:

1. The need for rapid decision making implies that the EWA needs a full time manager, supported by agency staff and/or consultants, reporting directly to a small management group. The manager, in consultation with the management group should plan for likely biological contingencies, recommend the appropriate allocation and use of EWA assets, see that needed contracts are written, monitor biological monitoring data, alert the management team to biological problems and opportunities, etc.
2. The need for near instantaneous E/I variances implies that the management of the EWA should be under the auspices of the Ops Group. Only the Ops Group has explicit authority to grant E/I variances (subject to SWRCB veto).
3. The need to acquire and expend water and to carry debt implies the need to develop accounting and operating criteria before the EWA begins operations.
4. The need for near instantaneous access to state and federal surplus capacity implies that the projects must be part of the interim management group.
5. The need to be responsive to ESA needs implies that state and federal fishery agencies must be part of the interim management group.
6. The need to pay for activities and to purchase water implies that the EWA should be granted adequate financial resources before beginning operations and should be able to carry over a financial reserve across years.

7. The need for access to near real-time biological monitoring data implies that some ability on the part of the EWA to direct IEP activities.
8. The need to negotiate and contract for water and storage services implies the EWA must be able to call upon existing state and federal water purchase personnel or must contract with private water brokers.
9. The need for accountability to the stakeholders and the public implies the need for reporting to CALFED via the Ops Group and to the public, either through BDAC or +through the ecosystem roundtable.

EWA Implementation Development Team

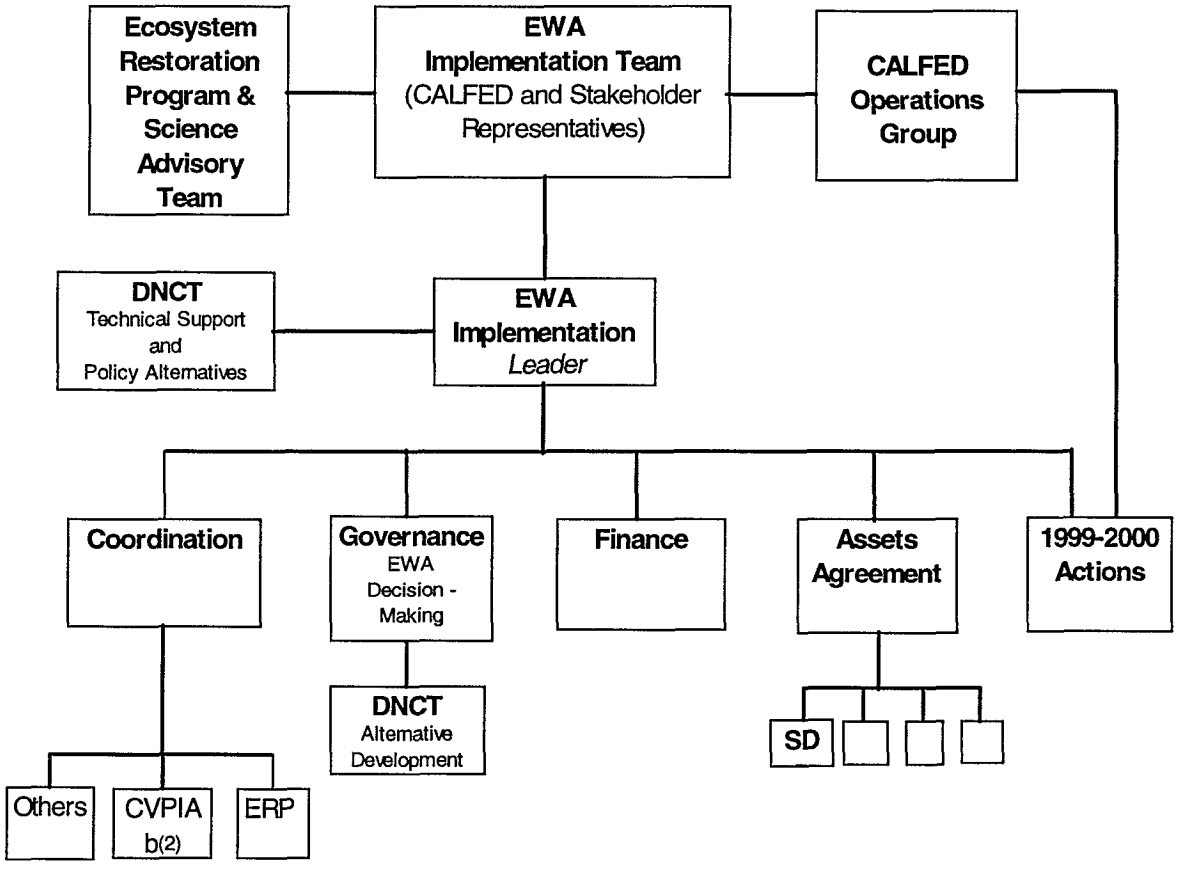
An EWA Implementation Development Team (EWAIDT) will be formed to address the issues associated with implementing the EWA. This team's responsibility is to develop the EWA that will be implemented after the CALFED's federal Record of Decision. The general EWAIDT organization is show below:

