

CR 6 GROUNDWATER STORAGE INSTEAD OF NEW DAMS AND RESERVOIRS

Many comments expressed that development of additional groundwater storage was the best alternative way to meet additional water storage needs. Several comments stated that development of additional groundwater storage should be maximized before any consideration is giving to developing new or expanding existing surface storage facilities.

Groundwater and conjunctive use programs have been given great importance in the CALFED Program. Development of groundwater resources is part of the CALFED Preferred Program Alternative presented in the PEIS/EIR. Storage of water in groundwater basins is one of a series of water management strategy tools developed to address the Water Supply Reliability problem. Based on projected future needs and estimated economical groundwater storage capacity, development of ground water resources is an important part of the package of available tools.

Water Supply Reliability The CALFED Program has proposed a Water Management Strategy to ensure water supply reliability that recognizes the variability of water supply and demand in California. CALFED's water supply reliability goals are to: increase the utility of available water supplies (making water suitable for more uses and reuses); improve access to existing or new water supplies in an economically efficient manner for environmental, urban and agricultural beneficial uses; and to improve flexibility of managing water supply and demand in order to reduce conflicts between beneficial uses, improve access to water supplies, and decrease system vulnerability.

Several general categories of tools are included in the Water Management Strategy, all of which are being used in California to some degree: water conservation; water recycling; water transfers, both short-term and long-term; storage, both groundwater and surface water; water project operations; Delta conveyance modifications; watershed management; water quality control; and monitoring and real-time diversion management.

Water Management Strategy

Storage of water in surface reservoirs or groundwater basins can provide opportunities to improve the timing and availability of water for all uses. The benefits and impacts of surface and groundwater storage vary depending on the location, size, operational policies, and linkage to other program elements. By storing during times of high flow and low environmental impact, more water is available for release for environmental, consumptive, and water quality purposes during dry periods when conflicts over water supplies are critical. Storage which is properly managed and integrated with other water management tools can achieve significant improvements for a number of CALFED's water management objectives: reduce conflicts, decrease drought impacts on all beneficial uses, increase supply availability, increase operational flexibility, and improve water quality.

The particular attributes of storage in CALFED's Water Management Strategy vary by the type

and location of storage. Water storage located upstream of the Delta functions differently than storage located south of the Delta in the export area. Generally, groundwater projects are viewed as having more benign on-site environmental and land use impacts than surface storage.

Construction of new surface storage facilities or expansion of existing storage facilities would result in impacts associated with each site specific location, such as, fragmentation of existing habitat corridors on small or ephemeral tributaries blocking the movement and interchange of populations of some wildlife species from upper to lower watershed locations, and potential for loss of habitat and the resulting direct impacts on special-status species. The potential benefits of a groundwater recharge program include increased water supply reliability; reduced long-term lift costs to extract groundwater; and possible reduction or reversal of the adverse effects of past overdrafting of groundwater, such as land subsidence and water quality degradation.

Groundwater supplies are normally used to augment reduced surface supplies during drought periods or other restrictions on the movement of surface water. Surface storage is more suited to rapidly discharging or receiving large volumes of water, an advantage in real-time management of high river flow periods or environmental storage releases.

Considering the magnitude of conflicts over available water in California, CALFED believes that it must continue to evaluate and implement a broad range of water management options to achieve the Program's objectives. Therefore, new storage will be developed and constructed, together with aggressive implementation of water conservation, recycling, and a protective water transfer market, as appropriate to meet CALFED Program goals. During Stage 1, CALFED will undertake an Integrated Storage Investigation as part of its Water Management Strategy. The CALFED Integrated Storage Investigation (ISI) will provide the comprehensive framework for evaluation of storage implementation and management opportunities through Stage 1 and beyond. The ISI will include evaluations of north of Delta off-stream storage, in-Delta and adjacent to Delta storage, on-stream storage enlargement, groundwater and conjunctive use, power facilities reoperation, and fish migration barrier removal evaluations. The ISI will provide the analyses necessary for CALFED's determination of the proper mix of groundwater and surface storage facilities, and CALFED's Water Management Strategy will rely on these analyses as it identifies an appropriate combination of water management tools for attaining CALFED's water supply reliability goals and objectives. Detailed environmental documentation, feasibility studies, permitting, and construction activities would be initiated as appropriate. Based on the Water Management Strategy, including the ISI, CALFED will identify acceptable projects, and initiate permitting and construction if program linkages and conditions are satisfied.

Linkages and assurances are critical to the process of evaluating and constructing new storage in the CALFED Program. CALFED will develop these linkages and assurances, including measures of success for the Program's Water Use Efficiency and Transfer Programs, and lay out a process and schedule for defining and pursuing the appropriate mix of new storage in Stage 1. As part of the assurance package, these linkages will be reflected in a memorandum of agreement to be executed no later than the ROD, articulating a Clean Water Act Section 404 compliance strategy and conditional programmatic assurance on the need for storage facilities, based on the necessary technical and economic analyses. The 404 compliance process is discussed in more detail in Chapter 5, of the Phase II Report appendix.

The practical storage capacity available for groundwater storage will be determined only after detailed study of specific projects and full consideration of local concerns. For study purposes, groundwater storage volumes of 250 TAF in the Sacramento Valley and 500 TAF in the San Joaquin Valley were considered in CALFED's programmatic evaluation. Potential storage in Southern California has not been estimated at this time.

Appropriate and effective groundwater management and protection is essential to an effective water management strategy and to the success of a broad range of CALFED programs, including water transfers, groundwater banking, watershed management and water use efficiency programs. CALFED recognizes the critical role of local government agencies in protecting and managing groundwater resources, and will actively pursue cooperative partnerships with local agencies to achieve CALFED's objectives for groundwater banking and conjunctive use programs. CALFED is developing guiding principles for conjunctive use programs to ensure that local concerns and potential impacts are fully addressed.

During the first stage of the Program, the CALFED agencies intend to support the construction of at least two to three groundwater banking facilities with a target volume of 500,000 acre feet of storage. Projects will be developed in close cooperation with local interests, and will be subject to full environmental review prior to implementation.

Based on a programmatic evaluation of potential water supply benefits and practical consideration of acceptable levels of impacts and total costs, the range of total new storage considered for evaluation in during preparation of the PEIS/EIR was from zero up to about 6 MAF. This was considered a reasonable range for study purposes and impact analysis; more detailed study and significant interaction with stakeholders will be required before specific locations and sizes of new storage are proposed. During preparation of the PEIS/EIR, CALFED considered groundwater banking and conjunctive use opportunities in the Sacramento and San Joaquin Valleys and in Southern California. An initial inventory of potential groundwater storage opportunities was completed in 1997. More recently, CALFED formed the Conjunctive Use Advisory Team with staff from CALFED agencies and stakeholders. An initial task of the team was to ask about local interest for CALFED support on conjunctive use projects. Positive responses were received throughout the state including Southern California. Conjunctive use opportunities described in responses received as of publication of this document are shown in a figure and table on pages 88 and 89 of the Revised Phase II Report, June 1999. CALFED will continue to evaluate these and other groundwater opportunities before deciding which projects it may support. If a loan or grant program is established, a public solicitation process to receive proposals will be initiated.

CALFED has developed a framework for evaluation and development of additional groundwater and conjunctive use opportunities, based on voluntary participation by local water management entities. The proposed framework would provide opportunities for intensified groundwater monitoring, modeling, and evaluation of local and regional opportunities as well as potential impacts and mitigation requirements. It calls for use of pilot studies to methodically assess opportunities and impacts before full implementation. In addition, DWR and USBR are pursuing cooperative partnerships with local agencies to study and implement specific groundwater

banking and conjunctive use opportunities. DWR's North of Delta Off-Stream Storage Study also includes evaluation of opportunities for exchanges and groundwater management in conjunction with surface storage.

CALFED's first stage includes developing cooperative partnerships with local agencies and landowners in both the north-of-Delta and south-of-Delta areas, and includes construction of several south-of-Delta projects. Additional south-of-Delta and north-of-Delta projects, if feasible, could be constructed in later stages. The following actions/activities will be undertaken in Stage 1:

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1).
2. Include provision to protect overlying and other landowners' water rights (yr 1-7).
3. Provide funding assistance to local governments and special districts for groundwater plan development (yr 1-7).
4. Identify potential projects and local cooperating entities and define CALFED role (yr 1-3).
5. Conduct baseline monitoring and modeling (yr 1-7).
6. Initiate field studies (yr 2-7).
7. Project environmental documentation and permitting (yr 1-3).
8. Project design (yr 2-4).
9. In partnership with local entities, construct two to three groundwater banking facilities with a total target volume of 500,000 acre-feet (yr 1-7).
10. Study additional project sites (yr 2-7).

Additional information regarding groundwater storage is contained in the Revised Phase II Report appendix. Information on the environmental consequences to groundwater can be found in Sections 5.1, Water Supply and Water Management, and 5.4 Groundwater Resources in the Programmatic EIS/EIR.

The Implementation Plan appendix includes proposed groundwater banking and conjunctive use actions for Stage 1.

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