EWAIDT- Includes CALFED Policy and stakeholder representatives. This team, with the support of the DNCT, will develop the information needed for negotiations on the mix and size of assets, governing rules, possibilities of use, potential contracts, and finance. The Team will also develop a detailed strawman EWA to serve as a starting point for negotiations and the negotiation process to be used. Once the EWA is developed the Interim Governance Structure as outlined in the Governance Plan will implement the EWA.

EWAIDT leader- CALFED will assigns a full time person to work with the EWAIDT and DNCT to develop the EWA. The leader will ensure coordination CVPIA, b(2), ERP and Others. The leader will also work closely with the implementation coordinators of the CALFED Programs, such as the South Delta Program. The leader recommends needed agency liaisons and asset allocation, operations, and funding needs beginning with the fall of 1999.

DNCT- DNCT will provide the Technical support and develop Policy Alternatives for the EWAIDT. They will; 1) provide a list of potential assets, 2) provide input on how decisions are made to use EWA assets, 3) develop tools to analyze sharing, frequency, availability and reliability of assets, 4) conduct computer games to analyze alternatives, work closely with CMARP on monitoring requirements, 5) develop tools to assist in application of EWA, 6) provide evaluations of baselines for water supply areas, and 7) in coordination with the Operations Group make recommendations to the EWAIDT on early development of assets in 1999-2000.

CALFED Environmental Water Account
Implementation Team



The five general areas that EWAIDT leader will direct are shown on the lower part of the organization chart: Coordination, Governance, Finance, Asset Agreement and 1999-2000 Actions. The leader may assign an small team and leader for each task. Specifics of each task are listed below:

Coordination- This task involves close coordination and integration of the EWA with other programs such as ERP and the CVPIA b(2) 800 TAF.

Governance- The leader will work with the large BDAC Governance subgroup and DNCT to develop the details of the interim governance plan.

Finance- This task provides input into the finance package for the CALFED program.

Assets Agreement- The leader will appoint a small team made up of stakeholders, state and federal water project and NoName group members to determine the technically feasibility of obtaining potential assets for the EWA. Availability, price, infrastructure needed to develop the asset, priority of use, and contractual needs are some of the variables that will be developed. The small team will also work with closely with the implementation coordinators of each of the CALFED programs.

1999-2000 Actions- A small team consisting of Operations Group and DNCT members will recommend do the EWAIDT options for developing assets that may be used by the EWA at the start of Stage 1, such as water purchases, varying the E/I ratio, purchasinf groundwater storage rights.

Schedule and Milestones

Milestones	Schedule
Form the EWAIDT	
Assign the EWAIDT Leader	
Form the asset technical feasibility team	
Report on Asset feasibility to EWAIDT	

- An interim EWA management group is formed as a subcommittee of the Ops Group. The members of the EWA management group are: USFWS, NMFS, DFG, USBR, and DWR. The Ops Group delegates to the management group the authority to grant E/I variances and to modify Project Operations within certain limits, with the right of appeal from the subcommittee up through the Ops Group to the CALFED Policy Group.
- The interim EWA management group collectively hires an EWA manager. The EWA manager is responsible for administering the EWA under the direction of the management group – contingency planning, operational recommendations, budget recommendations, negotiation of contracts, etc. The manager will be supported by agency staff (e.g., DOI

staff might negotiate water purchases) and by consultants. The manager will also assure the proper flow of monitoring information from the IEP.

- The management group will, to the extent feasible, base its asset, operational, and biological decisions upon criteria and priorities developed and vetted in advance by the Ops Group and a public advisory group.

The following org chart shows the general relationships.

Interim EWA Organization Chart

In a sense, the EWA has already assumed debts, despite the lack of a formal management structure (by taking on debt last spring to protect Delta smelt). It is imperative that a more formal EWA management structure be formed as soon as possible to assume control over EWA planning and operations. The following steps are needed:

- Ops Group forms EWA Management Group as a formal subcommittee.
- Fish and Operations agencies assign personnel to staff EWA Management Group.
- EWA Management Group hires EWA manager
- EWA manager hires consultants, and recommends needed agency liaisons.
- EWA manager recommends asset allocation, operations, and funding needs beginning with the fall of 1999.

[More work still needed on this paper. We need to integrate the DNCT work into this somehow. Otherwise, we will marginalize stakeholders. However, we may wish to have DNCT report to management group rather than vice versa in order to force the pace (a real manager will insist on getting timely outputs from DNCT).]

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